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First-Day Expository Interviews, Iterative Training, and Participant Skill in Descriptive Experience Sampling

Cody Michio Kaneshiro

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FIRST-DAY EXPOSITIONAL INTERVIEWS, ITERATIVE TRAINING, AND
PARTICIPANT SKILL IN DESCRIPTIVE EXPERIENCE SAMPLING

By

Cody Michio Kaneshiro

Bachelor of Arts – Psychology
Bachelor of Arts – Narrative Studies
University of Southern California
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of the requirements for the

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Department of Psychology
College of Liberal Arts
The Graduate College

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Cody Michio Kaneshiro

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Master of Arts – Clinical Psychology
Department of Psychology

Russell Hurlburt, Ph.D.
Examination Committee Chair

Noelle Lefforge, Ph.D.
Examination Committee Member

Murray Millar, Ph.D.
Examination Committee Member

Jared Lau, Ph.D.
Graduate College Faculty Representative

Kathryn Hausbeck Korgan, Ph.D.
*Vice Provost for Graduate Education &
Dean of the Graduate College*

Abstract

Descriptive experience sampling (DES) is a method of describing inner experience (i.e., directly apprehended thoughts, feelings, sensations, etc.). DES includes “iterative” sequences of random, natural-environment, beeper-driven sampling of inner experiences followed by an expositional interview that seeks to apprehend and describe those inner experiences in high-fidelity. DES investigators claim that these iterative sequences increase the participant’s DES skills. The present study tests that claim by investigating whether participants demonstrate higher skills in their very-last-sample interviews than they exhibited in their own very-first-sample interviews. The very-last-sample and very-first-sample interviews of six participants were quantitatively and qualitatively examined. We found that participants in very-first-sample interviews used frequent subjunctifiers that suggested that phenomena were not apprehended, whereas in their very-last-sample interviews they used subjunctifiers that suggested that they had apprehended phenomena adequately but their descriptions were falling short of describing those phenomena in high fidelity. Furthermore, very-last-sample interview turns were judged to be cleaving significantly more adequately to experience apprehended at-a-moment than were very-first-sample interview turns. These results are consistent with the view that DES skill increases across iterative sampling rounds. Implications for DES and other first-person methods are discussed.

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Chapter 1: Introduction

“Knowing yourself is the beginning of all wisdom.” – Aristotle

People of all ages, acculturations, education levels, socioeconomic status, physical ability, and so on describe having *inner experience*: thoughts, feelings, bodily sensations, kinesthetic awarenenses, real or imaginary seeings, hearings, tastings, and so on that are directly apprehended at particular moments. However, science—particularly psychology—has long struggled with how (and whether) to apprehend, describe, study, and/or analyze inner experience. On the one hand, much of psychology is dedicated to the study of things that have private, internal aspects, such as learning processes, personality and emotions, brain systems and nerve pathways, and psychological distress. Indeed, formal scientific psychology began in 1879 with the expressed goal of becoming “the exact description of consciousness [*Bewusstsein*]” (Wundt as cited in Titchener, 1921, p. 164). Even the word *psychology* is derived from two Greek words—*psyche* for soul and *logos* for the study of a subject—that literally translates to English as the *study of the soul*.

On the other hand, there have been long periods where psychology actively fought *against* studying inner experience. The rise of behaviorism in the early twentieth century led to the near complete abandonment of the study of consciousness for over half a century, particularly in the United States (Benjamin, 2007). Psychologists such as John Watson argued that psychology should aspire to be “a purely objective experimental branch of natural science” (Watson, 1913, pp. 158), and for many decades behaviorists were dominant, leading to an explosion of research in stimulus-response conditions, animal studies, and other inquiries into the

laws of behavior while nearly altogether deserting its initial Introspective¹ queries regarding the mental processes that formed consciousness.

However, the hegemony of behaviorism over psychology diminished during the later decades of the twentieth century, and once again inner-experience-sounding topics—now called cognition, cognitive science, cognitive-behavioral methods, and so on—became vogue (Hurlburt et al., 2017). Contemporary psychology expresses interest in investigating aspects of inner experience such as mindfulness (Reina & Kudesia, 2020), self-talk (De Muynck et al., 2020), and psychotherapy patient self-reported outcome monitoring (Lloyd, Duncan, & Cooper, 2019). Attention to the development and implementation of new methodologies to the study inner experience has grown substantially within the past fifty years, producing various approaches such as diary studies (Bolger, Davis, & Rafaeli, 2003), natural environment sampling methodologies (Csikszentmihalyi, Larson, & Prescott, 1977; Hurlburt, 1979), contemporaneous think-aloud methodologies (Ericsson & Simon, 1980), the micro-phenomenology interview method (Vermersch, 1994; Petitmengin, 2006) and descriptive experience sampling (Hurlburt, 1990). However, despite the apparent re-emergence of inner experience within current psychological research—as well as the number of methodologies that have been developed for the purposes of studying such phenomena—there remains considerable skepticism regarding science’s ability to apprehend inner experience (Haefel & Howard, 2010; Hurlburt & Heavey, 2001; Nisbett & Wilson, 1977; Petitmengin & Bitbol, 2009).

The present study involves an examination of one of those methods—descriptive experience sampling (DES)—and its claims regarding its ability to provide high-fidelity

¹ Note that *Introspection* with an uppercase *I* specifically differentiates the formal methods used by Wundt, Titchener, and other Introspectionists from *introspection* (with a lowercase *i*), which refers generally to any examination and observation of one’s own inner experiences by a variety of methods; Coon, 1993; Hurlburt, Alderson-Day, Fernyhough, & Kühn, 2017.

descriptions of participant's experience through iterative training. In Chapter 2, we begin by discussing the history of introspective methods within psychology and the known hazards of introspection that any adequate scientific method must deal with in its procedures. We also describe each of the major contemporary introspective methods and review whether and how each method works within the constraints imposed by the inherent hazards of introspection. In Chapter 3, we will discuss DES in greater detail, providing a detailed review of its aims and procedures. In Chapter 4, we describe the research question of the current study. In Chapter 5, we discuss how DES defines participant skill. Chapter 6 outlines the procedures used in this study. Chapters 7 through 12 present our findings for each participant, and Chapter 13 presents our overall findings across all participants. Chapters 14 and 15 presents our overall discussions and broader implications from this study's findings, and Chapter 16 discusses the limitations of this study.

Chapter 2: Review of the Literature

A History of Studying Inner Experience in Psychology

Inner experience has always played a central role within the field of psychology. The first formal psychological investigations of inner experience began in the mid-nineteenth century with Gustav Theodor Fechner and his work in psychophysics (Coon, 1993). Fechner was the one of the first scientific investigators to explore mind-body dualism, in that he was interested in the experiential differences between physical and mental phenomena. Fechner (1860) described his work as the “exact science of the functional relations or relations of dependency between body and mind, or, in more general terms, between the bodily and the mental, the physical and psychical worlds” (p. 8). Indeed, the earliest decades of the field of psychology saw the widespread use of Introspection—defined in the most general ways as “looking within to discover what one was thinking, feeling, remembering” (Coon, 1993, p. 760)—as a major method of psychological investigation. This is not to say, however, that the Introspective method was exceedingly subjective or qualitative, as will soon be demonstrated.

Building off Fechner’s and his contemporaries’ successes and failures was Wilhem Wundt’s Introspective method, which relied on experimental methods (i.e., controlled and replicable laboratory studies) as well as on highly trained, experienced participants such as Wundt himself or his graduate students (Danziger, 1980). The goal of Wundt’s Introspective research was *internal perception*: how individuals passively observe their inner experience when prompted by an externally presented stimulus (Danziger, 1980; Lyons, 1986). Notably, Wundt (as cited in Danziger, 1980) explicitly excluded the “process of thought in themselves” (p. 247). To Wundt (as cited in Danziger, 1980), this also meant excluding the “feelings and their complex

connections, affects and process of volition” (p. 247), as Wundt felt such processes were beyond the scope of Introspection (Aanstoos, 1983; Coon, 1993; Danziger, 1980).

Wundt’s methodology was developed with careful consideration of criticisms of past introspective techniques, such as the problem of self-observation (in that the mere act of observation may distort the original experience) and the use of retrospection (in which looking back on an experience could lead to distorted recollection; Danziger, 1980). Generally, a typical study conducted by Wundt included four major methodological considerations that sought to create an empirical approach to studying consciousness:

- 1) the Observer must, if possible, be in a position to determine beforehand the entrance of the process to be observed.
- 2) the introspectionist must, as far as possible, grasp the phenomenon in a state of strained attention and follow its course.
- 3) Every observation must, in order to make certain, be capable of being repeated several times under the same conditions and
- 4) the conditions under which the phenomenon appears must be found out by the variation of the attendant circumstances and when this was done the various coherent experiments must be varied according to a plan partly by eliminating certain stimuli and partly by grading their strength and quality (Asthana, 2015, p. 245).

Wundt’s significant contributions to creating a scientific methodology to study consciousness led many to characterize him as the father of modern psychology and the father of Introspective psychology (Diamond, 2001).

Following Wundt’s research came a new era of *systematic introspection* (Danziger, 1980). In contrast to Wundt’s Introspective methods, systematic introspection involved the acceptance of practices that Wundt specifically avoided, namely (a) a move to accept retrospective reports, (b) a greater emphasis on subjective reports on mental processes by

participants (versus Wundt's emphasis on objective data such as reaction time), (c) a noted interest in qualitative descriptions of experience, and (d) a greater emphasis on the investigator's role in experiments: having investigators, for instance, ask questions about a participant's experience versus traditional experiments in which the investigator was simply presenting a stimulus and the participant responded to it (Danziger, 1980). These changes attempted to broaden the scope of Introspection to investigate a greater range of human consciousness that were not possible with the strict limitations of Wundt's Introspective methods and were practiced by many important psychologists of the period such as G. E. Müller, Alfred Binet, and Theodor Lipps (Danziger, 1980).

One particularly prominent practitioner of systematic introspection was the British-born American psychologist Edward Bradford Titchener, who studied under Wundt in Leipzig. Titchener is credited with greatly expanding upon Wundt's investigations of structuralism, which sought to discover the structure of consciousness by first analyzing the mind in terms of its simplest constituent parts to then build a greater understanding of how these parts fit together to form consciousness. It is important to note, however, that Wundt himself never considered himself a structuralist or even used the term "structuralist" anywhere in his writings—structuralism was a word coined later by Titchener to describe Titchener's own theories of consciousness (Asthana, 2015).

Titchener's Introspective method was similar to Wundt's—such as using experimental conditions and highly trained participants—but differed in how participants were asked to report about their experience (Boring, 1954). A typical Titchener experiment might begin with the presentation of a stimulus (e.g., a book) in which participants were tasked with paying close attention to the stimulus and record their mental processes created by the stimulus. Following the

presentation of the stimulus, participants were to report carefully the *conscious content* of their inner experience, in which they were asked to abstain from referencing any meaning, interpretation, or inference of their experience (Boring, 1954). Additionally, Titchener tasked his participants with avoiding *stimulus error*, in that they were admonished not to report any statements about the stimulus, which he termed *dependent experience*. In other words, if presented with a red book, a report of “book” would have been considered a stimulus error due to the fact that such aspects were a description of the stimulus rather than an aspect or aspects of experience (Boring, 1954; Chirimuuta, 2016). In contrast, a report of “red” or “parallelogram” would have been considered acceptable, as (from Titchener’s perspective) such reports described the “purely mental sensations” that comprised consciousness (Chirimuuta, 2016, p. 34). The careful bounds of Titchener’s methods illustrated Titchener’s conviction that psychology was a natural science, in that he believed that if Introspection could “perform a reduction of complex experience to elements that were devoid of meaning, [they] were... identical with the sensory elements that also formed the basis of the data of physical science” (Danziger, 1980, p. 254).

Despite Titchener’s aim to develop psychology into a natural science in the manner of physics, his methods and theories of structuralism were criticized by his contemporaries and were abandoned after his death (Beenfeldt, 2013; Boring, 1954). One notable critic was Oswald Külpe, who developed his own Introspective method in the early twentieth century while establishing a thriving doctoral training program in Würzburg. Külpe, also a former student of Wundt, was particularly interested in using Introspection to study phenomena that Wundt had explicitly ignored, such as meaning, qualitative descriptions, and complex experiences (Coon, 1993; Danziger, 1980). Breaking significantly from Wundt’s method, Külpe developed *systematic experimental introspection*, a laboratory method that presented participants with a

complicated stimulus or series of events and asked them to provide retrospectively a comprehensive account about their thought processes (Boring, 1954). This method allowed the exploration of what previously had been considered off-limit phenomena in psychology: association (see Mayer & Orth, 1901), judgement (see Marbe, 1901), feelings (see Orth, 1903), thought (see Watt, 1905), and action and thought (see Ach, 1905; Boring, 1954).

In spite of the numerous advances made in Introspective methods by the early twentieth century, Introspection was all but abandoned as a legitimate psychological method soon after the start of the century. In addition to scathing criticisms of introspection by prominent behavioral psychologists of the period (e.g., Watson, 1913), the emergence of new psychological disciplines incompatible with Introspection (e.g., applied/industrial psychology, behaviorism), and economic pressures to industrialize psychological research (Coon, 1993), perhaps one of the most discrediting aspects of the Introspective method was the disagreement that occurred amongst Introspective researchers about key issues related to consciousness—specifically, about imageless thought (Hurlburt & Heavey, 2001).

The imageless thought controversy involved disagreement between Külpe at Würzburg and Titchener at Cornell. Following his tenure as the director of the Institute of Würzburg from 1896 to 1909, Külpe believed his fellow researchers had discovered a new, previously undescribed mental phenomenon—his graduate students described it as:

knowledge [that] exists in an imageless form, that is, no phenomenological components are demonstrable—neither visual, acoustic, nor kinesthetic sensations, nor their memory images—which would qualitatively define the content of this knowledge” (Ach, as cited in Beenfeldt, 2013, p. 60).

In contrast to Külpe's findings, Titchener believed in sensationalism, a viewpoint within psychology that posited that the core of experience was rooted in sensations and sense perceptions. Titchener (1926), for instance, believed that ideas differed from perceptions (e.g., sensory experiences) "only by the fact that [an idea] is made up wholly of images" (p. 376) and that, "sensation [perceptions] is the raw material from which ideas are built up" (Titchener, 1895, p. 428). That is, Titchener did not accept the possibility of imageless thought. Ultimately, the inability of these major Introspective schools to settle the imageless-thought controversy was one particularly important factor (among many) that led to the downfall of Introspective methods (Danzinger, 1980; Hurlburt & Heavey, 2001).

Following the demise of Introspection in psychology came the era most notably characterized by the widespread prevalence of behaviorism, taking place roughly between 1925 to 1970 (Hurlburt et al., 2017; Schultz & Shultz, 2008). As previously mentioned, Watson's consequential 1913 paper, "Psychology as the Behaviorist Views It," and his 1914 book, *Behavior, An Introduction to Comparative Psychology*, was a watershed moment for psychology, particularly in America². In both his paper and his book, Watson—considered by many historians to be the father of behaviorism—challenged psychologists to abandon Introspective methods and to adopt a new experimental methodology focused only on observable behavior (Hothersall, 2004). Watson's assertion was that psychology as a field had failed to be recognized as a natural science due to its interest in consciousness, which Watson considered to be "neither a definable term nor a usable concept" (Hothersall, 2004, p. 465). Watson argued that the study of consciousness had been fraught with contradictions, confusion, and a general sense of

² European psychologists continued to pursue investigations that were similar in spirit to the Introspectionists, such as Wolfgang Köhler and Kurt Koffka's contributions to the development of gestalt psychology (Hatfield, 2002). However, despite such investigations, behaviorism was still the dominant paradigm throughout much of the twentieth century.

unproductiveness; instead, Watson advocated a study of psychology in which the goal was “the prediction and control of behavior,” where “introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness” (Watson, 1913, p. 158). Watson was not the first to propose a more “objective” psychological science (indeed, the field was already in the midst of shying away from introspective techniques as a central method of psychology around the time of Watson’s published critiques; Costall, 2006; Danzinger, 1980). However, Watson’s provocative stance that “what we need to do is to start work upon psychology, making behavior, not consciousness, the objective point of our attack” (Watson, 1913, p. 176) was a critical assertion that galvanized a strong response from a field hungry for change.

In spite of Watson’s forcefulness, it was not until the 1930’s and 1940’s that the behaviorism paradigm found its dominance within psychology. Modifying and expanding upon Watson’s behaviorism, researchers such as Edward C. Tolman, Clark L. Hull, and B. F. Skinner strengthened key parts of Watson’s behaviorism by defining psychology as a science of behavior; by collecting only objective, observational data; and eschewing any study of consciousness (Greenwood, 2015; Hothersall, 2004; Schultz & Schultz, 2008, p. 493; Trull & Prinstein, 2012). These psychologists, particularly Skinner, concerned themselves primarily with formalizing laws of behavior, such as operant conditioning, and with behavior acquisition and modification. Additionally, the behaviorists were among the first to develop behavior therapies that—in contrast to earlier psychological interventions such as psychodynamic therapy—also focused clinical attention solely on observable, discrete behavior. During this period of psychology, investigations concerning inner experience became rare (Schultz & Schultz, 2008),

and journal articles' use of words such as “conscious*,” “introspect*,” and “cogni*” plummeted (Hurlburt, Heavey, & Seibert, 2006).

The field of psychology began to slowly shift again, however, as researchers once more became interested in the cognitive contents underlying behavior. Beginning in the 1950's, psychologists such as E. R. Guthrie—who was long considered a behaviorist—criticized the overt stress placed on physical and/or external stimuli by his behaviorally-focused colleagues, and instead began to advocate for the description of stimuli in cognitive terms (Guthrie, 1959). At around the same time, Albert Ellis began to develop one of the first therapies (Rational Emotive Therapy; RET) within clinical psychology that focused on cognitive approaches to various emotional and behavioral problems (Ellis, 1957; Trull & Prinstein, 2012), followed closely by Aaron Beck's Cognitive Behavioral Therapy (CBT) in the 1960's (Beck, 1963). Indeed, various researchers began investigations into a wide variety of studies that blended components of external and internal domains, such as information processing, cognitive development in children, and language acquisition (Leahey, 1991). This era of psychology—often reported as the “third” wave in psychology from 1970 to the present—has been referred to as the *cognitive revolution*, in which the field has seen a resurgence in explorations of the contents (e.g., thinking, feeling, information processing) of the mind (Hurlburt et al., 2017; Leahey, 1991).

With the renewed interest in the cognitive and cognitive-behavioral topics in psychology, investigations in individual's inner experience regained popularity. During the 1960's, researchers such as Jerome Singer and his colleagues began exploring features of daydreaming and other aspects of cognition and personality (Hurlburt & Heavey, 2008; Singer & Antrobus, 1963). By the 1970's, technological advances allowed investigators to invent (Hurlburt, 1976) or

use (Klinger, 1978-1979; Csikszentmihalyi, Larson, & Prescott, 1977) portable signaling devices to sample thoughts in natural settings, along with more traditional studies that used various self-report measures (e.g., diaries, questionnaires) to study internal states (Szalai et al., 1975, Campbell, 1976). In the 1980's and 1990's, researchers continued to use the latest technology (e.g., personal palmtop computer devices) that randomly signaled participants in natural environments to complete digital questionnaires (Stone, Neale, & Shiffman, 1993) about their inner experience. In the 2010's, researchers began to use smart phones to create personalized methods for psychological assessment and intervention, such that phenomenological data collected over time about an individual's inner experience is used to create a model of personalized intervention for that specific person via statistical modeling (Fisher et al., 2017).

Hazards of Introspective and Experience Sampling Methods

As demonstrated by the history of the scientific study of inner experience, a throughline throughout the history of psychology has revolved around the best methodological practices for understanding inner experience. Although the popularity and scope of inner experience within psychological research has waxed and waned over the decades, methods that rely on participant's self-report (i.e., introspection broadly defined) have had an undeniably long and varied history in psychological science. However, despite their ubiquity, the validity of self-reports in science has long been scrutinized (Bernard et al., 1984; Dodge, 1912; Hurlburt & Schwitzgebel, 2007; Nisbett & Wilson, 1977; Petitmengin & Bitbol, 2009). Indeed, research in many areas and topics over the decades have identified many known hazards that are unavoidable if science wishes to develop systematic ways of investigating inner experience. For example, retrospective reconstructions of past events have been found to be influenced by emotional arousal levels (Sillars & Scott, 1983; see hazard 1 below). Additionally, eyewitness testimony research has

demonstrated a number of shortcomings related to misinformation and false memories (Frenda, Nichols, & Loftus, 2011; Loftus & Palmer, 1974; Loftus & Pickrell, 1995). Many other confirmatory bodies of research additionally demonstrate the limitations regarding self-report methodologies.

Although there are quite literally a hundred or more hazards to consider (Hurlburt, 2011), Heavey, Hurlburt, and Lefforge (2010) have discussed 10 fundamental hazards that threaten inner experience research:

1. Distortions caused by retrospection. It has been extensively demonstrated that human memory is often fallible, particularly when the retrospection is taking place for an event that happened long before (Conway et al., 1994; Tourangeau, 2000; Thomas & Diener, 1990).
2. The influence of assumptions, heuristics, or other preconception (i.e., presuppositions) that distort the apprehension and/or report of pristine (naturally occurring, unmanipulated) inner experience. A presupposition can be defined as:
... a notion about the world that is so fundamental that it exists prior to critical examination. It is something accepted without controversy as being true, something that shapes perception, behavior, and affect without the fact of that shaping being noticed or recognized. It is an unquestioned manner of relating to the world that chooses what is seen and what is not seen, what is experienced and how it is experienced, so invisibly that what is seen and experienced seems to be the world itself, not aspects of the world selected, shaped, and distorted by the presuppositional process (Hurlburt & Heavey, 2006, p. 151).

3. A reliance on semantic memory versus episodic memory, in which semantic memory overrides, obscures, and/or distorts episodic memory for a specific moment. Episodic memory refers to the storage of specific situations, details, or events bound by time and place (Tulving, 1984). In contrast, semantic memory refers to the storage of nonspecific general concepts that are not bound by time and place (Tulving, 1984). A series of studies conducted by Robinson and Clore (2002) present evidence that participants used semantic memory when asked to rate the intensity of their emotional experience over a long period of time (i.e., several months, years), whereas participants used episodic memory when asked to rate the intensity of their emotional experience over a short period of time (i.e., past several hours or days). In other words, rather than relying on a chronological recollection of a specific moment, there is some warrant to believe that individuals may rely more on their (perhaps mistaken) general knowledge of a moment, which may or may not accurately reflect what occurred.
4. A failure to differentiate between directly apprehended phenomena and things that are assumed to be directly apprehended phenomena but are difficult or impossible to apprehend directly. Participants and/or researchers may not adequately distinguish between directly apprehended inner experience (i.e., thoughts, sensations, and feelings that presents itself “before the footlights of consciousness”; Hurlburt & Akhter, 2006) and constructs, processes, and/or concepts that may be challenging to access or may not exist at all in experience. For example, many topics in psychological research—such as racism, extroversion, and anxiety—exist as constructs; these constructs cannot be directly observed and must thus be approximated by the measurement of other phenomena that are theorized to relate to the construct (Furr, 2018). Additionally, processes such as

identifying the motivation of actions have been shown to be difficult for participants to identify (Nisbett & Wilson, 1977).

5. Objectifying the individual such that individual characteristics are lost in favor of group averages. A preference for summative/group analyses (e.g., means, sums) that are widespread within nomothetic methodologies may not sufficiently allow for the nuanced description and exploration of unique individual-to-individual variations in inner experience (i.e., idiographic methodologies).
6. Reluctance of participants to share their inner experience. Participants may not be honest in their descriptions of experience. Due to the inherent nature of inner experience, participants may be wary of describing phenomena that are private, disturbing, embarrassing, or sensitive in nature. Past research on factors that affect participant's self-report—such as the social desirability response bias—has demonstrated that individuals tend to portray themselves in a positive manner, thus confounding the true relationships between variables (van de Mortel, 2008).
7. The pitfalls of language. Participants may not be able to speak discriminately about their inner experience. In fact, even those who are widely believed to be relatively skillful in apprehending their own inner experience (e.g., long-time meditation practitioners) may not—and likely will not be—skilled in providing verbal descriptions of their inner experience due to the fact that such reports are not at all an intended goal of meditative practices (Petitmengin, 2006). Skinner (1974) noted that verbal reports on inner experience—in contrast to verbal reports on publicly observable things—may be under-differentiated due to the fact that it is difficult to shape a person's speech about private events. For example, one can learn to differentiate between many shades of blue by the

presentation of various hues of blue (e.g., azure, cyan, cobalt blue) which can be appropriately reinforced only when the correct stimulus is presented (Hurlburt, 2011; Skinner, 1953). This type of precision is difficult or impossible when building a vocabulary for inner experience, as it is impossible to differentially reinforce various types of inner experience to better specify such phenomena, such as differentiating between various types of affectively “feeling blue” (e.g., depressed, morose, dejected). This is evidenced by the use of the same word (“thinking”) by participants across many DES studies to describe disparate types of inner experience: Participants (typically in the earlier parts of the DES sampling process) often describe their experience as “thinking” (e.g., “I was thinking about what was said in class”), in spite of the fact that “thinking” may refer to any private event (e.g., hearing an inner voice, seeing a visual image, experiencing a bodily sensation; Hurlburt & Heavey, 2001).

8. Experimental manipulations fail to establish ecological validity. The contrived or retrospective accounts of experience do not constitute the same process of direct observation. Laboratory studies, armchair introspection, and methods that rely heavily on analog situations are built on a strong—and perhaps unwarranted—assumption that such stand-ins are generalizable or equal to pristine inner experience (Hurlburt & Schwitzgebel, 2007; 2011a).
9. Apprehending inner experience requires considerable investigator skill. Given the numerous hazards that have been so far discussed (in addition to those that remained discussed elsewhere but not outlined here; see Hurlburt, 2011), it takes a significant amount of training, persistence, and a willingness to be corrected by others in order to strive for a principled science of inner experience (Heavey et al., 2010; Hurlburt, 2011).

Both skeptics and supporters of inner experience research have been united in their repeated concerns about the major time- and labor-intensive limitations placed upon research methods that take seriously the hazards of inner experience research (Hurlburt & Schwitzgebel, 2011a; McKelvie, 2019).

10. The assumption that participants' accounts of their inner experiences are infallible. Due to the deficit of both informal interest in ongoing pristine inner experience and formal scientific explorations into pristine inner experience—in addition to many of the hazards previously listed, such as the pitfall of language, the influence of presuppositions, and the pitfalls of memory—it cannot be assumed that people are able to easily apprehend or report their inner experience without repeated opportunities to do so, or without prior training. Indeed, it has been observed elsewhere that inner experience often takes place below the threshold of conscious awareness; although participants are able to perform mental operations (e.g., memorizing a list) or carry out a practical action (e.g., making a sandwich), participants may only be able to consciously report a very small part of how they go about performing such acts (Petitmengin, 2006). Even early psychologists such as Wundt and Titchener recognized both the difficulty in apprehending inner experience and thus insisted on using only highly trained subjects (e.g., Wundt or Titchener's graduate students, or the psychologist themselves) in their investigations.

Taken together, Heavey et al.'s (2010) hazards of inner experience research offer a litany of cognitive, theoretical, methodological, and interpersonal risks involved in introspective methodologies. Other important risks were discussed by Petitmengin and Bitbol (2009), who divided them into two major areas: methodological difficulties related to inner experience and distortive hazards. In regard to methodological difficulties, Petitmengin and Bitbol highlighted:

- The disconnect between external stimuli and inner experience. There is an inherent gap between what may be externally present to a person and what may be internally present to a person. In developing his own Introspective technique, for instance, Titchener was sensitive to the difference between observing and describing external stimuli versus the noticing, observing, and description of one's actual experience (which may or may not be related to the external stimuli)—Titchener referred to the former as stimulus error. Research on inner experience is concerned *not* with whether or not reports of inner experience correspond with external stimuli but is instead concerned with whether or not reports of inner experience correspond with the individual's "true" inner experience.
- The "impossible split" (Petitmengin & Bitbol, 2009, p. 365) of self-observation. Introspection requires participants to "cut [themselves] into two" (p. 365) in order to observe ongoing inner experience. This act of "splitting" has called into question the idea of "*regressio ad infinitum*" (p. 365, emphasis in original): the seemingly endless loop of one observing oneself observing oneself.
- Blindness of introspection. Similar to hazard 10 outlined in Heavey et al. (2010), Petitmengin and Bitbol noted that many researchers across the history of psychology have commented on the difficulties of accessing inner experience. Notably, Nisbett and Wilson's (1977) seminal paper argued that while we are able to apprehend the results of our decision-making processes, we are unable to apprehend that decision-making process itself. Further evidence could be proposed by citing the exacting interview methods of Wundt and Titchener, who explicitly created such Introspective protocols and used highly trained participants to mitigate the known difficulties involved in describing ongoing inner experience. Additionally, mind wandering research has demonstrated that

participants may unintentionally and unknowingly stray from explicit directions to stay focused on a task (e.g., reading; Schooler, Reichle, & Halpern, 2005) and that participants may also vary in their ability to comment authoritatively on the validity of their self-reports of their inner experience (Seli et al., 2015). Ultimately, humans find it easier to report the “what” (i.e., content) about our private events, but not to the “how” such things present themselves to us (Petitmengin & Bitbol, 2009, p. 371).

- The non-verifiability of results. Because inner experience is inherently (a) private and (b) “singular [and] unrepeatable, neither by others nor even by myself who is experiencing it” (Petitmengin & Bitbol, 2009, p. 371), a “legitimate” science of inner experience is severely hampered by its inability to verify or falsify the phenomena of interest. As such, inner experience research struggles to meet the prerequisite attributes of a scientific methodology.

In regard to distortive hazards of inner experience research, Petitmengin and Bitbol (2009) highlighted:

- Observation distortion. Grounded in the ideas of phenomenology and Schooler (2002), Petitmengin and Bitbol mention of two types of consciousness: basic consciousness and meta-consciousness. Basic consciousness refers to an individual’s immediate, “organic,” and immersed “flow of experience” (Petitmengin & Bitbol, 2009, p. 365). Meta-consciousness refers to any reflection, observation, introspection, or any other means in which “consciousness is directed towards itself” (p. 365). This proposed two-tiered nature of consciousness reflects the “impossible split” problem of self-observation—namely, that meta-consciousness should be an accurate account of basic consciousness. However, it has been theorized that the mere act of observing one’s basic consciousness

may disturb and/or distort the inner experience. Petitmengin and Bitbol outlined four major ways in which observation may alter inner experience:

- Objectifying the subject, such that participants remove the subjective, experiential, and “human” nature of self in an attempt to “sanitize” the act of introspection of its subjectivity. Ultimately, this can lead to a loss of the subject.
- “Immobilizing” inner experience. In spite of the fact that consciousness is believed to always be in motion and fluctuating as time unfolds, the act of introspection may force participants to “petrify” their inner experience into still and isolated reports, thus losing important “flow” qualities of experience.
- Observation disrupts ongoing inner experience, which could fundamentally alter inner experience that otherwise would occur unheeded, uninterrupted, and pristine.
- Observation may enrich or create phenomena that may not have previously existed. There remains debate around the extent to which one’s observation of their inner experience either (a) apprehends ongoing, naturally-occurring phenomena that existed previous to (or in spite of) observation, or (b) *creates* phenomena due to the fact that one is suddenly paying attention to experience.

Given the considerable hazards that inner experience research faces, care must be taken in order for any science (or method) of inner experience to flourish. Towards this end, Hurlburt and Heavey (2015, 2018) have proposed four fundamental constraints that any adequate introspective method must work within:

1. Cleave to (relentlessly focus on; not stray from) specific moments. Because inner experience changes dramatically from moment to moment—at one moment we are

hearing, the next moment we are seeing, the next moment we are itchy, and so on (James, 1890)—it is necessary for any exploration of inner experience to clearly focus on identifying a specific moment to consider at the exclusion of all other moments, periods of time, or in-general, temporally non-specific reports. Therefore, cleaving to a specific moment is a prerequisite to the adequate study of inner experience.

2. Cleave to (relentlessly focus on; not stray from) pristine inner experience. *Pristine* inner experience refers to directly apprehended, ongoing, naturally occurring inner experience in everyday environments (in contrast to experience that is artificially distorted by laboratory investigations and/or intentional introspection). *Directly apprehended* refers only to phenomena that are unambiguously and directly present to an individual at a particular moment—by this definition, things such as an inner speaking, a seeing of an internal or external thing, a bodily sensation, and so on may all be directly apprehended phenomena, whereas things such as psychological constructs (e.g., conscientiousness), explanations/intentions of experience, behavior, self-theories, in-general characterizations, and so on are *not* directly apprehended phenomena. Considering only directly apprehended experience is essential because all else must be inferred or based on a blend of heuristics, presuppositions, and (perhaps) some kernels of directly apprehended phenomena.
3. Relentlessly bracket presuppositions about experience. Presuppositions are a priori, deep-set, invisible personal blind spots, assumptions, and self-theories that are blindly accepted to be true without question (Hurlburt, 2011, Kaneshiro and Hurlburt, 2020). Presuppositions are delusions (not mere ignorance): they are a persistent preconceptions about the world that are immovable to alternative perspectives because they are held

without any questioning (Hurlburt & Heavey, 2006; Hurlburt & Schwitzgebel, 2011b).

Presuppositions can affect both participants and investigators, and their presence thwarts the apprehension and description of inner experience. Presuppositions are, by their nature, distortive; they impede any ability at apprehending with fidelity. Thus, any adequate introspective method must use some principled method that seeks effectively to bracket (i.e., set out of play; Hurlburt, 2011) all presuppositions.

4. Iteratively train participants. Despite the ubiquity of inner experience, multiple streams of scientific investigations have demonstrated that without adequate training, people are often unable to apprehend and faithfully describe their experience. For example: the Introspectionists relied on highly-trained participants as part of their investigations, and Hurlburt and colleagues (through the use of DES sampling) have consistently found that nearly all participants naïve to the DES procedure fail to cleave to a moment, cleave to experience, and bracket presuppositions upon their first day of sampling. Hurlburt has argued that a method that implements some form of iterative training is necessary for high fidelity apprehensions of any pristine experiences (Hurlburt, 2011), where iterative training refers to the acquisition of skill through:

... successive approximations trained on the participant's home turf, using examples of distortions and misunderstandings in the participant's own vocabulary, discovered and explored as they present themselves in the participant's own failure to cleave and/or bracket, successively approximated as the participant gradually acquires skill and reveals additional levels of distortion or avoidance (Hurlburt & Heavey, 2018, p. 173).

Thus, iterative training is not merely repetition; iterative training successively refines participants' skill, such that each instance of apprehending and describing their experience may improve the participant's ability to apprehend and describe their experience on some future opportunity. Thus, any adequate introspective method must ensure participants are able to improve on their ability to apprehend and describe their experience (and consider how they may go about doing so in their procedures).

Although Hurlburt and Heavey's recommendations of the four constraints of introspective methods are by no means complete, they provide a foundational set of methodological considerations that are directly influenced and work within the constraints imposed by the various known hazards of introspection. And, although all introspective methods must work to consider how its procedures work within all of the constraints imposed by the hazards of introspection, we will, out of convenience, use these four constraints as an initial means by which we may analyze the adequacy of current introspective methods that seek to study inner experience.

A Review and Analysis of Contemporary Introspective Methods

Multiple methods have been proposed, developed, and used to study inner experience, and each offers unique perspectives and widely varying procedures. In the following sections, we present a broad review of the current, most widely used introspective methods. For each method, we will present an exemplary study and examine it from the perspective of Hurlburt and Heavey's (2015, 2018) four constraints of an adequate introspective method.

Diary Studies

Diary studies refer to a broad group of methods that utilize diaries (or other similar, self-report mediums) to provide frequent reports on the various events and experiences in

participant's lives (Bolger, Davis, & Rafaeli, 2003). Perhaps one of the oldest experience sampling methods, diary studies have existed in some form since approximately the turn of the twentieth century, in which psychologists such as William James were interested in using personal documents to study internal, subjective states such as religious experience (James, 1902). In particular, diary studies were popularized by the early personality psychologist Gordon Allport, who argued that psychology as a field of study should focus on describing and understanding individuals in an idiographic manner through collecting and analyzing repeated, longitudinal life documents (Allport, 1937; Allport, 1942). Allport argued that diary studies (and idiographic methods more broadly) would allow direct investigations of the structure and process of an individual person's personality; in other words, such studies could investigate how specific components of personality (e.g., beliefs, predilections) might lead to or affect behavior, actions, or other processes within individuals (Conner et al., 2009). By focusing on individuals, Allport believed it would be possible to illuminate the complex, idiographic aspects of a given individual's personality; his arguments stood in contrast to the competing nomothetic approaches of psychological research, which focused on describing "a non-existent 'average individual'" that did *not* "describe the structure of any actual person's personality"; Conner et al., 2009, p. 295). In spite of his desire to focus on individuals, Allport hoped that—given the study of enough individuals and the accumulation of enough data—that such findings would be able to discern nomothetic aspects of personality (Conner et al., 2009).

The general purpose of diary studies is to use self-report instruments to repeatedly examine ongoing experience in real-world, everyday contexts and situations (Bolger et al., 2003). Often, the research goals of studies that use diary methods involve gathering reliable, person-level information about each research participant, estimating within-person changes over

time (as well as the degree or nature of change between participants), and/or conducting a causal analysis of within-person changes and individual differences regarding such changes (Bolger et al., 2003). Diary studies have been used to study a broad range of populations, domains, and activities such as marital and family processes (Laurenceau & Bolger, 2005), social interaction (Wheeler & Miyake, 1992), headaches (Allena et al., 2012), and psychotherapy (Mackrill, 2008).

There is a wide range of diary procedures. For instance, while traditional diary studies used paper and pencil diaries, contemporary diary studies may use palmtop electronic devices, personal smartphone applications, or electronic diaries (Barrett & Barrett, 2001). Additionally, studies can choose multiple types of sampling schedules to collect reports. The three most popular schedules are interval-contingent sampling, in which participants complete reports at a pre-specified time(s) every day during the sampling period (e.g., 12:00 pm and 2:00 pm every day); event-contingent sampling, in which participants complete reports following a particular event occurring (e.g., after smoking a cigarette); and signal-contingent sampling, in which participants complete reports following a signal that occurs either at fixed or random intervals (e.g., following a random beep generated by a paging device; Barrett & Barrett, 2001; Bolger et al., 2003; Moskowitz & Young, 2006; Nezlek, 2012). Diary entries, moreover, may involve collecting various types of data via differing means: Some may ask participants to answer a pre-determined set of questions using a particular sampling schedule; other studies may ask participants to create diary entries similar to example entries provided; others still may use a diary-interview method (Zimmerman & Wieder, 1977), in which participants maintain diaries over a period of time and discuss entries with investigators at the end of the sampling period (Nezlek, 2012); and others may use diaries as either the primary data collection methodology or use diaries in conjunction with other measures (e.g., structured daily interviews).

For example, Bolger and Schilling (1991) investigated neuroticism and distress in daily life. They used a daily diary approach because (a) it would allow them to track the “relative importance of exposure, reactivity, and unmediated explanations” of participants as they experienced stressful situations (Bolger & Schilling, 1991, p. 358), and (b) it would allow researchers to study “same-day and later-day reactions to a stressor” in order to “distinguish people’s initial emotional reactions to a stressor from their speed of recovery from that stressor” (Bolger & Schilling, 1991, p. 358). Once each day, participants completed a diary entry that involved documenting two data points: one asked participants to indicate whether a common daily stressor event (from a list of 22) had occurred within the previous 24 hr, and another asked participants to indicate how strongly they had felt emotions (from a list of 18 drawn from the subscales of the Affects Balance Scale; Derogatis, 1975) on 4-point Likert scales ranging from *not at all* to *a lot* over the previous 24 hr (Bolger & Schilling, 1991). Participants completed a daily diary for 42 days. Each week, participants mailed seven days’ worth of diaries to investigators, and although efforts were made to have participants complete a diary for each day of their participation in the study, the researchers allowed participants to complete late diaries (95% of participants purportedly completed reports within 1 day of the target day, although it was possible that some participants completed multiple days’ worth of diaries prior to mailing back their forms; Bolger et al., 1989); once completed, hierarchical linear modeling was used to analyze the separate estimates.

In general, diary studies have been found to possess good construct validity, and they are less subject to retrospective bias than are interview methods—largely, however, such analysis have been conducted exclusively on time-use diaries (e.g., reporting how many hours of a day one spends performing various activities; Carp & Carp, 1981).

However, Bolger and Schilling's study failed to meet any of Hurlburt and Heavey's (2015, 2018) four constraints:

1. The study did not cleave to a moment: they asked participants to retrospect about their entire experience over a 24-hr period. Moreover, participants could retrospect about the target day on an entirely different day up to six days after the target day occurred.
2. The study did not cleave to inner experience: they inquired about daily stressors, which are not descriptive of experience, and they also inquired about emotions, which may or may not be apprehended as phenomena. The study also attempted to (but did not successfully) cleave to pristine experience: participants collected information about themselves as they went about their routines in their natural environments, but since diaries were intended to capture a person's experience across an entire 24-hour day, participants may have self-selected (or otherwise relied on heuristics to decide on) what to include in their diaries.
3. The study failed to bracket presuppositions: participants were constrained to report only on whatever things the questionnaires prompted them to report (rather than on anything that emerged), and the study's once-a-day report period meant that participants likely had to rely on their presuppositions to respond to questions (i.e., rely on heuristics and self-theories due to the limitations of memory).
4. The study provided no iterative training. The study did use repeated data collection, but there was no intercalated critical examination of participants' ability to cleave to experience-at-a-moment and to successively improve such abilities.

Experience Sampling Method

The Experience Sampling Method (ESM; Csikszentmihalyi, Larson, & Prescott, 1977; Csikszentmihalyi & Larson, 1987) is a naturalistic, beeper-based sampling method that asks participants, when cued by a signaling device, to respond to a questionnaire that records details about the participant's situation (e.g., location, time of day) and subjective states (e.g., mood). ESM, created by Mihaly Csikszentmihalyi, was one of the first methods to use pagers to trigger participants to complete self-report logs with the first ESM study conducted in 1975 (Csikszentmihalyi et al., 1977).

The purpose of ESM is to obtain self-reports of both the context and the content of an individual's daily life. ESM is described as a method that allows for the examination of the relationship between changes in individual's external environment and/or situations and internal contents of the mind (Larson & Csikszentmihalyi, 2014; Hektner, Schmidt, & Csikszentmihalyi, 2007). In particular, measurements of experience collected via ESM are interpreted through the lens of *systematic phenomenology* (Hektner et al., 2007): the combination of modern empirical science (e.g., statistical analysis, scientific research designs) with data reflecting real-world lived experience.

ESM studies may vary from study to study (particularly in regards to the types of data collected and the manner in which such data is collected), but the general procedures for an ESM study is as follows: A typical ESM study begins with recruiting participants and enrolling them in a group orientation meeting with other participants to provide information about the study's procedure and to strengthen the research alliance (Hektner et al., 2007). Orientation meetings typically are 45 to 60 min long, in which information is given about the study's goals, participant confidentiality and consent, instructions about how to use the beeper, and how to respond to beeped cues using an Experience Sampling Form (ESF); in addition, participants are usually

given the opportunity to engage in a practice beep with the researcher available to answer any questions (Hektner et al., 2007). Guidelines for ESM orientation meetings stress the importance of pre-sampling participant training, and recommend that investigators walk through each item on the ESF and allow participants opportunities to respond to a practice beep (Christensen et al., 2003). The signal device can be as simple as an electronic pager (Larson & Csikszentmihalyi, 2014), or as complicated as a palmtop, handheld computer, Personal Data Assistants (PDA), or mobile device (Hektner et al., 2007; Van Berkel, Ferreira, & Kostakos, 2018). Often, an ESM study will use a signal-contingent sampling schedule, in which participants are cued at random times throughout the day (e.g., once every 2 hours between 8:00am and 10:00pm) over the course of the sampling period (often seven days; Hektner et al., 2007; Larson & Csikszentmihalyi, 2014).

When cued by the random beep, participants are instructed to complete an ESF that typically asks questions regarding their situation at the time they were cued (e.g., date, time, location, what activity was being performed, whether or not they were alone or with others) as well as questions regarding their internal experience at the time they were cued (e.g., contents of thought; cognitive, emotional, and motivational states; Csikszentmihalyi & Larson, 1987; Hektner et al., 2007; Larson & Csikszentmihalyi, 2014). Whereas participants are usually encouraged to respond to beeps immediately, participants sometimes delay in reporting; researchers typically restrict responses to no more than 30 mins following a beep (Scollon et al., 2003). Many studies use open-ended prompts to record external dimensions of their situation and Likert-type rating scales to record internal components of experience (Hektner et al., 2007). The scope and type of questions asked on ESF's differ widely from study to study depending on the specific research goals of a particular investigation, but all ESF's are questionnaire-based.

Once the data are collected, participants are usually given a questionnaire that assesses how representative the period of sampling reflects a “normal week” in their lives and whether there were any situations or events that caused participants to be unable to complete an ESF following a beep (Hektner et al., 2007). Additionally, some studies conduct a debriefing interview in which participants may be asked to identify any notable beeps or to point out the normalcy of particular beeps (Hektner et al., 2007). After all data collection is completed, a numeric codebook is typically developed that allows researchers to assign coding schemes to participant’s open-ended answers on their ESF’s (Hektner et al., 2007). Although most of the data are participant-coded Likert-scale ratings, investigators can code any number of variables using a wide range of categories depending on the research questions (Csikszentmihalyi & Larson, 1987). For instance, ESM studies have coded activities that participants were engaged in at the moment of the beep (e.g., “working at work”, “playing with child”) and contents of thought (e.g., thoughts about work, self, or others; Csikszentmihalyi & Larson, 1987).

ESM has been reported to have high sampling accuracy when compared to diary records that recorded the frequency of activities ($r = .93, p < .05$), relatively stable test-retest reliability ($r = .45$ to $.75, p < .05$), and sufficient internal consistency for scales of affect ($\alpha = .57$) and scales of arousal ($\alpha = .48$; Csikszentmihalyi & Larson, 1987). The validity of ESM has also been studied in terms of the extent to which ESM data match situations and self-reported psychological measures. One such study—which involved correlating participant’s heartrate activity with their responses on a self-report 10-point scale that asked, “how physically active have you been in the past three minutes?”—found that the relationship between these two measures could vary widely within individuals, with relationships ranging from $r = .16$ to $r = .61$ (Hoover, as cited in Csikszentmihalyi & Larson, 1987). Other studies have found correlations

between participant's ESM reports and their scores on other psychological assessments: For instance, McAdams and Constantian (1983) found that people with a high need for intimacy as reported on the Thematic Apperception Test (TAT) also reported more thoughts about people and relationship as collected through ESM ($r = .52, p < .001$).

Of particular note is the extent to which participants in ESM studies believe that ESM reports accurately capture their experience. In a sample of American and German participants, Hormuth (as cited in Csikszentmihalyi & Larson, 1987) found that 90% of American participants and 80% of Germans participants believed that the ESM reports captured their week well.

For example, Janssens et al. (2021) used ESM to examine changes in adolescent's mood during the COVID-19 pandemic and its relationship with parent-child relationship quality. They used a smartphone app (MobileQ; Meers, Dejonckheere et al., 2020) that delivered a "buzz or beep for 90 s or until the participants opened the notification" (p. 627) to cue the participants to complete three questions about their ongoing experience: "I feel irritated," "I feel stressed," and "I feel lonely." Participants were instructed to respond to these items "with the moment right before the notification in mind" (p. 627). Participants were tasked with responding to each item using a Likert-scale from 1 (*Not at all*) to 7 (*Very much*). Prior to sampling, the authors prepared participants by providing instructions and a full demo on how to use the MobileQ application and encouraged participants to ask questions. Participants were tasked with responding to 10 semi-random cues for six consecutive days; once completed, linear mixed effect models with multilevel structure and repeated observations within persons was used to analyze the various relationship between the study's variables.

However, Janssens et al.'s ESM study failed to meet any of Hurlburt and Heavey's (2015, 2018) constraints:

1. The study did not cleave to a moment: the use of a “buzz or beep” as a cue does not unambiguously identify the moment of interest. A buzz has a slow-rise time and may gradually pull participants out of their ongoing experience towards recognizing the onset of the buzz (Hurlburt & Heavey, 2004).
2. The study did not straightforwardly cleave to inner experience: they inquired about emotions (irritated, stressed, lonely) which may or may not be apprehended as phenomena. One can be, for example, in an irritated state without directly apprehending irritation. The study also attempted to (but did not successfully) cleave to pristine experience: participants collected information about themselves as they went about their routines in their natural environments, but the authors used a semi-random sampling timetable (and so participants may have caught on to the timing of the cues, thus thwarting the possibility of pristine experience).
3. The study failed to adequately bracket presuppositions. In fact, the study made no effort to bracket presuppositions; for instance, they only inquired about three pre-determined emotions such that any and all other things could not be reported on.
4. The study did not provide iterative training: although the study *did* provide participant training prior to sampling and involved collecting data over multiple instances, both of these practices cannot be considered iterative training. First, the only explicit training that occurred was the single pre-study practice—such one-shot trainings inherently preclude successive training-and-improvement (as such training only occurs once). Second, there was no ongoing direct confrontation or examination of participant’s reports—once pre-sampling training was complete, the authors treated all reports as data regardless of whether those reports were adequate or not (in fact, the authors explicitly stated,

“participants received no feedback on their ESM compliance” (p. 627), destroying any possibility of iterative training). Third (and given points one and two) there is little warrant to expect participants could or would improve simply by completing the same, identical questionnaires (because there were no means for participants to consolidate feedback and start anew).

Ecological Momentary Assessment

Closely related to (and sometimes used interchangeably with) ESM is Ecological Momentary Assessment (EMA). Developed in the 1990’s by Arthur Stone and Saul Shiffman, and strongly rooted in ESM, EMA seeks to broaden the scope of ESM—which typically focused on internal states—to include physiological measurements as well as events, locations, activities, and places within the context of health (Stone & Shiffman, 1994). As a result, EMA is more commonly used in medical research (Moskowitz & Young, 2006; Stone, 2012). Despite the different research traditions between ESM and EMA, EMA refers to a broad range of methods/procedures that are nearly identical to ESM (Shiffman, Stone, & Hufford, 2008), such that EMA (a) focuses on assessing phenomena the moment they occur, (b) uses various, carefully timed sampling schemes (e.g., event-based, time-based, random), (c) typically involves repeated multiple assessments over time, and (d) collects data in real-world environments that are typically inhabited by participants (Stone & Shiffman, 1994; Trull & Ebner-Priemer, 2014).

Generally, differences between ESM and EMA studies are due more to small procedural changes rather than larger conceptual changes. For instance—whereas most ESM studies will have participants fill out an ESF to record their experience—EMA may use a variety of assessments to record data at the moment of a beep, such as paper diaries, personal smartphones, physiological measures (e.g., blood pressure, heart rate), and so forth, with an emphasis often

placed on collecting objective, physiological measures (Shiffman, Stone, & Hufford, 2008; Stone & Shiffman, 2002). Additionally—whereas ESM studies will often use signal-contingent or random sampling—EMA studies often utilize a wider variety of sampling schedules such as time-contingent or event-contingent sampling (Shiffman et al., 2008). It should be noted, however, that the distinction between ESM and EMA are often not strongly defined in the literature as certain procedural changes (e.g., differences in sampling schedules) are not exclusive to each respective method.

Like ESM, EMA has been found across a variety of studies to possess good reliability and validity. Research conducted by Diener and colleagues have found EMA methods to possess strong temporal stability and internal consistency while assessing various types of affect (e.g., fear, joy; Diener, Smith, & Fujita, 1995). EMA studies on pain have also found moderate but significant correlations between daily sampling of pain and laboratory pain sensitivity ($r = .34$, $p = .037$; D'Antono, Ditto, Rios, & Moskowitz, 1999).

For example, Shiffman et al. (1994) used EMA to study situational associations between drinking alcohol and smoking). At the start of the study, participants were trained with a tutorial and lecture that included hands-on practice trials and electronic trials to learn mastery over using an electronic diary. Once sufficiently trained, participants were asked to always carry the electronic diary with them and were tasked with recording data using both event-contingent sampling (i.e., triggered by the act of smoking) and signal-contingent random sampling (i.e., triggered by a signal regardless of whether smoking was ongoing). Participants were instructed to complete reports using their electronic diary within 20 minutes after being prompted and were typically randomly sampled approximately five times a day. When beeped by an audible cue, participants filled out assessments directly on the electronic diary. Items were presented one at a

time and consisted of several closed-ended questions of which participants could select a response from a pre-selected list. Branching items were also given based on participant's previous responses; participants were required to respond to every item within 30 seconds and could not skip any questions. When beeped, the assessment collected information about many variables, particularly those related to smoking and drinking such as alcohol consumption (scored dichotomously *yes* or *no*), mood (from a list of 14 adjectives), activity (e.g., work, eating or drinking, social interaction), location (home, work, bar or restaurant, vehicle), and so forth. The results from Shiffman et al.'s investigations primarily consisted of reporting frequencies of behavior (e.g., how many cigarettes and alcoholic drinks were consumed), temporal characteristics of behavior (e.g., time of day, location, and activities ongoing when consuming tobacco or alcohol), self-reported aspects of inner states as apprehended during sampled moments (e.g., negative affect, arousal, attention), and relationships between frequencies, temporal characteristics, and inner states.

Shiffman et al.'s study failed to meet any of Hurlburt and Heavey's (2015, 2018) constraints:

1. The study did not cleave to a moment: Participants were allowed to respond to cues up to 20 min after they occurred, and it is unclear how that time span may have impacted participant's memory of whatever was ongoing at the time of the cue.
2. The study did not cleave to inner experience: they inquired about context and behaviors (which are not descriptive of experience), and they also inquired about psychological constructs (e.g., arousal, attention) that are *never* directly apprehended (one may infer arousal by directly apprehending (for example) a pounding heartbeat, but arousal itself does not refer to a directly apprehendable phenomena). The study also attempted to (but

did not successfully) cleave to pristine experience: participants did collect some samples cued by the random beeper, but the study's primary aim of event-contingent sampling (whenever participants smoked) was the exact *opposite* of pristine inner experience as participants were not at all blind to their efforts to introspect.

3. The study failed to bracket presuppositions on at least three fronts: first, the study included a narrowing-of-interest in studying participants' experience during a particular event—smoking (and, in so doing, likely overlooked important-but-unexpected experience at other moments that may related to smoking but are not overtly about smoking); second, participants were constrained to report only on whatever things the questionnaires prompted them to report (rather than on anything that emerged). And third, the study provided no principled method for bracketing presuppositions.
4. The study did not provide iterative training: although the study *did* provide participant training prior to sampling and involved collecting data over multiple instances, neither of these practices can be considered iterative training. First, the only explicit training that occurred was the single pre-study practice—such one-shot trainings inherently preclude successive training-and-improvement (as such training only occurs once). Second, there was no ongoing direct confrontation or examination of participant's reports—once pre-sampling training was complete, the authors treated all reports as data regardless of whether those reports were adequate or not. Third (and given points one and two) there is little warrant to expect participants could or would improve simply by completing the same, identical ESF form across (some near-identical) situations (because there were no means for participants to consolidate feedback and start anew).

Think-Aloud Methods

Think-aloud (TA) methods are types of experience sampling that involve asking participants to speak aloud whatever words may be present in their mind as they go about completing a task or process (Charters, 2003). The general purpose of TA studies has focused on assessing higher-level thinking processes (Olson, Duffy, & Mack, 1984) as well as describing problem-solving processes both within and across individuals (Fonteyn, Kuipers, & Grobe, 1993). TA has been used across a wide variety of populations and domains, such as studying problem solving processes in sports and health (Arsal, Eccles, & Ericsson, 2016), computer design (Jaspers et al., 2004), and education (Oster, 2001), and recent meta-analyses indicate that TA does not elicit significant participant reactivity (i.e., does not negatively impact participant's performance of a task; Fox, Ericsson, & Best, 2011).

The origins of TA can be traced to early psychological research conducted by John Dewey (1910) and Edouard Claparede (1917), although they gained prominence in contemporary psychology via the work of Anders Ericsson and Hebert Simon (1980) (Brouwers & Hurlburt, 2017; Charters, 2003). Early TA methodology developed as a direct response to criticisms of earlier introspective methods, although more modern studies are based on cognitive psychology—and in particular—Vygotsky's research on thought and words (Charters, 2003). In a paper discussing the TA method (amongst other verbal reports of psychological data), Ericsson and Simon (1980) expounded upon the theoretical background of TA: Given the information-processing paradigm within short-term memory (STM; the information-processing paradigm posits that at any given moment, there exists a certain subset of information that is being processed in STM), Ericsson and Simon argued that such information-processing within STM—reported concurrently (at the moment) rather than retrospectively—is the only information about consciousness that is accessible, consistent, complete, and able to be described.

In contrast to other experience sampling methods that have thus far been covered (i.e., diary studies, ESM, EMA), TA differs in that it often is used in controlled laboratory settings rather than in natural environments (Brouwers & Hurlburt, 2017). The procedure for a typical TA study, for instance, often begins by selecting a moderately difficult task for participants to complete. The use of a moderately difficult task is important, given that the task should be something in which individuals cannot rely on automatic, wordless cognitive processes as a means to complete the task; in other words, the think aloud method—by virtue of its purpose to elucidate participant’s ongoing thought process while problem solving—necessitates language-based activity to be occurring during whatever task is selected (Charters, 2003). The task can either be simulated (e.g., written, audio-visual), or performed in real life by the participant (Fonteyn et al., 1993).

For example, Aarsal et al. (2016) studied the cognitive control of a skilled behavior, golf putting. Following Ericsson and Simon (1993), the investigators recruited two groups of participants (a less-skilled golf group and a more-skilled golf group) and provided all participants with two training exercises that taught them on how to think-aloud while putting. In the first exercise, participants thought-aloud while solving simple problems and received feedback from investigators; this was repeated until participant’s verbalized thoughts were completed with no explanations and descriptions in them. In the second exercise, participants were tasked with thinking-aloud during a short warm-up putt that was significantly shorter than either of the experimental tasks. Participants practiced thinking-aloud from the moment they retrieved a ball for their first putt until they had completed a second putt. Investigators were present during warm-up exercises and were tasked with reminding participants to think out loud if the participant had a period of silence longer than 20 secs.

Once participants completed their think-aloud training, participants putted across four conditions (short vs. long putt distance crossed with low vs. high stress conditions). Within each condition, participants completed a block of five putt trials in which each trial consisted of two putts for a total of 20 trials (40 putts). Participants were tasked with thinking-aloud from the moment they retrieved a ball to begin their first putt to the completion of their second putt for four of the five putt trials. Participant's verbal thoughts were recorded and subsequently coded using a coding scheme.

Arsal et al. (2016) performed quantitative analyses that illuminated aspects of golf performance. For example, they found a significant main effect of group ($F(1, 50) = 8.25, p = .006, \eta_p^2 = .14$), such that the more-skilled golfers verbalized more task-relevant thoughts while putting ($M = 5.97, SD = 2.52$) than did the less-skilled golfers ($M = 4.08, SD = 2.22$). In addition, the more-skilled golfers verbalized significantly more thoughts related to golf strategy than did the less-skilled golfers ($M = .67, 95\% \text{ CI } [.44, .96]; F(1, 50) = 12.12, p = .001, \eta_p^2 = .20$). The authors also found a significant main effect for putt length, $F(1, 50) = 28.00, p < .001, \eta_p^2 = .36$, in which more task-relevant thoughts were stated out loud during longer putts ($M = 5.30, SD = 2.60$) than during shorter putts ($M = 4.75, SD = 2.54$). Ultimately, Arsal et al.'s study provides an illustrative example of the TA method within empirical studies. Notably, TA provides significant quantitative data on the frequency, content, and temporal characteristics of verbally reported accounts of inner experience.

Arsal et al.'s (2016) study failed to meet at least two of Hurlburt and Heavey's (2015, 2018) constraints:

1. The study's cleaving to a moment is questionable: TA is inherently about putting-to-words one's thinking while engaged in a task across several or many seconds. In Arsal et

al.'s study, participants spoke from the moment they retrieved a ball to begin a putt to the completion of their second putt, lasting in the vicinity of 18 to 22 s. Thus, this study involved experience across a period of time, not one moment. However, it might be said that each utterance was constrained to its own moment.

2. The study's cleaving to pristine inner experience is questionable: first, the study was performed entirely in a contrived, laboratory environment, and participants were given explicit instructions to intentionally introspect while perform the task (thus failing to cleave to pristine experience). Second, the data collection favored verbal experience. A participant could have reported, for example, seeing an image in their imagination, but all of the subsequent analysis was on the content of thought (e.g., goal statements, task-irrelevant thoughts, strategy thoughts) as opposed to how such thoughts were apprehended (thus significantly limiting the likelihood of cleaving-to-experience).
3. The study failed to bracket presuppositions on at least three fronts: although the study allowed participants to report on whatever experience may have been present to them (in that the study did not restrict reportable phenomena to certain pre-selected categories per say), it still featured several presuppositions that were not at all bracketed. First, investigators constrained their interest in studying participants' experience while engaged in a particular event—golf putting (and, in so doing, likely overlooked important-but-unexpected experience at other moments that may related to putting but are not overtly about putting); second, the demand for participants to describe their near-concurrent and ongoing experience with constancy and fidelity presupposes many assumptions about the nature of experience (e.g., that experience is always or near-always directly present, that participants can report their experience quickly and/or with ease after limited training);

third, there are presuppositions in assuming that whatever experience is reported on within laboratory settings is close to pristine inner experience.

4. The study did not provide iterative training: although the study *did* provide participant training prior to sampling and involved collecting data over multiple putting trials, both of these practices cannot be considered iterative training. First, the only explicit training that occurred was the single pre-study practice—such one-shot trainings inherently preclude successive training-and-improvement (as such training only occurs once). Second, there was no ongoing direct confrontation or examination of participant's reports—once pre-sampling training was complete, the authors treated all reports as data regardless of whether those reports were adequate or not. Third (and given points one and two) there is little warrant to expect participants could or would improve when completing the same, identical task during a single experimental session (there were no means for participants to consolidate feedback and start anew).

Articulated Thoughts During Simulated Situations

Similar to TA, the articulated thoughts during simulated situations (ATSS) method asks participants to speak aloud their ongoing thoughts and feelings. The distinction is that ATSS uses hypothetical scenarios rather than actual tasks. ATSS was created by Gerald Davison, Clive Robins, and Marcia Johnson in 1983. Thus, the ATSS method (also referred to as a *paradigm* by Davison and others) involves asking participants to report aloud their ongoing thoughts and feelings as a response to simulated (i.e., contrived or imaginary) scenarios presented in a laboratory environment (Davison, Robins, & Johnson, 1983; Davison, Vogel, & Coffman, 1997). The ATSS method was designed with many criticisms of past self-report in mind: it is unstructured in response format (in that it encourages open-ended responses of all cognitions), it

limits retrospection by having participants report on near-concurrent processes, it is situationally specific (in that simulated situations are designed to evoke specific cognitions), and it allows for the investigation of a wide breadth of circumstances (Davison et al., 1997). ATSS has been used in studying cognition across various domains, disorders, and populations, such as in aggressive and nonaggressive teens (DiLiberto, Katz, Beauchamp, & Howells, 2002), individuals with anorexia nervosa or bulimia nervosa (Cooper & Fairburn, 1992), PTSD symptoms in veterans (LaMotte et al., 2016), and implicit views of self in individuals with social anxiety (Tanner, Stopa, & De Houwer, 2006).

The reliability, replicability, and validity of ATSS has been evaluated elsewhere (Davison, Best, & Zanov, 2009; Zanov & Davison, 2009). Generally, however, ATSS's test-retest reliability is often found to be low, as the ATSS paradigm is a state measure interested in participant's immediate and changing reactions to specific situations (Zanov & Davison, 2009). There is evidence that ATSS possesses good replicability: Previous ATSS studies demonstrated *a priori* group similarities across participants in that similar cognitive contents were observed between and within two different groups of participants (Zanov & Davison, 2009). Construct validity for ATSS has been mixed, in that some studies, for instance, demonstrated high positive correlation (and thus good construct validity) between participants' self-ratings of their fear of negative evaluation and their observed articulations of self-deprecation during socially evaluative ATSS situations (Williams et al., 1992); in contrast, other studies have found that no correlation (i.e., poor construct validity) between self-reports and ATSS data, which may be explained by the fact that questionnaires often assess participants' general and retrospective assessments of their tendencies, whereas ATSS focuses on reactions to situation-specific scenarios (Zanov & Davison, 2009).

For example, Eckhardt, Barbour, and Davison (1998) used ATSS to study the thoughts of maritally violent and nonviolent men during situations of anger arousal. Prior to data collection, husbands (divided into three groups based on self-report: maritally violent, maritally distressed-nonviolent, and maritally satisfied-nonviolent) were presented with tape-recorded audio instructions of the ATSS method, in which they would “listen to several taped scenarios, imagine that they were actually involved in each, and when prompted by a tone, to talk out loud about their thoughts and feelings into a microphone connected to a hidden tape recorder” (Eckhardt et al., 1998, p. 262). Participants completed a non-arousing practice scenario and then were presented with three audio-recorded scenarios of scripted overheard conversations—an anger-inducing, jealousy-inducing, and control scenario, respectively. Each scenario was divided into eight, 30 s segments. Participants were to report their articulated thoughts at the end of each 30 s segment. Each scenario was presented successively on a single tape, with the control situation always presented first as researchers expected participants might have initially been uncomfortable with the procedure. At the conclusion of participation, participants were debriefed and provided with resources to local spouse abuse support groups and psychotherapy resources.

Each participant’s recorded articulated thoughts were transcribed and rated by two independent raters who read the transcripts and listened to the recorded tape concurrently while providing their ratings. In particular, each rater provided ratings on four general categories for each segment of the tape: irrational beliefs, cognitive biases, hostile attributional biases, and anger-control strategies. Irrational beliefs and cognitive biases—which were composed of four specific types of irrational beliefs and six specific cognitive biases, respectively—were scored on 5-point Likert scales where 0 = *not present at all* and 4 = *extremely present*; ratings for each segment were averaged from the two coders’ ratings and summary scores for the overall

scenarios were calculated by summing the averaged ratings across the scenario's eight segments. Hostile attributional biases and anger-control strategies were scored as ongoing frequency tallies across each of the three scenarios. Hostile attributional biases were defined as instances in which a participant interpreted the cause of an event as stemming from malicious intentions of another character, and anger-control strategies were defined as any verbally stated statement that expressed a desire to leave the situation, active attempts to change one's feelings, etc.

Eckhardt et al.'s (1998) results were largely quantitative and focused primarily on distinguishing group-level differences among the three groups of men. For instance, maritally violent men exhibited a significantly higher level of irrational beliefs during the anger scenario compared to the groups of maritally distressed nonviolent men and maritally satisfied nonviolent men ($F(2, 77) = 7.42, p < .01$). Similarly, maritally violent men exhibited a significantly higher number of cognitive biases during the anger scenario compared to the groups of maritally distressed nonviolent and maritally satisfied nonviolent men ($F(2, 78) = 14.49, p < .001$). Eckhardt and colleagues also used ATSS data to predict group status using direct discriminant function analysis, finding that they could correctly identify 70% of cases using two discriminant functions. They also found no significant correlation correlations between cognition endorsed using ATSS and cognition endorsed using self-reported questionnaires even when controlling for affective arousal.

Eckhardt et al.'s study failed to meet most of Hurlburt and Heavey's (2015, 2018) constraints:

1. The study did not cleave to a moment: participants were asked to report on their experience across 30 s intervals.

2. The study could not be said to cleave to pristine experience: first, the study involved asking participants to listen (in a laboratory setting) to staged scenarios (and tasked participants with pretending (a) the scenario was real and (b) that the participant was present in the scenario itself; thus, the study failed to cleave to pristine experience). Second, participants were instructed to “talk out loud about their thoughts and feelings,” but there was no guarantee that the talk was actually constrained to directly apprehended inner experience. Furthermore, all subsequent analysis was on the *content* of thought (e.g., the four categories: irrational beliefs, cognitive biases, hostile attributional biases, and anger-control strategies) as opposed to describing the phenomena (thus significantly limiting the likelihood of cleaving-to-experience).
3. The study failed to bracket presuppositions on at least three fronts: although the study allowed participants to report on whatever experience may have been present to participants (in that the study did *not* restrict reportable phenomena to certain pre-selected categories per se), it still featured several presuppositions that were not at all bracketed. First, investigators constrained their interest in studying participants’ experience within particular (anger-arousing) situations (and, in so doing, likely overlooked important-but-unexpected experience at other moments that may related to anger but are not overtly about anger); second, the demand that participants must describe their experience across an entire 30 s period presupposes many assumptions about the nature of experience (e.g., that 30 s worth of experience can be retained in one’s memory and can be described with fidelity); third, there are presuppositions in assuming that whatever experience is reported on within laboratory settings is similar to pristine inner experience.

4. The study did not provide iterative training: although the study *did* provide participant training prior to data collection, pre-study training is not equivalent to iterative training as one-shot training—inherent by its singleness—precludes *successive* training-and-improvement. Thus, there is little warrant to expect participants would successively improve their skill (because there were no means for participants to consolidate feedback and start anew).

Micro-Phenomenological Interview

The micro-phenomenological interview is a qualitative, interview-based research method whose origins can be traced to Pierre Vermersch. In the 1990s, Vermersch developed the *elicitation interview*³ technique in response to his frustration with apprehending first-person accounts of consciousness (Vermersch, 1994; Vermersch, 2009) and his interest in philosopher Edmund Husserl’s phenomenology (Vermersch, 2009). Originally created to study the cognitive processes involved in learning (Valenzuela-Moguillansky, 2013), Vermersch’s elicitation interview technique is focused on singular moments of lived experience rather than on generic structures (Petitmengin, Remillieux, & Valenzuela-Moguillansky, 2018). It has been described as a “form of guided retrospective introspection” (Vermersch, 2009, p. 23) in which interviewers use the explicitation process to help participants—who are theorized to possess *pre-reflective* memories of a particular moment in time (i.e., memories that the participant is unaware of possessing)—to recall and fill-in aspects of a specific conscious memory (i.e., “rediscover” a memory; Maurel, 2009). Thus, it can be said that the participant works towards gaining *reflective*

³ Vermersch originally named the interview method *Entretien d’explicitation* in French. It was first translated to English as “explicitation interview”; however, beginning in about 2013 it has been translated as “elicitation interview” (Valenzuela-Moguillansky, 2013).

consciousness of their past experience by carrying out a “reflection of [their] past lived experience” (Maurel, 2009, p. 59), which the participant then describes within the interview.

Inspired by Vermersch’s work, Claire Petitmengin adapted Vermersch’s elicitation interview method to create an “interview method” (Petitmengin, 2006) which later (Bitbol & Petitmengin, 2016) became known as the micro-phenomenological interview method. The basic, fundamental assumption underlying this method is that the majority of inner experience is pre-reflective (goes by unnoticed; Petitmengin, 2006), such that inner experience is often not part of reflective consciousness and therefore is not something that is able to be verbally described (Petitmengin et al., 2018). To access the pre-reflective aspects of consciousness, the micro-phenomenological interview method uses several methodological techniques that allow participants to describe their experience more completely. These techniques include *evoking* past or recently past events, having participants give repeated descriptions of a single experience, and having participants focus not on the content of experience but rather on the form (i.e., how) experience occurs (Petitmengin et al., 2017).

Thus, the stated goal of the micro-phenomenological interview method is to use “specific prompts and questions... to help interviewed subjects become aware of the unrecognized part of their experience and describe it precisely” (Petitmengin et al., 2018, p. 4). The founders of the micro-phenomenological interview method ultimately believe that it is possible—by focusing on singular experiences—that one can better elucidate the more general structure of experience that takes into account the pre-reflective dimension of lived experience instead of focusing on directly observed experience (or on observable, “third person” data collected by an experimenter; Petitmengin, 2006; Petitmengin et al., 2018). It has been used to study a wide variety of various types of experience such as intuitive experience (Petitmengin, 1999), meditative experiences

(Petitmengin et al., 2017), and auditory experiences (Petitmengin et al., 2009) as well as in a number of different clinical and therapeutic domains (Petitmengin, Navarro, & Le Van Quyen, 2007), cognitive and educational domains (Gould et al., 2014; Valenzuela-Moguillansky, O'Regan, & Petitmengin, 2013), and artistic domains (Petreca et al., 2015).

Given the wide range of topics micro-phenomenological studies have investigated, the exact procedures used in the micro-phenomenological interview method can vary. However, in general, a typical micro-phenomenology interview study involves the isolation of a singular experience such that it becomes possible to “practice an *époche*: to ‘bracket’ or suspend our preconceptions and theorizations about experience, and notably our implicit belief in the existence of an objective world independent of experience” (Petitmengin et al., 2018, p. 691). Identifying a singular experience is typically performed as a collaboration between the participant and micro-phenomenology interviewers and can involve either re-evoking the experience within the interview (e.g., intentionally re-engaging in behaviors to conjure the experience) or identifying a past experience. Once an experience has been identified, the micro-phenomenology interviewer assists participants in avoiding participants’ verbalization of *satellite dimensions* about the specific experience (e.g., the generalities, judgements, and theoretical knowledge about the experience) and to instead talk about “the way this experience appears to us (the ‘how’)” (Petitmengin et al., 2018, p. 691) by evoking or re-enacting the experience.

In particular, micro-phenomenology claims that evoking the experience involves establishing two (diachronic and synchronic) dimensions of experience. First, interviewers help the participant to establish the diachronic dimensions of the specific experience—a description of the temporally-unfolding and “content-empty” nature of experience including *how* the participant experienced things, breaking down the experience into successive sub-phases or a timeline of the

experience. This typically involves questions such as “how did you start?” and “what happened then?” (Petitmengin et al., 2018, p. 694). Once established, participants and interviewers establish the synchronic dimensions of the experience—descriptions of the structural characteristics of the experience at a given instant; if, for instance, the experience involved an inner image, the interviewer may ask questions such as, “When you see this, how do you see it?” (Petitmengin et al., 2018, p. 694) to help the participant describe how the inner image was present (e.g., its color, size, location). Researchers that use the micro-phenomenology interview method claim that the repeated evocation of the experience is an example of an iterative structure, such that participants may be guided towards “a progressively finer synchronic and diachronic mesh” (Petitmengin et al., 2018, p. 694). The final result of a micro-phenomenology study typically results in discovering generic structures of experience that emerge from considering each individual participants’ individual experience(s).

For example, Petitmengin et al. (2017) used micro-phenomenological interviews to study the experience of *shamatha-vipashyanā* meditators. Twelve participants—each with 5 to 45 years of meditative experience—were interviewed two or three times. When participants first arrived for the study, they engaged in a conversation with researchers to discuss the context and objectives of the study. The researchers explained the theory and purpose of the micro-phenomenology method and collected information about the participant’s meditative practices (e.g., type of practice, frequency of practice, years of practice). If participants were naïve to the micro-phenomenology method, they engaged in a training micro-phenomenological interview. Next, participants were asked to practice *shamatha*—a meditation aimed at focusing attention on one’s breathing—for approximately 20 minutes.

Following the meditation session, researchers conducted an elicitation interview, which typically lasted approximately 60 to 90 min. The first step of the elicitation interview involved discussing “a general description of the unfolding of the [meditation] session” from the perspective of the participants’ experience. Next, participants were instructed to identify a specific moment of experience to discuss; this sometimes involved an *invoked* experience that occurred prior to participation in the study, but, more commonly, it involved having participants elicit *provoked* experiences. Provoked experiences involved having participants purposefully engage in meditation to better come into contact with their experience; within the procedures of Petitmengin et al.’s (2017) study, this took the form of either (a) intentionally re-engaging in meditation within the course of an interview to provide answers about experience, or (b) interrupt meditation at a random point to begin the elicitation interview, typically with the sound of a gong (such that participants were asked about their experiences that had occurred just before the meditation was disturbed).

Once a single experience had been specified, participants were guided to re-enact the experience in such a way that they were able to establish the basic spatio-temporal context of the situation and various other components of experience (e.g., visual, auditory, tactile, kinesthetic, olfactory sensations). Next, participants were asked about finer levels of experience by the investigator’s focus on the synchronic and diachronic dimensions of experience. At the end of each interview, participants were asked to reflect on their experience of the interview process, such as whether the elicitation interview aided their ability to notice previously unnoticed parts of their experience. This pre-interview/meditation-session/elicitation interview/post-interview protocol was repeated at least once for each participant; some participants were invited for an additional (third) interview that followed the same procedure (Petitmengin et al., 2017).

As a result, Petitmengin et al. described participants' generation of a virtual scene (i.e., an imagined space where some participants visualize their thoughts; Petitmengin et al., 2017, pp. 180-181), generation of a virtual scene while losing contact with their actual situation (i.e., getting "lost in a thought" and losing awareness of one's actual body; pp. 181-182), instances of regaining contact with bodily sensations (i.e., reconnecting with the physical sensations present in their actual body; pp. 182-183), and various instances of the early emergence of thought (e.g., physical and mental characteristics that indicate the early parts of or changes in thought; pp. 183-187).

Petitmengin et al.'s (2017) study failed to meet most of Hurlburt and Heavey's (2015, 2018) constraints:

1. The study did not cleave to a moment: of the three ways a moment of interest was identified in the study, two failed to identify (let alone cleave to) any moment—participants' recollection of a self-selected past experience provided no means of ensuring any moment was being identified, and the intentional re-engaging in meditation to try and (re-)apprehend a particular phenomenon refers to a new, unique, and different moment than the original moment. The third way a moment of interest was identified—the random-interruption of meditation using a gong—approached cleaving to a moment, but the use of a gong as a cue may have complicated the study's task for participants (a gong typically involves a slow-rise time, which ambiguates the exact moment a participant should apprehend: is the moment when the first audible sound is heard, or when the gong reaches its apex?; see Hurlburt & Heavey, 2004).
2. The study neared cleaving-to-inner-experience but failed to do so outrightly: investigators sought describe directly apprehended experience while meditating (the authors

specifically noted that a goal of their study was to “help the subject relax the focus of attention on the content, the ‘what’ of the evoked experience, in order to let the ‘how’ appear” (Petitmengin et al., 2017, p. 175), and their results were about describing such experience. However, there is reason to doubt that this study successfully cleaved to experience: because the study failed to cleave to a moment, it is unlikely that any directly apprehended phenomena could have been apprehended or described by participants because inner experience (by definition) inheres in moments. A failure to cleave to a moment diminishes (if not destroys) the likelihood of cleaving to experience. The study failed to cleave to pristine experience: of the three ways in which the study identified possible phenomena, only one involved an attempt at apprehending pristine experience (the participants’ recollection of a self-selected past situation); but, because such a practice failed to cleave to a moment, it is doubtful that pristine phenomena could have been described. All other ways in which the study identified possible phenomena involved demands to intentionally introspect on experience in a contrived, laboratory environment.

3. The study failed to bracket presuppositions on at least three fronts: although the study involved asking open-ended questions about whatever experience may have been present to participants (in that the study did *not* restrict reportable phenomena to certain pre-selected categories per say), it still featured several presuppositions that were not at all bracketed. First, there was/is a presupposition that the apprehension (and, subsequently, the description) of past inner experience may be improved through repeatedly “re-evoking” again and again the experience during the explication interview. Second, there was/is a presupposition that experience-at-a-moment may be similar to, or at least could

be adequately interchanged with, experience-at-(other-similar)-moments. For example, the study involved having participants engage in purposeful periods of meditation to better answer questions about their (past) experience-while-meditating that they could not previously answer (likely because the participant failed to apprehend their experience). In both instances, the known hazards that retrospection, heuristics, and other factors impose on introspection suggest that these practices should be treated with great caution. Third, there are presuppositions in assuming that whatever experience is reported on within laboratory settings is similar to pristine inner experience.

4. The study did not provide iterative training as Hurlburt and Heavey (2015, 2018) defines “iterative.” The micro-phenomenology version of iterative is primarily recurrent within a single session (or perhaps across sessions aimed at re-evoking the same or similar experience). The DES version of iterative is across sessions, aimed a preparation for entirely new experiences.

Descriptive Experience Sampling

Descriptive experience sampling (DES) is a descriptive, naturalistic sampling and interview-based method for describing pristine inner experience (e.g., naturally occurring thoughts, feelings, physical sensations). Created by Russell Hurlburt, a precursor to DES was first used in a master’s thesis under Hurlburt’s mentorship in the 1980’s (Saltman, 1983); that method had built on earlier experience-sampling research that Hurlburt conducted in the 1970’s that pioneered the use of random beepers in natural environment sampling (Hurlburt, 1976, 1979). DES was formally described and discussed in the 1990’s (Hurlburt, 1990, 1993, 1997).

Although DES’s protocol uses a random-beeper to cue participants in their everyday lives (as do ESM and EMA), DES is substantially different from ESM and EMA in that DES does not

use questionnaires or Likert scales, instead using *expositional interviews* to collect high-fidelity descriptions of inner experience; and DES requires iterative skill training rather than one-shot training. DES has been used to study inner experience across a number of diverse clinical populations such as bulimia nervosa (Doucette & Hurlburt, 1993; Jones-Forrester, 2009), anxiety (Hutchins, 2008), depression (Perlotto, 2001), and schizophrenia (Hurlburt, 1993). It has also been used in diverse, non-clinical populations such as older adults (Seibert, 2009), left-handed individuals (Mizrachi, 2013), and undergraduate college students (Lapping-Carr, 2019), and has been used to study inner experience while engaging in various, on-going situations such as while silently reading (Brouwers et al., 2018) and while golfing (Dickens, Van Raalte, & Hurlburt, 2018). DES has been validated by inviting skeptics into the sampling process (see Hurlburt & Schwitzgebel, 2007) and has also been made publicly accessible (see Hurlburt & Krumm, 2020; Krumm & Hurlburt, 2021); DES has also been validated by engaging in contemporaneous sampling within an fMRI scan (Kühn et al., 2014).

The goal of DES is deceptively simple: to provide high-fidelity descriptions of directly apprehended pristine inner experience through randomly sampled moments occurring in natural environments. To achieve this, prospective DES participants are given a random beeper with earphones and are instructed (via a 30- to 45-min pre-sampling instruction session) to wear the beeper throughout their normal daily routines. The “beeper” (officially called the random interval generator v.3.x; Hurlburt, 2000) used in DES studies is a pocket-sized (4.15 x 2.40 x .85 in) device that produces a 700 Hz tone at random intervals ($M = 30$ min; minimum = a few seconds; maximum = 60 min) delivered through an earphone worn by participants. At typically six random beeps, participants are tasked with apprehending whatever inner experience happened to be directly present at the “last undisturbed moment before the onset of the beep” (Hurlburt &

Akhter, 2006, p. 277). Participants are instructed to stop the beep and then to take notes about whatever experience that had been “caught in flight” by the beep. The note-taking procedure can be by writing in a notebook, using the Notes feature of their mobile phone, or by recording audio notes. All such notes are meant to help the participant recall their at-the-beep experience during the upcoming expositional interview.

Within 24 hr of sampling, the participant meets with DES investigators to engage in an expositional interview to (a) describe whatever experience was apprehended at each sampled moment, (b) clarify and disambiguate the participant’s descriptions, and (c) through this clarification and disambiguation practice, improve the apprehension-and-description process so that they may be incrementally better equipped to provide higher fidelity descriptions of the participant’s inner experience on subsequent sampling days.

Expositional interviews last approximately 1 h, during which time the participants are asked to respond to the DES question, “what, if anything, was in your experience at the moment of the beep?”. Such a question is *open-beginninged* in that “it leaves *both* the beginning and the end of the response spontaneous and unguided” (Hurlburt, 2009, p. 169, emphasis in original) and contributes to the bracketing of presuppositions by allowing participants to describe whatever experience may have been directly apprehended. The expositional interview is/was an inherently egalitarian endeavor—the participant is treated as a co-investigator (as they are the only ones with access to the thing-of-interest—their inner experience), and DES investigators themselves each individually practice the checking and bracketing of their own and all others’ presuppositions.

The expositional interview also involves confrontation. Both investigators and participants must wrestle with the adequacy of participant’s utterances. All the while,

investigators and participants are joined together in a group agreement to grasp inner experience with as much fidelity as possible; thus, for example, if participant's responses appeared to speak of anything other than experience-at-a-moment (such as by reporting on their in-general experience) or anything other than directly apprehended phenomena (such as by reporting on explanations or self-theories of their experience), participants and investigators engaged in conversations confronting the participant's potential difficulties in apprehending and describing their experience in the hopes of improving the apprehension and description of experience for the next sampling opportunity. This sampling-and-interviewing process is repeated over a minimum of 3-4 (often more) rounds of sampling-and-interviews, with each round aimed at grasping inner experience with the highest fidelity possible and to successively improve for the next round of sampling. The aim of DES studies are high-fidelity descriptions of participants' inner experience. Typically, the findings from DES studies involve the generation of idiographic descriptions of individual participants' salient inner experience characteristics—high-fidelity descriptions of a few random samples of participant's ongoing experience. Such profiles also thus allow for the identification of phenomena that may be present in all or most participants of a particular investigation.

For example, Jones-Forrester (2009) studied the inner experience of individuals with bulimia nervosa. Recruiting participants from an undergraduate SONA population, Jones-Forrester invited 13 participants with bulimia to participate in six days (i.e., six sampling-and-interview sequences) of standard DES sampling following the procedures outlined above. Jones-Forrester's findings involved the high-fidelity description of phenomena such as fragmented multiplicity—instances where participants experienced several (e.g., 12) simultaneous phenomena. Here is an example of a sample of experience from participant Jessica:

She was watching the TV show *Scrubs*, a scene in which a skinny blonde female doctor walked in to [sic] a room and all of the male doctors froze and stared at her. Jessica had a partially worded thought process that if it were fully worded would be, “Why is it that movies and TV shows always have blonde skinny girls for guys to stare at?” At the moment of the beep, in this partially worded thought, the words “blonde,” “skinny,” “guys,” and “stare” were apprehended in inner speech, in her own voice, as if she had said these words aloud, and were apprehended as being in the front of her head. The remainder of the words from this thought were apprehended as being also in inner speech, in her own voice, but quieter and in the back of her head. These two voice streams were not in a temporally organized stream; that is, it seemed that the front voices were not synchronized to the back voices. Thus, if these inner speakings were coordinated they would be saying one thing, “Why is it that movies and TV shows always have blonde skinny girls for guys to stare at?” but at the moment of the beep they are not coordinated but are instead two separate and simultaneous streams of partially worded inner speakings. She also had separate, simultaneous multiple unsymbolized thought/recollections of movies and TV shows in which blonde skinny girls were featured. There were perhaps 8 or 10 of these simultaneous thoughts/recollections, apprehended as a jumble of not fully articulated thoughts that somehow existed in a pile or heap outside and behind her head (Jones-Forrester, 2009, pp. 286-287).

In addition to these types of descriptions of individual moments of directly apprehended experience, Jones-Forrester found that the phenomena of fragmented multiplicity emerged as an experience universal to all sampled participants (and is exceedingly rare in other populations that do not have bulimia).

Jones-Forrester's (2009) study satisfied all of Hurlburt and Heavey's (2015, 2018)

constraints:

1. The study cleaved to moments: participants were tasked with apprehending whatever was in their direct experience at moments identified by the random DES beeper—that is, the last, undisturbed moment at the leading edge of the 700 hz tone.
2. The study cleaved to pristine inner experience: the entire study was focused on the apprehension and description of directly apprehended inner experience. Moreover, the experience under examination occurred in participant's natural environments and the use of the random beeper meant that participants could not anticipate when the beep would occur (thus limiting intentional introspection).
3. The study made substantial, principled efforts to bracket presuppositions: for example, the use of the random beeper meant that participants not chose to discuss their “favorite” or theoretically desirable phenomenon or other forms of self-selection; the expositional interviews always involved asking open-beginning questions that allowed for the description of any and all phenomena (that is, even though the investigators pre-determined a population of interest, they intentionally did *not* set out to constrain participants' report to only bulimia-related phenomena).
4. The study provided iterative training: the entire construction of DES is intended to facilitate participants' improvement in their ability to apprehend and describe experience.

Summary

In contrast to all other introspective methodologies outlined in this review, DES has several conspicuous characteristics. Similar to the other sampling methods, DES involves random natural environment sampling (rather than laboratory settings or reenacting past

experiences). However, unlike other sampling methods, the DES data collection involves descriptive interviews (rather than self-report questionnaires) that are conducted using open-beginninged questions (rather than relying on close-beginninged and close-ended questions, such as “Were you innerly speaking to yourself? Yes or no?”), involves bracketing presuppositions (rather than relying on or leaning into a priori assumptions, theories, and other beliefs that may obscure phenomena), and provides iterative training (rather than a one-shot attempt at collecting data). Ultimately, idiographic characterizations of participants are descriptive (rather than relying on summative statistics or numerical representations of non-numerical phenomena) and are aimed at the individual (and are thus idiographic rather than nomothetic). Although the challenges that are related to a scientific study of inner experience persist in all introspective methodologies, DES has taken these considerations seriously (as evidenced by its fulfillment of Hurlburt and Heavey’s (2015, 2018) four constraints and the hundred others described in Hurlburt, 2011) and has attempted to limit their influence by its methodological characteristics (McKelvie, 2019). Thus, DES is a particularly promising methodology that merits further exploration, particularly around its claims about the possibility of descriptive fidelity that give rise to important questions: Is it possible to apprehend experience in high-fidelity? How does one know a high-fidelity description from a report with low fidelity? Do participants improve in their ability to apprehend and describe their experience?

Chapter 3: DES Analytical Procedure

In the previous chapter, we saw that DES aspires to provide high-fidelity descriptions of directly apprehended pristine inner experience while working within Hurlburt and Heavey's (2015, 2018) four constraints and discussed aspects of the method. Now, we provide a more detailed discussion of the DES analytical procedure. We first review the target to be described, and then discuss how DES deals with sampling data.

DES' Target: High-Fidelity Descriptions of Directly Apprehended, Pristine Inner Experience

Directly apprehended inner experience refers to any phenomenon “which directly presents itself ‘before the footlights of consciousness’ (as William James would say) at some particular moment” (Hurlburt, 2011, p. 2), that are undeniably present to an individual at a particular point in time. By this definition, “a thought, a feeling, a tickle, a seeing, a hearing, and so on count as [directly apprehended inner] experience” (Hurlburt, 2011, p. 2). In contrast, processes that occur outside of conscious awareness (e.g., digestion, the regulation of one's heart rate, the activation of lumbar muscles while sitting) and explanations and/or interpretations of phenomena (e.g., “I was talking to myself *because I was getting ready to make a phone call*”) are *not* directly apprehended inner experience.

The adjectival phrase, “directly apprehended inner” is designed to narrow the kind of experience under consideration from other, usually broader, uses of “experience.” For example, people may use “experience” to refer to life experience they've accumulated; people also may use “experience” to describe an encounter or contact with an event or events, such as the “experience of my trip to India,” (Caracciolo & Hurlburt, 2016) or the “experience of graduate school”; and so forth. “Experience” as used in these examples and contexts are decidedly *not* part

of directly apprehended inner experience. Thus—and arguing against the widely-held assumption that inner experience is inherently “subjective” (see Csikszentmihalyi & Larson, 1987, p. 526)—directly apprehended inner experience can be said to be *radically non-subjective*. It is not merely that directly apprehended inner experiences are “subjectively” or “impressionistically” present, but rather that they are “actual phenomena that are directly experienced at some moment; all subjective opinions, impressions, and characterizations are radically avoided” (Hurlburt, 2011, pp. 330).

Pristine inner experience refers to “experiences in their natural state, not disturbed by the act of observation, unplanned, unmapped, un-‘figured out’ already, uninterpreted, un-heuristicized real experience” (Hurlburt & Akhter, 2006, p. 273). *Pristine* by this definition is used in the same way as it is used to describe a pristine forest: untouched, unsullied, unspoiled, undeveloped. Notice that pristine in this context does *not* mean “‘clean’ or ‘tranquil’; much of a pristine forest is mucky, bloody, brutal, and so on” (Hurlburt, 2011, pp. 2).

High-fidelity descriptions of inner experience within the context of DES refer to “the degree to which an apprehension or description of pristine inner experience faithfully reflects, genuinely conveys, and non-misleadingly suggests important features of that pristine inner experience” (Hurlburt et al., 2017). By this definition, high-fidelity does *not* aspire to perfection, nor does it strive for concepts such as psychometric validity. Rather, high-fidelity is akin to the process of painting a faithful, realistic, detailed representation of a particular, real-life scene; it would be impossible to re-create the exact visual stimuli as it is apprehended through your eyes, but one can commit oneself to ensuring that the salient characteristics of the scene are captured with “a lack of distortion, misrepresentation, exaggeration, [or] avoidance” (Hurlburt et al., 2017, pp. 5).

DES' Analytical Procedure

We now discuss the analytical procedures used by DES to describe directly apprehended pristine inner experience.

Within a few hours following each expositional interview, one of the DES investigators who had participated in the interview drafts the *contemporaneous description* of the participant's apprehended experience for each sampled moment. That contemporaneous description is circulated to all other investigators who had been present in the interview so that each investigator may, within 24 hours of the interview, provide comments, ask for clarification, and express differences of opinion with the original contemporaneous description or comments thereon (typically by using tracked changes on a Word document). The goal of these descriptions is *not* necessarily to reach a consensus about ongoing experience at each beep, nor is it meant to serve as a definitive description of ongoing experience. Instead, the goal is to document each experience as individually apprehended by each interviewer, including acknowledging any doubts, disagreements, ambiguities, and so on that may be present. Each investigator has the responsibility of ensuring that his or her own apprehension of each sample of the participant's experience (including perhaps doubts about it) is contemporaneously documented. That is, the contemporaneous description is *messy*; it may contain several competing versions of the same sampled experience. As such, many commentary rounds as are necessary may occur, in which the document is continually circulated to all interviewers. Sometimes during these rounds, an investigator may be swayed by another investigator's characterization ("Oh! *That's* what she said!"), in which case the messiness can be reduced. However, we emphasize that the goal of the contemporaneous description is *not* consensus but individual responsibility.

Contemporaneous descriptions are written and circulated after each sampling day. Sometimes, a subsequent sampling day clarifies an ambiguity or messiness of a previous contemporary description (“Oh! *That’s* what she meant!”), in which case the previous contemporary description is edited.

When the sampling period with a participant is complete, the investigators meet to reawaken each individual investigator’s apprehension of each sample, now in the context of all the samples. The contemporaneous descriptions are used as tools in this reawakening, but the aim is *not* to reconsider the *descriptions* but to refresh the investigator’s recollection of the *sampled experiences*. Sometimes those discussions involve watching the video of one or several samples. Functionally, this involves reviewing and discussing each sample one-by-one and generating a brief caption (usually less than about 10 words) that seeks to capture the heart of whatever phenomena was present at each sample. Note that this process involves creating captions that *emerge from* whatever phenomena is present at each sample; this process expressly *does not* involve defining, fitting, or otherwise coding phenomena into a pre-determined set of codes or categories. Thus, the process of captioning each sample is done in service of the phenomena, where the intention is to honor and describe the phenomena with high fidelity; the intention is *not* performed in service of getting phenomena to fit codes or categories.

Once the sample reconsideration has been completed, within 24 hours each investigator independently prepares an *independent informal characterization* of the major idiographic salient characteristics that emerged across the totality of sampled moments. These reports are similar to the ethos behind the contemporaneous sample descriptions: each investigator has the responsibility to provide his or her own take-aways regarding the participant’s sampled moments (regardless of whether those take-aways agree with other investigators’). Through the discussion

of the multiple informal characterizations (typically performed via email and tracked changes on a Word document), a final summated document is created, called the *idiographic salient characteristics*. This document characterizes the main characteristics of that participant's sampled moments. Moreover, this document does reflect (for the first time) a desire for consensus, but may also include differing or conflicting views of each investigator if such exist (Hurlburt & Heavey, 2018). This document is referred to as the *idiographic* salient characteristics of a participant's collected samples, where *idiographic* emphasizes that the description characterizes the particular individual, regardless of the characteristics of any other individuals (Hurlburt, 2011; Hurlburt & Heavey, 2006).

The procedure up to now has created descriptions of several or many salient characteristics; the task ahead involves applying that group of salient characteristics back to each of the original samples. An Excel spreadsheet is created in which the description of each idiographic salient characteristic appears as a column, and each sample description appears as a row. Then, each investigator re-visits each sample (aided by the contemporaneous descriptions and recollections of the samples, but returning to the videotape if necessary) and independently codes which of the idiographic salient characteristics are present, in which a coding of 0 refers to the salient characteristic being not at all or only very slightly present in that sample, 1 refers to the salient characteristic as being present, and .5 refers to a salient characteristic as being somewhat present or we weren't sure. The goal of this process is to confront each sample with all of the idiographic salient characteristics now identified.

Similar in many respects to the goal of the characteristic creation meeting, the intention of coding the presence of salient characteristics in samples is *not* to see how well the phenomena fits pre-determined categories, but instead is aimed at considering whether the idiographic

characteristic itself should be refined. Once completed by each individual investigator, investigators as a group meet for a *rectification meeting*. The goal of this meeting—like most other processes within DES—is *not* to simply reach consensus, nor is it merely to implement double-entry-bookkeeping data entry techniques (although doubtless this is a byproduct of the practice). Instead, the process is one more step toward attempting to fulfill the goal of fidelity. In other words, the goal of both the act of coding salient characteristics and the rectification of the salient character codings is to consider whether the idiographic characteristics should be refined so that they may rest with greater fidelity on the phenomena present within each sample, brought into focus when the investigators do not unanimously agree on the coding of a particular characteristic for a particular sample. Thus, discrepant codings between investigators may serve as important indicator that the salient characteristics identified in previous sections may misrepresent or distort fundamental aspects of the phenomena, and in turn may lead to the adjustment of the “borders” or details of the characteristics themselves.

Once all characterizations are complete and rectified, an idiographic description is created summarizing the salient characteristics of a participant’s sampled experience (here, again, *idiographic* emphasizes the focus on a single individual). It should be noted that the goal of the idiographic characterizations is *not* to interpret participant’s experience or to make nomothetic generalizations across a group or population—rather, the primary goal of the idiographic characterization is one of high-fidelity description of a person’s sampled experience.

For the sake of completeness in describing the DES method in its entirety, we have now provided an outline of DES’ analytical procedure, which demonstrates the DES commitment to apprehending and describing directly apprehended pristine inner experience in high-fidelity. This commitment suffuses every aspect of the DES method—DES always aims to act in service of

achieving high-fidelity experience, which means avoiding many of psychology's conventional practices and procedures such as the implementation of common qualitative data analysis (as such analysis were not intentionally built in the services of apprehending and describing directly apprehended pristine inner experience in high-fidelity).

Although the DES analytical procedure is central to the DES method, we did not investigate this procedure in the current study. Instead, the current study analyzed a portion of DES that comes *before* the analytic procedure: participant's behavior and utterances within the expositional interviews.

Chapter 4: Current Study—Overview and Purpose

Of the many unique procedures that is part of the DES method, one of the core practices at the heart of the method is the iterative training of participant's skill. It has long been claimed that most (nearly all) participants are initially unskilled at apprehending and describing their inner experience (see Hurlburt & Heavey, 2001). However, through iterative training, it is claimed that participants *can* and *do* sharpen the skills necessary to apprehend and describe their inner experience. That is, it is claimed that a participant's skill at the end of DES sampling (e.g., the last round of sampling-and-interviewing) is typically improved by comparison to their skill at the beginning (e.g., the first round of sampling-and-interviewing).

There are several consequences both small and large that have stemmed from this assumption. One specific example: first-day samples are always excluded (because they are collected putatively with low skill) from consideration of participant's salient characteristics are aggregated:

- First-day expositional interviews are considered “on-the-job” training for participants, thus any information gathered during the first-day interviews are discarded (Heavey & Hurlburt, 2008, p. 801; Hurlburt, 2007, pp. 23; Hurlburt & Heavey, 2002, p. 139; Hurlburt & Heavey, 2015, pp. 9; Hurlburt, Koch, & Heavey, 2002, p. 126).
- Samples collected on first-day expositional interviews are considered unreliable and are thus discarded from meaningful analysis (Hurlburt et al., 2015, p. 4).
- Most people are unskilled observers and/or reporters about their inner experience; thus, most people in their first-day expositional interview are unable to provide adequately meaningful reports about their experience because they did not actually apprehend their experience while sampling (Hurlburt & Akhter, 2006, p. 281).

- Most people on their first day of sampling are either not highly skilled at apprehending their experience and/or are not sufficiently bracketing their presuppositions about their experience; and/or DES interviewers have not yet adjusted to a participant's idiosyncratic ways of reporting their inner experience. As a result, first-day expositional interviews are only aimed at roughly approximating faithful apprehensions of experience (Heavey, Hurlburt, & Lefforge, 2010, p. 349).
- Most participants describe heuristics, speculations, and/or generalizations about their inner experience during first-day interviews and thus do not report directly apprehended pristine inner experience and so result in sullied data (Hurlburt & Heavey, 2018 p. 5; Hurlburt, 2009, p. 165)

Although these claims may be based on observations by experienced DES investigators, there has been no formal investigation of the characteristics of the experience-apprehension and description skills of DES participants in first-day expositional interviews, and little formal investigation of whether iterative training improves participants' ability to apprehend and describe their inner experience. It is unclear what the characteristics and skill are of naïve participants during their first-day interview, and it is unclear what changes (if any) occur in their characteristics and skill by the time of their last-day interview. The present study examines those issues.

Chapter 5: DES Skill

Defining DES Skill

In order to address the research aims of this study, it must first be clarified how DES defines “skill” as it relates to apprehending and describing inner experience. To this end, we return to parts of Hurlburt and Heavey’s (2015, 2018) four constraints. Although we have so far discussed the four constraints as a means of assessing methodological adequacy, two of the constraints relate directly to participants’ skill—cleaving to the moment of the beep and cleaving to directly apprehended experience.

Cleaving to the Moment of the Beep

Because inner experience may change dramatically from moment to moment, it is necessary for any exploration of inner experience to focus on temporal specificity. Therefore, in order for any description of experience to be possible, the participant (and the method) must work to cleave to (not stray from, focus only on) a specific moment. To this end, DES uses the random beeper that delivers an unambiguous beep (700 hz tone with a fast-rise-time) and asks participants about the experience that the beep “caught in flight.” By tying experience to a specific moment in time, DES aims to constrain participants to apprehend only what had been occurring at the “microsecond” right before the beep sounded (that is, what experience had been ongoing at the leading edge of the beep). This process is meant to actively avoid participants’ reporting experiences that had occurred seconds, minutes, hours, or days prior to or after the moment of the beep. The randomness of the beep is also intended to avoid the potentially distortive effects of intentional introspection or self-selection bias on the part of the participant.

Cleaving to Directly Apprehended Experience

By definition, directly apprehended phenomena are the only phenomena that can be described (as it is the only thing that is directly and unambiguously apprehended by a participant). Therefore, in order for any description of experience to be possible, the participant (and the method) must work to cleave to (not stray from, focus only on) directly apprehended inner experience. DES makes careful distinctions between phenomena that are directly apprehendable to participants (i.e., phenomena that are present “in the footlights of consciousness”) versus generalities, constructs, explanations, theories, speculations and so on about inner experience that are themselves not directly apprehended at the moment of the beep. This focus on directly apprehended experience makes possible a high-fidelity description: in the same way a high-fidelity recording of a symphony translates the volume, timbre, location, echo, and so on of a real performance (but can never fully recreate the live performance), a phenomena that was directly apprehended by a participant at a specific moment implies that that experience may be described in a way that faithfully translates the phenomena into a worded description (but can never fully recreate the ongoing, private experience).

In sum, by cleaving to the moment of the beep and cleaving to directly apprehended experience, descriptions of directly apprehended phenomena that are actually present before the footlights of consciousness at the moment of the beep are considered, while all other things are avoided. Resultingly, a participant who shows evidence for implementing these abilities can be considered a skillful participant.

(Lack of) Subjunctification

In addition to cleaving to the moment of the beep and cleaving to directly apprehended experiences, Hurlburt and colleagues have cited *subjunctification* as a potential hallmark of a participant’s skill. Hurlburt (2011) roughly defined a subjunctifier as “anything that gives a sign

that a subject's utterance is not to be confidently understood as a straightforward description of momentary experience" (pp. 116). Subjunctifiers can be understood as potential signaling on behalf of participants that they (the participant) may not fully believe what they are saying (Hurlburt & Heavey, 2006). Operationally, Hurlburt (2011) proposed an initial operational definition of subjunctification that included a dozen behavioral and verbal cues such as: verbs in the subjunctive mood (e.g., "I *would* think...", "If I *were* to..."), generalities (e.g., "Whenever I think, I'm *always* talking to myself), theoretical inferences (e.g., "I *must have been* experiencing..."), undermining expressions (e.g., "Well," "like," "I think," "probably," "I'm *not sure*, but...", "um"), causal explanations (e.g., "I was talking to myself *so* I don't forget"), metaphors and similes, procedural comments or questions (e.g., "What should I have done when the beep went off?" "I wasn't wearing an earphone"), and distinctive behaviors (e.g., false starts, long pauses, shrugs, sighs, grimacing, quizzical tones; Hurlburt, 2011, pp. 116-117).

Notably, Hurlburt (2011) emphasized that subjunctifiers in and of themselves are *not* the only indicators of a participant's skill. Subjunctifiers signal that the participant has some kind of recognition (perhaps explicit, perhaps implicit) of a discrepancy between their directly apprehended phenomena and what they are in the process of saying about it (Hurlburt, 2011; Hurlburt & Heavey, 2006). A fundamental interviewer skill within the DES method is gaining sensitivities towards recognizing and heeding subjunctification within the expositional interview.

Hurlburt (2011) has claimed that descriptions of experience that involve little subjunctification are likely to be of higher fidelity than are descriptions with high subjunctification, and that the density of subjunctification is likely more important than merely counting the instances of subjunctification. Therefore, he recommended dividing a count of subjunctifiers by the number of words in an utterance (or the amount of time elapsed) as a guide

to determining the likely quality of a description (Hurlburt, 2011, pp. 120). In short, Hurlburt (2011) posited that “the lower the density of subjunctification, the better the description” (p. 120), although he noted that this is a general rule of thumb and is by no means definitive.

First-Day Expositional Interviews and (Low) Skill

Although no quantitative inquiries regarding the quality, characteristics, or descriptions of first-day interviews have been conducted, Hurlburt (2009, 2011) provided qualitative examples of typical first-day behaviors. For instance, participants may not initially follow instructions for sampling, such as by not using the beeper and not using earphones while sampling. Additionally, participants’ reports may frequently not strictly adhere to the moment right before the beep sounds. Participants in first-day interviews often do not constrain their reports to a specific moment in time, but rather report a string of moments that may span several seconds, minutes, hours, or days prior to (or even in response to) the beep (Hurlburt, 2011, p. 167). That is, first-day participants often fail to cleave to the moment of the beep.

Participants moreover often struggle with constraining their reports to directly apprehended inner experience. For example, participants may not initially know what directly apprehended inner experience is. In Hurlburt (2009), a DES investigator (NM) has the following exchange with a participant (JT) during his first expositional interview:

NM:¹³ OK. So, I know you gave me some background there, so if you can help me clarify. Right when the beep went off, what was in your experience?

JT:¹⁴ Um. What do you mean, in my experience? [sounds puzzled] What was I thinking?
(p. 176)

Here, even though JT was provided with initial instructions before sampling about attending to “anything that is occurring directly before the footlights of... consciousness at the moment of the

beep” (Hurlburt, 2009, p. 176), he is perplexed by exactly what he should be apprehending and subsequently describing. In particular, JT provides evidence of his presupposition that thinking must be the primary feature of experience or encompasses the primary goal of the study. The fact that JT does not immediately know what constitutes directly apprehended inner experience is not merely one of ignorance. It is *not* simply the case that JT would have been more skilled in this task if only he had been provided with a clearer, more exhaustive account of what directly apprehended inner experience is. Instead, JT’s confusion illustrates a common misunderstanding present across many neophyte DES participants, as was emphasized by Heavey et al. (2010) in their fourth fundamental hazard of inner experience research: Participants in DES research consistently show a failure to differentiate between directly apprehended phenomena and constructs, processes, or concepts that are assumed to be directly apprehended phenomena (e.g., decision making, aggression, depression) but are difficult or impossible to apprehend directly.

Relatedly, participants may also struggle in cleaving to directly apprehended experience by not clearly distinguishing between phenomena and presuppositions/heuristics. Hurlburt and Schwitzgebel (2007) provided a transcript of a participant’s (“Melanie’s”) first-day, first sample expositional interview. Melanie describes her “thinking” that was caught in-flight by the beep: “It’s my inner thought voice, so it’s the one I recognize and hear all of the time whenever I’m thinking” (p. 62). Here, Melanie makes two general claims about her inner voice: that she is knowledgeable of her own distinctive inner voice (“it’s the one I recognize”) and that this inner speaking is ubiquitous—one that she “hear[s] all of the time.” Notice, however, that these claims are generalities about her inner experience, *not* descriptions of her inner experience *at the precise moment of this beep*. In fact, Hurlburt and Schwitzgebel (2007) show that later sampling undermined Melanie’s belief of her ubiquitous inner voice.

Additionally, first-day participants often exhibit a high density of subjunctification. As previously outlined, higher densities of subjunctification may be an indication that a participant's description of their inner experience may not be accurate. Hurlburt (2011; see p. 118) offered an example of subjunctification in a participant's initial description of her experience during her first-day-first-sample interview in which she used approximately 35 subjunctifiers in 175 (a density of about one subjunctifier for every 5 words).

Iterative Training and DES Skill

Central to the discussion of the (claimed) lack of skill typically demonstrated by participants during first-day interviews—as well as an integral part of the DES method more generally—is iterative training. At its fundamental core, the DES methodology is iterative, such that the structure of the sampling-and-interview process is designed to incrementally improve participant's ability to apprehend and describe their inner experience over time through successive refinement across multiple days of sampling (Hurlburt, 2009). Iteration within this context is more than just simple repetition—it is an active process by which improving approximations are made over multiple, always newly encountered instances in which the description at each instance is likely of higher and higher fidelity (Hurlburt, 2011, pp. 152). The importance of iterative training within DES cannot be overstated: Hurlburt and colleagues have repeatedly emphasized the importance of iteration as it relates to high-fidelity reports of inner experience, such that it “may, incrementally on successive occasions, *increase* the direct contribution of pristine experience (and decrease the contribution of reconstruction)” (Hurlburt, 2011, p. 174, emphasis in original). Thus, DES investigators provide repeated rounds of sampling and interviewing: at the onset of DES sampling (i.e., on day 1), it is anticipated that participants will be relatively unskilled at apprehending and describing their inner experience

due to the fact that as they have received no exposure and/or practice in apprehending and describing their pristine inner experience. Through the skills (e.g., bracketing presuppositions, asking open-beginninged questions, examining the language participants use to describe their inner experience) used by investigators within the first expositional interview, however, it is believed that participants will be more prepared and more skilled for their next round of sampling and interviewing.

Hurlburt (2009) provided a theoretical overview of the strengths of the iterative process. In his essay, Hurlburt outlined four main aspects of an iterative method that contribute to high-fidelity apprehension of inner experience: the refreshment by new experience, improvement in apprehension, multiple perspectives on experience, and the open-beginningedness of the process. The first main aspect of the iterative method—the refreshment by new experience—is important because it allows for the calibration of the skills necessary for the apprehension of inner experience to be practiced on fresh samples at each step. Said in another way, using an iterative method that relies on gathering new samples at every step is much like trying to ski having access to an empty ski resort, such that every ski route is covered with fresh, undisturbed snow; with each run, the skier is always given a fresh start on an “unblemished” surface that (thus, predicated on the assumption that progress is being made on all other fronts of the constraints of inner experience research, such as the bracketing of presuppositions, cleaving to the moment of the beep, and cleaving to experience, the refreshment of experience allows for the apprehension process to begin anew at each step, and thus the contribution of directly apprehended inner experience should *increase* across interviews). In non-iterative methods (i.e., those that *do not* involve the refreshment of experience), it is likely that the contribution of directly apprehended inner experience *decreases* within each interview due to the greater and greater influence of

interviewer and/or interviewee's presuppositions, retrospective and reconstructive errors, and so forth on pristine experience: As a non-iterative investigation proceeds, the original (single) experience becomes further and further distant, while the theories or presuppositions become closer and closer in prominence. In other words—and continuing with the skiing analogy—a non-iterative procedure is much like trying to ski at a busy ski resort in which the mountainside face is riddled with moguls, deep ruts, and pockmarks. With each run, the skier is forced to retread the same route, which inexorably *contributes* to the development of larger and larger moguls, ruts, and so forth.

The second main aspect of an iterative method—the improvement in apprehension—essentially involves improving the quality of apprehension and description of pristine inner experience due to the function of practice. Hurlburt (2009) contends that practice involves (a) trying to improve observational skills, (b) trying to improve interview skills, (c) using the synergistic interplay between the practice of observation and interview skills to improve on future observation/interviewing abilities, (d) increase his or her ability to become more ready/prepared/poised to observe their pristine inner experience, (e) improve their ability to create contemporaneous observations of their experience, and (f) improve his or her ability to learn the skill of conforming their reconstructions more closely to their pristine experience. However, just as in the refreshment of new experience and its effects on increasing skill, improvement in apprehension is predicated on the assumption that both the interviewer and interviewee are working to increase their skills at apprehending inner experience (i.e., bracketing presuppositions, cleaving to the moment, cleaving to directly apprehended experience).

Hurlburt (2009) posits that the third aspect of an iterative method—multiple perspectives on experience—helps to increase the contribution of pristine inner experience to interviewee's

reports by allowing genuinely salient phenomena to emerge over time. Because naturally occurring pristine inner experience is intrinsically unknown to both the investigators and (typically) to the participant themselves at the onset of sampling, the iterative sampling of new, unique experiences allows genuinely frequent phenomena to arise while allowing nonrecurring features to subside over time. Additionally, because each experience is unrepeatable, salient phenomena are refined by exposure to a robust set of different circumstances, contexts, and situations. Thus, Hurlburt (2009) argues that “iteration allows both for the emergence of salient phenomena and for the elaboration of phenomena once they emerge” and that “both those characteristics taken together can, across occasions, allow a greater clarity of apprehension of the central features of pristine experience” (p. 168).

The fourth main aspect of an iterative method—open-beginninged probes—is what Hurlburt (2009) highlights as perhaps the most important part of the iterative method. As covered previously in this document, open-beginninged questioning within the DES method is crucial for high-fidelity descriptions of inner experience, because such questions may reduce the effects of presuppositions. As it relates to the iterative process, however, open-beginninged probes communicate at each interview to the interviewee that “the interviewer really does want to hear about the details of my [the interviewee’s] experience, whatever those details happen to be or not be” (Hurlburt, 2009, p. 170). Because of the inherently ambiguous nature of open-beginninged questions, participants understandably require several iterations of such questions in order to appreciate the sincerity that DES strives to embody in this questioning. There are inherent structures and expectations that participants almost always have upon initially engaging in DES investigations, such as the power differentials between investigators and participants,

expectancies for deception or manipulation by, the investigators, and so forth, that can be overcome (or at least, limited) only by repeated, iterative training.

Although the iterative process is indeed part of this current investigation, it should be emphasized that the goal of the current study is explicitly *not* to look at the progression of the iterative process. To do so would require a far more expansive investigation across each day of DES sampling. Instead, the current study is specifically focused on the overall outcome of the iterative process. Are DES participants *relatively more* skilled on their very-last-sample interview regarding their ability to apprehend and describe their pristine inner experience in contrast to their abilities on the very-first-sample interview?

Empirical Evidence Regarding the DES Iterative Process

Of the extant DES literature, there is only one previous investigation that has sought to answer questions similar to those posed in this current study. In a dissertation completed by Brouwers (2016), Brouwers and DES investigators completed two studies that aimed at investigating the iterative process in DES. Specifically, Brouwers and colleagues were interested in studying subjunctification density and participant's access to experience within videotaped DES expositional interviews as evidence for the DES iterative process. Broadly, given the claims that the iterative process helps participants hone their ability to apprehend and describe their experience, it was hypothesized that (a) participants would demonstrate a lower subjunctification density during last-day interviews (in this particular study, this consisted of fourth-day interviews) compared to first-day interviews, and (b) participants would demonstrate increased ability to access their inner experience as a function of time (such that participants on their last-day (fourth-day) interviews would have higher access to their inner experience than did those participants on their first-day interviews).

In the first study, Brouwer (2016) and colleagues were interested in determining the extent to which subjunctification density decreased across multiple days of DES interviews. Eight undergraduate research assistants naïve to DES were trained to identify subjunctification via a multimedia training platform that included an essay on subjunctification and an online subjunctification training program. Once trained, the eight research assistants viewed video clips of expository interviews that were selected from 15 undergraduate DES participants (i.e., interviewee) from a previous study. For each interviewee, three utterances were obtained from their first-day interview and their fourth-day interview, respectively, for a total of 90 video clips. Utterances were defined as “any clear, verbal response, two words or longer, where the interviewee [was] the sole speaker, aside from minor interviewer vocalizations such a “yeah” and “hmm.” Utterances ranged from two-word responses (e.g., “Not really”) to responses several sentences in length” (p. 24). In viewing these video clips, research assistants were tasked with rating the interviewee’s level of subjunctification in each clip on a 5-point scale, where 0 = *unsubjunctified* and 4 = *highly subjunctified*.

To analyze results, z -scores were calculated for each combination of rater and interviewee for a total of six z -scores for each rater-interviewee pairing. An average first-day and fourth-day z -score was calculated for Rater 1/Interviewee 1, which allowed for a direct comparison of first-day ratings to fourth-day ratings within Rater 1/ Interviewee 1 (and so on and so forth for each unique crossing of rater and interviewee). A dependent samples t -test was performed and found no significant difference between levels of subjunctification when comparing each interviewee’s average first-day z -score rating ($M = .02$, $SD = .42$) to their paired fourth-day average z -score rating ($M = -.02$, $SD = .42$; $t(119) = .60$, $p = .550$). A Repeated Measures ANOVA was also performed on the data due to violations of the t -test assumption. For

this analysis, the level of subjunctification ratings were averaged within each rater, interviewee, and day (i.e., first-day or fourth-day). The Repeated Measures ANOVA showed no main effect for day ($F(1, 14) = 0.32, p = .581$), which indicated that there was no significant difference between first-day average subjunctification level ratings ($M = 1.80, SD = .84$) and fourth-day average subjunctification level ratings ($M = 1.71, SD = .80$). Brouwers proposed three possible explanations for these findings: (1) the iterative method in DES is not effective at building the skills necessary to apprehend inner experience (or that perhaps three days of sampling is insufficient in training interviewees), (2) the study was not adequate and may have failed to detect differences in subjunctification for a number of procedural reasons (e.g., insufficient training for raters, lack of context of utterances), and (3) the iterative method in DES is effective at developing skill in regards to apprehending experience, but subjunctification does not measure DES skill.

In the second study, Brouwers (2016) and colleagues were interested in assessing whether DES interviewee's skill changed across sampling days. In this study, experienced DES investigators watched and rated the same 90 video clips used in Brouwers' first study on subjunctifiers; however, rather than asking raters to rate levels of subjunctification, raters instead were instructed to estimate interviewee's access to experience on a 5-point scale where 0 = *no access* and 4 = *high access*. Access to experience was defined as "the interviewee's broad ability to apprehend and describe inner experience phenomena in the DES interview" (p. 35). To analyze results, *z*-scores were calculated using the same process as Brouwers' subjunctification study. A dependent samples *t*-test was performed and found a significant difference between access to experience ratings when comparing each interviewee's average first-day *z*-score rating ($M = -.19, SD = .41$) to their paired fourth-day average *z*-score rating ($M = .19, SD = .41$), $t(74) =$

3.98, $p < .001$. These results indicated that DES interviewees were rated as having greater abilities to apprehend their experience on their fourth-day interviews compared to their first-day interviews. A Repeated Measures ANOVA was also performed on the data due to violations of the t -test assumption, and data was transformed using the same procedure as Brouwers' subjunctification study. The Repeated Measures ANOVA showed a main effect for day: access to experience ratings for fourth-day interviews ($M = 2.49$, $SD = .82$) were significantly higher than access to experience ratings for first-day interviews ($M = 2.07$, $SD = .65$; $F(1, 14) = 7.51$, $p = .016$). These results suggest that DES interviewees were rated as being more skillful at apprehending their inner experience on their fourth-day interview compared to their first-day interviews.

Although Brouwers' (2016) dissertation is similar in many respects to the current study, its methodology was perhaps inadequate in at least six fundamental ways. First, as explained in summarizing Brouwers' subjunctification study, Brouwers himself highlighted the potential deficiencies in his methodology that may have affected his data. For example, Brouwers pointed to the fact that:

The context of the utterance was not provided, and often the videos were brief, sometimes including only two or three word [*sic*] utterances, and the shortest videos were only two seconds in length. These factors may have been barriers to the raters' detection of differences in subjunctification between days. (p. 33)

Hurlburt (2011) described the complexities surrounding subjunctifiers, emphasizing that "there are lots of reasons that a person might use a theoretical inference, might insert an undermining expression, might show distress, or use some other subjunctifier even while faithfully describing experience" (p. 117). Thus, by providing only (in some cases, *very*) short video clips of

interviews, such videos may indeed not adequately allow any rater to determine the function or purpose of the subjunctification.

Second, Brouwers noted that he had used undergraduate research assistants naïve to DES as raters for his subjunctification study. However, it “requires substantial skill to conduct an interview that stays directly in touch with experience at the moment of the beep” (Hurlburt, 2011, p. 124), such that a DES investigator is sensitive to bracketing their presuppositions. Thus, even in spite of subjunctification trainings, it is possible that naïve research assistants may still have not adequately learned to attend the various factors important to achieving high-fidelity descriptions of inner experience, such as bracketing presuppositions, cleaving to the moment of the beep, cleaving to directly-apprehended experience, and so forth.

Third, Brouwers’ subjunctification study used a Likert-type scale to rate interviewee’s subjunctification level. Given this rating system, it is unclear how to interpret differences between ratings (i.e., what is the degree of difference between a rating of “3” and a rating of “4?” Are the intervals between each rating uniform across the scale?).

Fourth, Brouwers’ procedure counted subjunctifier *frequency*, rather than follow Hurlburt’s (2011) recommendation of focusing on subjunctification *density* as an indicator of subjunctification level.

Fifth, Brouwers provides an insufficient operational definition of “access to experience,” which thus exacerbates the lack of clarity around what exactly characterizes a person’s “access” to their experience.

Sixth, Brouwers’ (2016) dissertation placed emphasis on rater’s *assessments and categorizations* of various interview and experience characteristics and treated such assessments as discrete data (in contrast to the interview behaviors or inner experience phenomena itself).

This is seen as a fundamental error, as the ratings are *not* being used to reflect the phenomena but are instead “top-down” assessments that (very likely) *obscure* the actual phenomena by having raters determine the extent to which phenomena fit a pre-defined criteria. A consequence of this process is that the *ratings themselves* become the primary data of interest as opposed to the phenomena themselves (thus obscuring the phenomena).

Recapitulation of the Current Study

DES practitioners claim that there are three characteristics that provide evidence for high fidelity descriptions: cleaving to the moment, cleaving to directly apprehended experience, and low subjunctification density. If DES iterative training does in fact improve the participant’s ability to provide high fidelity descriptions, then DES participants should demonstrate better cleaving to the moment, better cleaving to experience, and lower subjunctification density on the last day of their sampling participation than they do on the first day. However, that has not (until now) been empirically tested.

The present study compared the very-last-sample interviews to the very-first-sample interviews of six DES participant. We used both quantitative and descriptive methods to analyze and describe three primary skills that contribute to the perceived quality of a participant’s descriptions, asking: (1) Did participants’ cleaving to the moment improve from their very-first-sample to very-last-sample interview? (2) Did participants’ cleaving to experience improve from their very-first-sample to very-last-sample interview? And (3) Did participants’ use of subjunctifiers decrease from very-first-sample to very-last-sample interview?

Chapter 6: Method

Participants

Participants for this study consisted of six individuals who were randomly selected from participants who had been videotaped while participating in one of two previous DES investigations. In the first DES investigation (hereafter referred to as the “methodological study,” described in Lapping-Carr, 2019), 12 undergraduate volunteers (9 female, 3 male) 18 years old or older enrolled in introduction to psychology courses at a large urban university in the United States had participated in five days of standard DES sampling; all expositional interviews had been videotaped. Of these 12, three were randomly selected and, via their videotapes, became participants in the present study. In the second DES investigation (hereafter referred to as the “psychotherapy study,” described in Moynihan, 2020 and in Krumm, 2019), 20 participants (14 female, 5 male, 1 gender-fluid) had been individuals seeking psychotherapy services at a community-based mental health clinic and had participated in eight days of standard DES sampling; as in the methodological study, all expositional interviews had been videotaped. Of these 20, three were randomly selected and, via their videotapes, became participants in the present study.

Raters

Raters in the current study were two experienced DES investigators: the first rater was the current study’s author (Cody Kaneshiro; CK), and the second was the developer of the DES method (Russell T. Hurlburt; RTH). Their experience with DES at the time they provided their ratings was 2.5 years and 40 years, respectively.

Materials

Videotapes

In both the methodological study and the psychotherapy study, DES interviews had been conducted following the procedure described in Chapters 3 and 4 of this document and in Hurlburt (2011, 2017). At the time of each interview, each session was recorded in its entirety (usually 1 hour) on a digital camera, and all files of the videotapes were stored on a secure, password protected server.

Chess timer

An online chess timer (<https://www.online-stopwatch.com/chess-timer/>).

Experience-at-the-Moment-of-the-Beep (EMB) Ratings

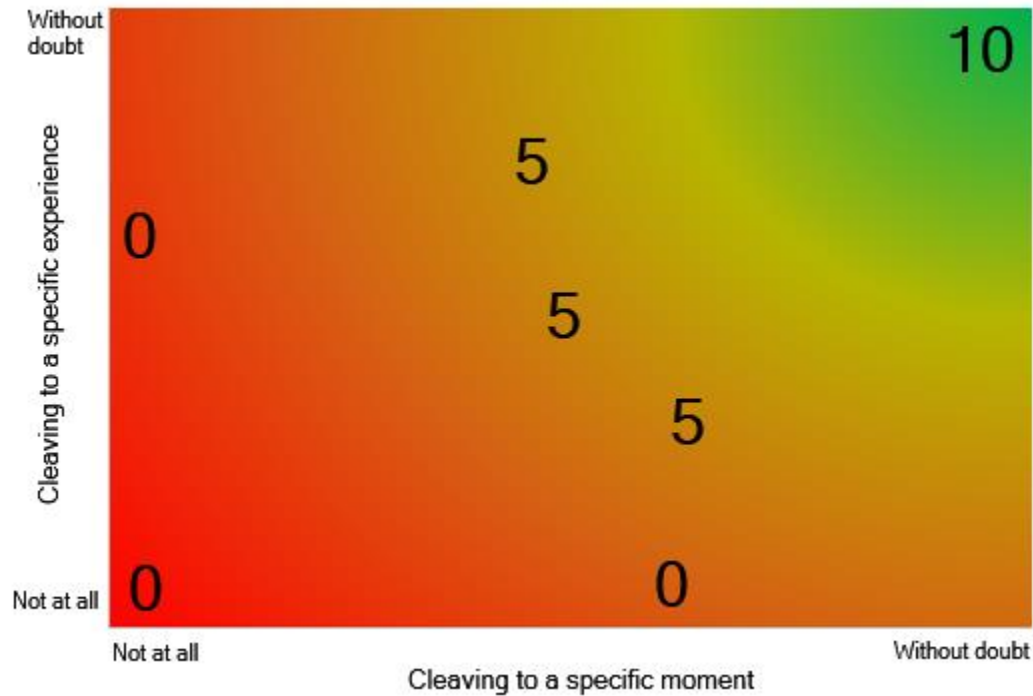
The EMB rating procedure was developed for this study as a means of providing a single numerical rating of the extent to which a participant is describing experience-at-the-moment-of-the-beep during a conversational turn of an expositional interview. EMB ratings range from 0 (*not at all cleaving to experience-at-the-moment-of-the-beep*) to 10 (*cleaving to experience-at-the-moment-of-the-beep*). EMB ratings are intended to provide an in-general, quantitative characterization of a multidimensional, non-numerical process.

Because inner experience is always experienced at (a) some particular moment, and (b) directly apprehended phenomena, describing experience-at-the-moment-of-the-beep involves cleaving both to a moment and to directly apprehended experience. EMB ratings are designed to reflect both aspects. Figure 1 illustrates the rater's consideration of these two factors.

Conversational turns that are clearly consistent with describing both a particular moment and a particular experience should be assigned a high EMB rating (10). Conversational turns that are clearly *inconsistent* with describing *either* a specific moment *or* a specific experience (or both) should be assigned a low EMB rating (0).

Figure 1

EMB Rating Heuristic



Note. The numbers included in the figure are examples of hypothetical EMB ratings.

Procedure

All participants in this study had provided informed consent at the time of their participation in their respective investigations (i.e., the methodological study or the psychotherapy study) for their videotaped interviews to be used in future DES investigations.

Step 1: Video Selection

Participants in this study were randomly selected, three from the 12 participants of the methodological study and three from the 20 participants of the psychotherapy study. Once selected, videos of each participant's first-day and last-day interviews were retrieved and each

participant's very-first-sample (i.e., the first sample on the first sampling day) expositional interview and their very-last-sample (i.e., the last sample on their last sampling day) expositional interview were isolated.

Step 2: Transcript Preparation

The main investigator (CK) prepared a verbatim transcript (including notable postural features, facial expressions, vocal tone, volume, and so forth) for each participant's very-first-sample and very-last-sample interviews. Once completed, the two raters (CK and RTH) independently watched the videotapes of both interviews to verify the transcript's accuracy; if any corrections were necessary, they were incorporated into the transcript using tracked-changes and circulated to the other rater. Transcripts were continually circulated until they were deemed adequate by both raters.

Step 3: Subjunctification Identification

The two raters independently watched the video a second time, now highlighting (on the transcript prepared in step 2) any and all subjunctifiers used by the participant. Once all subjunctifiers were independently identified by each rater, the raters met and resolved any discrepancies, returning to the video files as needed (for a third time). The purpose of this meeting was to discuss and resolve any potential differences between raters for their subjunctification identification. Once differences were resolved, the total number of subjunctifications spoken by the participant were counted.

Step 4: Tracking Time Spoken

Each rater independently watched the video (for a fourth time) in three-minute blocks, using the chess timer to measure the amount of time spoken by the participant and by the interviewers in the block. That is, as the rater watched the video, he switched the chess timer

back and forth between the participant and the interviewers as each spoke. This resulted in a measure of how long the participant and the interviewers spoke in each 3-min block.

The three-minute blocks were used to calculate the reliability of the timings. Because the very-first-sample and very-last-sample interviews were excerpts of longer videotaped expositional interviews, the first three-minute time block were rounded up to the closest whole-minute timestamp. For example: if a participant's very-first-sample interview began at 3:23, we rounded that up to 4:00 and then stopped the first three-minute block at the 7:00 timestamp. The end of the last block coincided with the end of the interview, and therefore the last block was often shorter than 3:00.

Once the timings in each block had been independently determined by each rater, the raters met and resolve any discrepancies in the block timings, returning to the video (for a fifth time) if necessary. The purpose of this meeting was to arrive at a consensus between raters regarding the total amount of time spoken by the participant and interviewers. Once completed, the timings were aggregated across the interview, resulting in the total time spoken by the participant and the total time spoken by the interviewers.

Step 5: Calculating Subjunctification Densities

Subjunctification density was calculated by dividing the total number of subjunctifiers (identified in step 3) by the total amount of time (in s) spoken by the participant for each interview (determined in step 4). Thus, subjunctification density is thus defined as the number of subjunctifiers per second of participant's speech.

Step 6: Annotating the Transcript

Both raters met together to watch (and rewind and re-watch as necessary) the participant's interviews to discuss the extent to which the participant seemed to be describing

experience-at-the-moment-of-the-beep in each interview turn. This discussion considered a participant's moment-cleaving, experience-cleaving, subjunctification usage, body language/posture, the effect of the interviewer's queries, and context that emerge from other parts of the interview (e.g., noting that a participant describes multiple "drafts" of experience descriptions might change across time within an interview), noting whether the participant followed DES procedures, and so on. The main investigator (CK) then prepared an annotated transcript that included a characterization of the extent to which each conversational turn of a participant's interview (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctifiers in that turn.

Each turn was given a separate annotation unless a turn was understood to be part of a single back-and-forth exchange (in which case these turns was combined into a single annotation), or the turn involved statements, questions, or comments that were unrelated to the descriptive process (e.g., a query by the participant to clarify the interviewer's question), or when the interview shifted away from trying to describe experience with fidelity to iterative training for the next round of sampling-and-interviewing.

Step 7: EMB Ratings

Each rater independently returned to the videotapes and provided an EMB rating for all conversational turns. There were two exceptions: turns that were understood to be part of a single back-and-forth exchange were given a single EMB rating (consistent with their groupings created in step 7), and turns that were unrelated to the descriptive process were skipped. Note that raters relied on the videotapes and *not* the transcripts, thus allowing tone of voice, inflections, sighs, body posture, length of pauses to influence the EMB rating. Then the raters met and resolved any discrepancies in the block timings (returning to the video if necessary),

thus ensuring that the EMB ratings corresponded to the turns determined in step 6. Then EMB ratings were calculated for each turn by averaging the two rater's EMB ratings for each turn.

Step 8: Within-Participant Analysis

We assessed the interrater reliability of subjunctification density by computing the Pearson's correlation coefficient of raters' subjunctification density across all 3-min intervals. We assessed the interrater reliability EMB ratings by computing the Pearson's correlation coefficient of rater's EMB ratings across all rated turns in both sample interviews.

The last step in the within-participant consideration was to compare an individual participant's very-last-sample interview to their very-first-sample interview. Quantitatively, we performed independent-samples *t*-tests to compare subjunctification density and EMB ratings between participant's very-first-sample and very-last-sample interviews.

Qualitatively, we discussed the extent to which a participant apparently cleaved to experience-at-the-moment-of-the-beep during both their very-first-sample interview and their very-last-sample interview, noting any changes between the interviews. We also discussed the manner of each participant's subjunctification during both their very-first-sample interview and their very-last-sample interview, noting any changes between the interviews.

Step 9: Across-Participant Analysis

Once steps 1-8 had been completed for all participants, we compared changes in skill between very-first-sample and very-last-sample interviews across participants. Quantitatively, we conducted a dependent samples *t*-test to compare the change in subjunctification density and EMB ratings between all participants' very-first-sample and very-last-sample interviews. Qualitatively, we described the characteristics of a typical participant's talk in the very-first-

sample interview so that we could contrast it with changes in participant talk in the very-last-sample interview.

Step 10: Counting Subjunctifiers by Type

At the completion of steps 1 through 9, we recognized that it would be desirable to categorize subjunctifiers into three types: phenomena-not-apprehended (PNA) subjunctifiers, description-falling-short (DFS) subjunctifiers, and subjunctifiers that were difficult to categorize as either PNA or DFS—hence, unable-to-classify (UTC) subjunctifiers. We therefore returned to all participant’s very-first-sample and very-last-sample videotapes and re-counted subjunctifiers with the same procedure as in step 3, except that now we identified when any of three types (PNA, DFS, or UTC) of subjunctifier was present. This allowed us to obtain a count and subjunctification density of each of the three types of subjunctifiers as well as of the total subjunctifiers (= PNA + DFS + UTC) within each sample interview. All the subjunctification data presented here reflects this manner of subjunctification count and density calculation.

Design of Results and Discussions

Wundtian-Like Methodological Model

We chose to conduct our analysis (and present our results and discussion) using a *Wundtian*-inspired methodological model (Danziger, 1990; Robinson, 2011). The Wundtian model involves analyzing a collection of individual participants, each in an $N = 1$, case-study fashion to provide the basis for establishing findings that are common to all in the sample⁴. Thus, in the following individual results and discussion section, we have treated each participant as

⁴ The Wundtian model draws conclusions *if and only if* those conclusions emerge for *each* of the individual $N = 1$ studies. That is, the Wundtian model is *not* primarily interested effects that occur *on average* (that would be the Galtonian model) but rather in effects that occur *for everyone* (see Robinson, 2011).

independent case studies. Then, in Chapter 13, we discuss any findings that emerged as universal across all participants.

Chapter 7: Results and Discussion for Amelia

Amelia had been an undergraduate subject pool volunteer in the methodological study. As part of her participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki—Amelia had consented to have her videotapes used in studies such as the present one. The present study therefore accessed her methodological-study videotapes and had no other contact with her.

Amelia completed four days of natural environment DES sampling spread across a two-week time span, with 14 days elapsing between her first-day interview and her last-day interview. She collected a total of 22 samples: 4 samples in her first day, and 6 samples each during her second, third, and fourth days.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Amelia's quantitative results are shown in Table 1. For Amelia, the very-first-sample interview was 657 s in total length, of which Amelia spoke for 176 s across 37 conversational turns. The very-last-sample interview was 262 s in total length, of which Amelia spoke for 121 s across 18 conversational turns. We divided Amelia's very-first-sample and very-last-sample interviews into 3-min intervals; there were four intervals in the very-first-sample interview and two intervals in the very-last-sample interview.

Table 1*Amelia: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	657	262							
Time spoken by participant (s) ^a	176	121							
Number of spoken turns	37	18							
Number of 3-min intervals	4	2							
Total Subjunctification Count ^a	65.5	19							
Total Subjunctification Density ^{a,b}	0.37 (<i>SD</i> = 0.06)	0.16 (<i>SD</i> = 0.10)	.68	4	.134	−3.55	4	.016	3.12
PNA Subjunctification Density ^{a,b}	0.37 (<i>SD</i> = 0.08)	0.02 (<i>SD</i> = 0.02)	.77	4	.076	−5.09	4	.004	5.32
UTC Subjunctification Density ^{a,b}	0.01 (<i>SD</i> = 0.01)	0.04 (<i>SD</i> = 0.04)	.64	4	.172	−1.10	4	.323	1.65
DFS Subjunctification Density ^{a,b}	0.01 (<i>SD</i> = 0.01)	0.10 (<i>SD</i> = 0.04)	.53	4	.285	3.82	4	.010	4.45
Number of turns with EMB ratings	17	15							
Average EMB Rating ^c	1.65 ^d (<i>SD</i> = 1.16)	8.97 (<i>SD</i> = 1.16)	.82	31	< .001	17.38	31	< .001	6.33

Note. EMB = Experience at the moment of the beep; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

^a Averaged across the two raters.

^b Density is subjunctification count divided by time spoken by participant (subjunctifiers per s).

^c Average EMB ratings across the two raters for all rated turns of the interview.

^d Includes non-annotated turns given EMB ratings ($A^{47a} - A^{78a}$). If non-annotated turns are excluded, then there are 10 rated turns from the very-first-sample interview and 15 rated turns from the very-last-sample interview; the results remain very similar: ($t(23) = 16.98, p < .001, d = 6.93$).

Rows 5 through 9 of Table 1 analyze Amelia's subjunctifiers. Row 5 displays the total count of Amelia's subjunctifiers in her very-first- and very-last-sample interviews (averaged

across both raters), and row 6 displays the total subjunctification density (row 5 divided by row 2) and changes to the overall subjunctification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctifiers: phenomena-not-apprehended (PNA) subjunctifiers, unable-to-classify (UTC) subjunctifiers, and description-falling-short (DFS) subjunctifiers.

Specifically, the four right-hand columns of rows 7 through 9 in Table 1 show that Amelia's subjunctification changed significantly and substantially between her very-first- and very-last-sample interviews. We found that Amelia's total subjunctification density significantly decreased from the very-first-sample interview ($M = 0.37$ subjunctifiers per second) to the very-last-sample interview ($M = 0.16$ subjunctifiers per second) with a huge ($d = 3.12$) effect size; we similarly found that Amelia's PNA subjunctification density significantly decreased from the very-first-sample interview ($M = 0.37$ subjunctifiers per second) to the very-last-sample interview ($M = 0.02$ subjunctifiers per second) with a huge ($d = 5.32$) effect size. By contrast, her DFS subjunctification density significantly *increased* from the very-first-sample interview ($M = 0.01$ subjunctifiers per second) to the very-last-sample interview ($M = 0.10$ subjunctifiers per second) with a huge ($d = 4.45$) effect size. All these changes⁵ are consistent with a consequential improvement in Amelia's skill in apprehending and describing experience: Whereas Amelia's very-first-sample interview involved a high density of subjunctifiers (mostly PNA), her very-last-sample interview involved a low density of subjunctifiers (mostly DFS), suggesting that she learned to apprehend phenomena but struggled to find the words to describe them adequately.

⁵ Although UTC subjunctification density also decreased between the very-first-sample interview ($M = 0.01$ subjunctifiers per second) and the very-last-sample interview ($M = 0.04$ subjunctifiers per second) with a substantial ($d = 1.65$) effect size, the change was not significant due to the small sample size. Moreover, changes in UTC subjunctification density does not matter to the aims of the current study: UTC subjunctifiers, as their name implies, merely represent subjunctifiers that could not easily be classified as a PNA or DFS-type subjunctifier; as such, they do not provide insight into the possible fidelity of a participant's report.

Rows 10 and 11 of Table 1 analyze EMB ratings for Amelia's sample interviews, counting them in the row 10 and, in the row 11, showing the average EMB rating. We found that Amelia's average EMB rating significantly increased from the very-first-sample interview ($M = 1.65$) to the very last-sample interview ($M = 8.97$) with a huge ($d = 6.33$) effect size, suggesting extremely great improvement in Amelia's cleaving-to-a-moment and cleaving-to-experience skill.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Amelia's very-first-sample and very-last-sample interviews are provided in Appendixes A and B, respectively. There, each annotation includes analysis detailing the extent to which Amelia (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctifiers in that turn. Here, we summarize those results.

Experience at the Moment of the Beep

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. Cleaving (successfully) to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended experience. We now review the extent to which Amelia demonstrated moment- and experience-cleaving skill at the very start and very end of her DES sampling participation.

Very-First-Sample Interview

(Lack of) Cleaving to the Moment. Amelia did not cleave to any specific moment during her very-first-sample interview.

Here is one example from Amelia's initial conversational turn from the very-first-sample interview:

A^{1a}: Actually, my first beep I was like, I dunno, I was thinking of why the beeper didn't go off [laughs]. So the whole time I was just wondering... when it would beep because it took like, maybe about an hour before it beeped? So I thought, like, maybe I should call you... text you... like, there was some kind of problem... and then it just beeped. And I knew it worked. And that was it. [laughs] It was a simple one.

Here, Amelia provided many reports about time, but none were about a moment. For instance: "so the whole time" and "because it took like, maybe an hour before it beeped?" explicitly referred to a long period of time prior to the beep's onset (not a specific moment). Moreover, Amelia talked about periods of time that occurred after the moment of the beep: "and then it just beeped. And I knew it worked. And that was it" all referred to her reaction to the beep *after* the beep had sounded. Thus, not only did Amelia fail to cleave to the specific moment of interest (i.e., the "microsecond" just *before* the beep onset), but she failed to constrain her description to any moment at all (such that A^{1a} described a mixture of many moments spread across an indeterminate period of time).

Other evidence of Amelia's failure to cleave to the moment of the beep came from her radically different reports of (what should have been) her at-the-moment experience. The degree of difference between these reports were so great that she could not possibly have been describing the same, discrete moment. For example:

- In A^{6a}, Amelia said: "I was getting anxious because, I thought, like, maybe I handled the beeper too roughly when I was in my car?" This report was about either a feeling ("getting anxious") or a thought about how she had handled the beeper too roughly.

- In A^{10a}, Amelia stated: “I think right at that moment, I was thinking of whether I should text... Leslie or you guys” and in A^{21a}, she described that this thought was present to her “in the form of words” and that it was being repeated “in [her] head.” In A^{23a}, she said the worded thought was: “Should I text Leslie?” Unlike Amelia’s talk of her at-the-moment experience in A^{6a}, her reports at turns A^{10a}, A^{21a}, and A^{23a} were aimed at describing a worded thought: “should I text Leslie?” Note that the description of a worded thought was in no way in line with her A^{6a} description of apprehending an anxious feeling and/or thought about handling the beeper too roughly. Instead, her A^{10a}/A^{21a}/ A^{23a} descriptions appeared to refer to an entirely different moment from A^{6a}.
- In A^{27a}, Amelia again changed her description of her at-the-moment experience, when she described, “‘Cause I was thinking... just like, how to text [the text message] on my phone. Just like, how I should word it out.”

We see that Amelia’s description of her (purported) at-the-moment experience in A^{27a} had changed once again from her previous descriptions, such that Amelia described a thinking-about-how-to word-out-a-text-message-to-DES-investigators experience. Note that this description (thinking about wording a text message) was *not* merely an evolution, alteration, or continuation of the “should I text Leslie?” worded thought described in A^{10a}/A^{21a}/ A^{23a}, nor was the description of an anxious feeling and/or a thought about breaking the beeper in A^{6a} related to the latter two descriptions. These descriptions were all quite distinct from each other; this fact, in combination with her initial failure to cleave to a moment, are all illustrative of one simple conclusion: Amelia failed to cleave to a moment during her very-first-sample interview. Thus,

she could not have been cleaving to the *specific* moment of interest within DES—the last undisturbed moment at the leading edge of the beep’s onset.

(Lack of) Cleaving to Directly Apprehended Experience. By definition, an inner experience is a phenomenon that is present at a specific moment. Because, as we just reviewed, Amelia’s very-first-sample interview never focused on any specific moment, her very-first-sample interview could not have described any genuine inner experience(s). Instead, Amelia explicitly expressed her failure to cleave to directly apprehended experience and talked about ersatz descriptions and faux generalizations of experience. We provide examples of each.

Amelia expressed her ignorance about her at-the-moment experience twice during her very-first-sample interview. Here was the first exchange:

RTH^{15a}: And how—and, and... how does that thought present itself to you?

A^{16a}: Um... [looks quizzical] I’m not really sure.

The second instance came later in the interview:

RTH^{36a}: And so, is that present to you at the moment of the beep?

A^{37a}: Mhm.

RTH^{38a}: In what way?

A^{39a}: In what way? [pause] Mmm... I don’t know, it just comes.

In both instances, Amelia straightforwardly communicated her failure to cleave to directly apprehended experience.

Amelia also provided ersatz descriptions of her experience—talk that (at first) may appear to be descriptive of phenomena, but are in fact completely unacceptable and inferior substitutions for any actual description of phenomena because ersatz descriptions are reports of

non-phenomenal things such as situational context, talk of behavior, and so on. Here is one example:

RTH^{5a}: Okay. And, so, uh... so what's that wondering like for you? What d...

A^{6a}: I was getting anxious because, I thought, like, maybe I handled the beeper too roughly when I was in my car? And that I broke it.

As A^{6a} illustrates, Amelia failed to cleave to directly apprehended experience and did so in a relatively substantial way—she spent time providing reports about the *content* of her ostensible experience (e.g., how she had been worried that she broke the beeper; that she may have broken the beeper while in her car), but was unable to describe *how* such phenomena had been directly present to her (e.g., was it innerly spoken? Innerly seen? Inner heard? A physical sensation?). DES is only interested in describing *how* phenomena is/was present, hence its demand for cleaving to experience. Reports about what or why someone was thinking does not constitute cleaving to experience, and hence indicates that what is being said is an ersatz description.

Amelia also provided faux generalization of experience—statements that appear to describe experience, but instead are glib, in-general statements unconstrained to describing a particular experience. Here is one such example:

A^{29a}: I think I thought of [texting DES investigators and what message I would send] at the same time. It usually just, like, pops up at the same time if I wanna like text someone. I usually just think of what I'm gonna write.

Here, Amelia talked about a characterization of her in-general experience: how she “usually” texts someone. Faux generalizations are so called because they seem to be aimed at saying something about phenomena, but are not at all descriptive of a particular moment of experience.

Even if Amelia's generalization is genuine, it cannot describe Amelia's specific experience at the moment of any particular (including the very-first) beep.

The examples above are all illustrative of one simple conclusion: Amelia did not cleave to directly apprehended experience during her very-first-sample interview.

Very-First-Sample Interview: Conclusions. Overall, we see that Amelia failed to cleave to any moment and failed to cleave to directly apprehended experience during her very-first-sample interview. We conclude that Amelia's utterances in her very-first-sample interview had a near-zero possibility of any descriptive fidelity because she failed to grasp a particular moment of experience and failed to differentiate phenomena from all else.

Very-Last-Sample Interview

Amelia's very-last-sample interview was consistent with cleaving to directly apprehended experience that occurred at a specific moment. Since the high-fidelity apprehension and description of experience must involve the simultaneous presence of cleaving to a moment and to directly apprehended experience, we are unable to separate our analysis of Amelia's very-last-sample cleaving abilities as independent processes. Therefore, we will review examples from Amelia's very-last-sample interview and examine whether she did simultaneously cleave to a moment and cleave to experience.

Here is Amelia's initial first turn from her very-last-sample interview:

A^{1b}: The next one... I was looking at the emails on my phone; I could feel the phone in my left hand, but I could also feel, like, the dryness of my eyes. No thoughts or feelings. But I could see the border around my phone, and the different emails I received, but no... actual words. Just, like, colors.

First, let us consider whether Amelia cleaved to a specific moment. She began the turn by describing context (e.g., “I was looking at emails”), but soon zeroed-in on describing three simultaneous experiences that were all consistent with at-a-moment experience (that is, she did *not* refer to anything other than (what appeared to be) the single moment such as periods of time or moments far before or after beep onset). Second, let us consider whether Amelia cleaved to experience. After providing context, she described only phenomena: feeling her phone in her left hand, eye dryness, and seeing colors. Thus, Amelia’s first turn of her very-last-sample, after a brief statement of context, was a relatively straightforward description of experience at a relatively specific time.

Throughout the remainder of her very-last-sample interview, Amelia appeared consistent in describing the same moment of feeling-the-phone-and-eye-dryness-and-seeing-colors experience that she described in A^{1b}. For instance, Amelia provided further detail about how that eye dryness had been present in turns A^{7b} through A^{11b}:

RTH^{6b}: Well let’s start with the eyes: so I feel—my eyes feel dry? Both eyes?

A^{7b}: Both, both.

RTH^{8b}: Both dry? And in my eyeballs?

A^{9b}: Yeah, my eyeballs [laughs].

RTH^{10b}: My eyeballs feel dry [laughs]. All right. And... and is there more to be said about that?

A^{11b}: No, they’re just dry. Like they need eye drops.

Note that this description was entirely consistent with the at-the-moment experience Amelia first described in A^{1b} (“I could also feel, like, the dryness of my eyes”). Amelia additionally showed her familiarity with her at-the-moment experience when she provided further details about how

she felt her phone in her left hand, such as in A^{15b}, where she described how she felt “the pressure” of her fingertips on her phone. Notably, despite the outward diversity of Amelia’s three simultaneous and ongoing experience at the moment of the beep, these descriptions were never conflated with each other; Amelia unshakingly referred to the same three aspects of the same, single moment throughout her very-last-sample interview.

Perhaps the most striking example of Amelia’s heightened sensitivity for the moment, however, came in her detailed descriptions of seeing “colors” at the moment of the beep. For instance, after she described seeing “rectangle strips” (A^{16b}) of “orange, orange, and blue” (A^{20b}) colors, the following exchange occurred:

RTH^{25b}: Okay. And, is that the way your phone actually works? So if we looked at your actual phone would we see orange message followed by orange message followed by blue message?

A^{26b}: Mmm... [laughs] I don’t know. [A looks at her phone] Well, it looks different. My phone is just like a little square of color, and then it’s just white. But I imagined it just like the whole thing just being orange.

Notably, even when her descriptions of experience contradicted verifiable aspects of reality, Amelia was not shaken in continuing to describe her “incorrect” experience. That is: Amelia consistently described seeing her email inbox as rectangular blocks of color that ran horizontally across her entire phone screen throughout her very-last-sample interview despite her actual email inbox not resembling what Amelia had described seeing at the moment of the beep (her real inbox displayed a small, colored square on the left-hand side of her phone screen and a white rectangle with black text on the remaining right-hand side of her phone. See Figure 2 for a comparison between Amelia’s described experience and her actual email inbox). Amelia

explicitly expressed her surprise at the apparent difference between her at-the-moment experience and her real email inbox twice in the interview; both turns have been copied below:

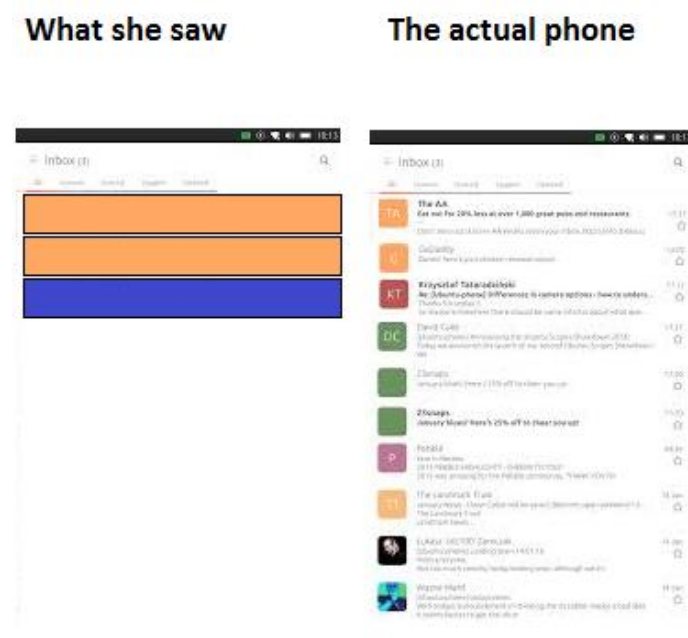
A^{28b}: Like this? [A shows phone to interviewers] It's very different [laughs] from how I imagined it.

A^{30b}: I thought it would be like, this one was just all orange, all orange [A gestures across the width of her phone screen with her finger]—

Thus, despite the fact that Amelia (in reality) had been looking at her email on her phone at the beep's onset, Amelia's experience was one that contradicted the logical/expected description of reality. We note that this discrepancy did not appear a product of mere misremembering or misreporting; her statements in A^{28b} and A^{30b} demonstrate Amelia's obvious acknowledgement of the contrast between her real phone and her directly apprehended experience that occurred at the moment of the very-last beep. Taken together, Amelia's steadfast commitment to describing experience in spite of whether those descriptions were contradictory to reality (and her straightforward description of only directly apprehended experience at the exclusion of all else) throughout her very-last-sample interview strongly signal that she was describing a discrete moment of experience.

Figure 2

Comparing Amelia's at-the-Moment Experience to Her Actual Email Inbox



Very-Last-Sample Interview: Conclusions. Overall, we see that Amelia appeared to cleave to a moment and to experience in her very-last-sample interview. We conclude that Amelia's descriptions had the probability (or at least the possibility) of describing with fidelity a moment of experience (perhaps most likely the experience at the beep).

Comparison: Very-First-Sample Qualitative Characteristics vs. Very-Last-Sample Qualitative Characteristics

We have seen that, in her very-first-sample interview, Amelia did not describe any particular moment and did not describe experience. By contrast, Amelia's very-last-sample interview was constrained to a relatively specific time and was mostly limited to describing experience. We conclude that Amelia's very-last-sample interview was *very different from* her

very-first-sample interview. Whereas in the very-first interview, she could not possibly have been describing an experience that was directly apprehended at the moment of the beep with any level of fidelity, in the very-last sample she (at least) might have been describing an experience that was directly apprehended at the moment of the beep.

Subjunctification

Previously in Amelia's Quantitative Results and Discussion, we saw that Amelia's subjunctification density significantly decreased between her very-last-sample interview and her very-first-sample interview, and as we have just detailed, there is reason to believe that Amelia's descriptions were of much higher fidelity during her very-last-sample interview than they had been on her very-first-sample interview. These findings are all consistent with Hurlburt's (2011) proposal of using subjunctification density as an indicator of descriptive fidelity—that the higher the density (that is, a greater number of subjunctifiers per second), the lower the fidelity.

However, we also found that subjunctification density was not the only difference between interviews. The type and manner of subjunctifiers that Amelia used also dramatically changed between interviews and may provide even greater insight into Amelia's improvement: Nearly all Amelia's very-first-sample interview subjunctifiers signaled that she failed to apprehend her experience at-the-moment-of-the-beep (and thus undermined any possibility of describing experience). That is, most very-first-sample subjunctification was of the *phenomenon-not-apprehended* (PNA) type. By contrast, nearly all her very-last-sample interview subjunctifiers signaled that, whereas Amelia apprehended the phenomenon adequately, her description was not yet adequate. That is, most very-last-sample subjunctification was of the *description-falling-short* (DFS) type.

There were three types of PNA subjunctifiers that were common in Amelia's very-first-sample interview: softening expressions, causal inferences, and hedges. We provide examples of each.

Here is an example of softening expressions—an excerpt from the first conversational turn in Amelia's very-first-sample interview (all subjunctifiers are set in italics and with superscripts):

A^{1a}: ... So I thought, *like*¹, maybe I should call you...² text you...³ *like*⁴, there was some kind of problem...⁵ and then it just beeped.

In this turn, all subjunctifiers undermined any commitment to describing a particular experience. Each subjunctifier made whatever Amelia said generalized, non-specific, and approximated: for instance, the four subjunctifiers present in “so I thought, *like*¹, maybe I should call you...² text you...³ *like*⁴, there was some kind of problem” all denoted significant turns away from any consistent description of possible experience. Each subjunctifier-utterance pairing took the report in a completely different direction; the subjunctifiers signaled that what followed was interchangeable to each other, and that all that was said should be understood *within a manner of speaking*. This is in direct contrast to what is required to complete the DES task: to straightforwardly describe a specific, unambiguous moment of experience. Thus, we see how Amelia's use of softening expressions signaled Amelia's failure to have cleaved to experience-at-a-moment.

Another common PNA subjunctifier that Amelia used during her very-first-sample interview were causal inferences—inferences explaining Amelia's reports of experience. Here is an example (all subjunctifiers are set in italics and with superscripts):

A^{8a}: Yes. ‘Cause¹ this was taking really long. ‘Cause² I thought it was just, like³, taking half an hour, but that it would go all the way up to, like⁴, an hour. [RTH: Right] *Something like that*⁵.

Even if true, the two causal inferences Amelia provided (i.e., both instances of “‘cause”) explaining why her (potential) experience occurred were not at all descriptive of directly apprehended experience. Moreover, note that “*something like that*⁵” was a softening expression—like the softening expressions discussed in the previous paragraph, “*something like that*⁵” actively signaled that what was reported should not be understood as being descriptive of a particular experience, hence undermining any possibility of a high-fidelity description.

Amelia’s very-first-sample interview also involved hedges— statements that signal what is about to be said are speculations. Here is an example (all subjunctifiers are set in italics and with superscripts):

A^{10a}: *I think*¹ right at that moment, I was thinking of whether I should text...² Leslie or you guys.

The opening “*I think*¹” of the turn implied that all that followed was impressionistic or estimated, thus undermining the possibility that what is being said is to be descriptive of a specific moment of experience.

Thus, all the subjunctifiers in Amelia’s very-first-sample interview had the effect of signaling Amelia had failed to cleave to experience-at-a-moment-of-the-beep. All of her subjunctifiers lowered any possibility of describing specific experience, either by softening a report, by reporting causal inferences, or by hedging, warning that what is about to be said should not be taken as description. That is, all were PNA subjunctifiers.

By contrast, Amelia's subjunctifiers on her very-last-sample interview seemed to signal that she was working to refine the fidelity of her descriptions of experience-at-the-moment-of-the-beep (hence, DFS subjunctifiers, illustrating the description-falling-short label). The DFS subjunctifiers never undermined a commitment to describing a particular phenomena; because the subjunctifiers were nearly always immediately followed by descriptions of apprehendable phenomena (or at least the possibility thereof), they signaled that Amelia *was attempting to give a careful description of experience*. For example:

- In A^{5b}, Amelia provided a description of the relative prominence of her three simultaneously apprehended phenomena: "No, I think maybe like dry, forty percent, and then the rest were like thirty." Although highly subjunctified, Amelia in this turn is wholly constrained to describing her experience. Perhaps Amelia may not have perfect certainty or descriptive fidelity in describing the relative prominence of her experience, but her description is at least possibly descriptive of phenomena.
- In A^{11b}, Amelia used "like" to further clarify her description of eye-dryness: "No, they're just dry. Like they need eye drops." Here, "like" did not qualify what phenomena was present; it merely adjusted Amelia's experience of how the dryness was apprehended.
- In A^{20b}, Amelia described the order and arrangement of the rectangular blocks of color she saw: "Orange orange and then blue and then I don't remember the rest." Here, "I don't remember the rest" was a subjunctifier (an explicit expression of ignorance), but it was an expression of the limits of her memory; that is, it provided evidence of Amelia's improved ability to distinguish that which she apprehended

from what she did not, and thus improved the believability of the phenomena she did describe.

This is all not to suggest, however, that Amelia's very-last-sample interview was entirely consistent with high skill. In fact, Amelia used some PNA subjunctifiers in her very-last-sample interviews that potentially signaled (through her use of hedges and causal inferences) that she had failed to have apprehend her experience-at-a-moment. Here is an example (all subjunctifiers are set in italics and with superscripts):

A^{15b}: [Smiling] *I think¹ it must²* be the pressure. '*Cause³* it didn't feel like I was massaging my phone or, *like⁴*, actually feeling the texture.

Here, "*I think¹*" was a hedge indicating that what followed was speculative; "*it must²*" and "'*Cause³*" made up a causal inference in which she proposed a probable explanation for her experience (but did not describe the experience); and "*like⁴*" was a softening expression. All of these subjunctifiers mirrored the PNA subjunctifiers Amelia most frequently used in her very-first-sample interview; however, one notable difference in this turn is that, unlike her very-first-sample interview, Amelia's description was consonant with describing possible, at-a-moment experience. So, although it is possible that these subjunctifiers signaled Amelia's failure to cleave to a moment, they may have also been DFS subjunctifiers signaling that Amelia was trying (with difficulty) to describe experience.

Comparison: Very-First-Sample Subjunctification vs. Very-Last-Sample Subjunctification

Amelia's subjunctification improved across every manner between her very-last-interview and her very-first-sample interview. Her subjunctification density on her very-last-

sample was significantly and substantially lower than her subjunction density on her very-first-sample interview, and (where subjunctions were used at all) involved mostly DFS subjunctions that helped to refine the fidelity of her descriptions.

Amelia: Overall Conclusion

The goal of this chapter was to examine a single participant (in this case: Amelia) at the very start and the very end of her sampling process to assess any changes in her skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Amelia cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of her subjunctions.

The Very-First-Sample Interview: Did Amelia (Possibly) Describe Experience?

No. She cleaved neither to the moment nor experience, her interview involved a high density of PNA subjunctions that signaled her failure to have apprehended her experience-at-a-moment, and the average EMB rating for the interview was low.

The Very-Last-Sample Interview: Did Amelia Improve?

Yes. She appeared to cleave to experience-at-the-moment-of-the-beep, in which she described (simultaneous) feeling-the-phone, eye dryness, and rectangles of color. The very-last-sample interview involved a low density of subjunctions that were most commonly of the DFS type, signaling she successfully apprehended her experience but struggled to describe her experience. Therefore, the EMB ratings for the interview were almost eight times higher than for those of her very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample Interviews

Ultimately, we draw the following conclusion: whereas Amelia's very-first-sample interview could not possibly have been a high-fidelity description of experience (because she failed to cleave to any moment and failed to cleave to any experience), it is possible that Amelia's very-last-sample interview involved high-fidelity descriptions of experience (because she showed improvement in cleaving to a moment and in cleaving to experience). We cannot be certain whether or not fidelity was actually achieved, but Amelia's improvement in cleaving to the moment and to experience, and the change in the manner of her subjunctification, suggests at least the *possibility* that Amelia was apprehending at-the-moment experience in high-fidelity at the end of her sampling participation

Chapter 8: Results and Discussion for Shirley

Shirley had been an undergraduate subject pool volunteer in the methodological study. As part of her participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki—Shirley had consented to have her videotapes used in studies such as the present one. The present study therefore accessed her methodological-study videotapes and had no other contact with her.

Shirley had completed five days of natural environment DES sampling spread across a roughly two-week time span, with 16 days elapsing between her first-day interview and her last-day interview. She had collected a total of 26 samples: 3 samples in her first day, 6 samples in her second and third days, 5 samples in her fourth day, and 6 samples in her each during her fifth day.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Shirley's quantitative results are shown in Table 2. For Shirley, the very-first-sample interview was 759 s in total length, of which Shirley spoke for 328.5 s across 36 conversational turns. The very-last-sample interview was 262 s in total length, of which Shirley spoke for 227.5 s across 23 conversational turns. We divided Shirley's very-first-sample and very-last-sample interviews into 3-min intervals; there were four intervals in the very-first-sample interview and three intervals in the very-last-sample interview.

Table 2*Shirley: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	759	262							
Time spoken by participant (s) ^a	328.5	227.5							
Number of spoken turns	36	23							
Number of 3-min intervals	4	3							
Total Subjunctification Count ^a	106.5	33							
Total Subjunctification Density ^{a,b}	0.32 (<i>SD</i> = 0.02)	0.15 (<i>SD</i> = 0.04)	.73	5	.061	-7.52	5	< .001	6.13
PNA Subjunctification Density ^{a,b}	0.17 (<i>SD</i> = 0.07)	0.01 (<i>SD</i> = 0.01)	.60	5	.157	-4.28	5	.008	3.01
UTC Subjunctification Density ^{a,b}	0.10 (<i>SD</i> = 0.03)	0.03 (<i>SD</i> = 0.01)	.48	5	.279	-3.19	5	.024	2.80
DFS Subjunctification Density ^{a,b}	0.05 (<i>SD</i> = 0.04)	0.11 (<i>SD</i> = 0.04)	.31	5	.498	2.48	5	.056	1.43
Number of turns with EMB ratings	15	13							
Average EMB Rating ^c	1.33 ^d (<i>SD</i> = 0.99)	9.10 (<i>SD</i> = 0.90)	.93	26	< .001	21.48	26	< .001	8.14

Note. EMB = Experience at the moment of the beep; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

^a Averaged across the two raters.

^b Density is subjunctification count divided by time spoken by participant (subjunctifiers per s).

^c Average EMB ratings across the two raters for all rated turns of the interview.

^d Includes non-annotated turns given EMB ratings ($S^{35a} - S^{77a}$). If non-annotated turns are excluded, then there are six rated turns from the very-first-sample interview and 13 rated turns from the very-last-sample interview. The results are very similar and remain statistically significant ($t(17) = 20.20, p < .001, d = 9.97$).

Rows 5 through 9 of Table 2 analyze Shirley's subjunctifiers. Row 5 displays the total count of Shirley's subjunctifiers in her very-first- and very-last-sample interviews (averaged

across both raters), and row 6 displays the total subjunctification density (row 5 divided by row 2) and changes to the overall subjunctification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctifiers: phenomena-not-apprehended (PNA) subjunctifiers, unable-to-classify (UTC) subjunctifiers, and description-falling-short (DFS) subjunctifiers.

Specifically, the four right-hand columns of rows 7 through 9 in Table 2 show that Shirley's subjunctification changed significantly and substantially between her very-first- and very-last-sample interviews. We found that Shirley's total subjunctification density significantly decreased from the very-first-sample interview ($M = 0.32$ subjunctifiers per second) to the very-last-sample interview ($M = 0.15$ subjunctifiers per second) with a huge ($d = 6.13$) effect size; we similarly found that Shirley's PNA (and UTC⁶) subjunctification density significantly decreased from the very-first-sample interview ($M = 0.17$ subjunctifiers per second) to the very-last-sample interview ($M = 0.01$ subjunctifiers per second) with a huge ($d = 3.01$) effect size. By contrast, her DFS subjunctification density *increased* from the very-first-sample interview ($M = 0.05$ subjunctifiers per second) to the very-last-sample interview ($M = 0.11$ subjunctifiers per second) with a substantial ($d = 1.43$) effect size, but this change was not significant due to the small degrees of freedom. All these changes are consistent with a consequential improvement in Shirley's skill in apprehending and describing experience: Whereas Shirley's very-first-sample interview involved a high density of subjunctifiers (mostly PNA), her very-last-sample interview

⁶ Although UTC subjunctification density also significantly decreased from the very-first-sample interview ($M = 0.10$ subjunctifiers per second) to the very-last-sample interview ($M = .03$ subjunctifiers per second) with a huge ($d = 2.80$) effect size, UTC subjunctifiers, as their name implies, merely represent subjunctifiers that could not easily be classified as a PNA or DFS-type subjunctifier; as such, they do not provide insight into the possible fidelity of a participant's report and are not germane to the overall argument.

involved a low density of subjunctifiers (mostly DFS), suggesting that she learned to apprehend phenomena but struggled to find the words to describe them adequately.

Rows 10 and 11 of Table 2 analyze EMB ratings for Shirley's sample interviews, counting them in row 10 and, in row 11, showing the average EMB rating. We found that Shirley's average EMB rating significantly increased from the very-first-sample interview ($M = 1.33$) to the very-last-sample interview ($M = 9.10$) with a huge ($d = 8.14$) effect size, suggesting an extremely great improvement in Shirley's cleaving-to-a-moment and cleaving-to-experience.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Shirley's very-first-sample and very-last-sample interviews are provided in Appendixes C and D, respectively. There, each annotation includes analysis detailing the extent to which Shirley (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctifiers in that turn. Here, we summarize those results.

Experience at the Moment of the Beep

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. (Successfully) cleaving to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended experience. We now review the extent to which Shirley demonstrated moment- and experience-cleaving skill at the very start and very end of her DES sampling participation.

Very-First-Sample Interview

(Lack of) Cleaving to the Moment. Shirley did not cleave to any specific moment during her very-first-sample interview. Instead, Shirley talked about the wrong moment or long (or ambiguous) time-periods that were not about any specific time. We provide examples of each.

At the earliest conversational turns of the very-first-sample interview, Shirley demonstrated her failure to cleave to experience:

LLC^{1a}: All right, so... what, if anything, was in your experience at the moment of the first beep?

S^{2a}: Um, I was scared. [Laughs]

LLC^{3a}: Okay.

S^{4a}: I didn't know what was—I forgot that, um, I put the beeper on, so I was really startled. Um...

If Shirley's S^{2a} and S^{4a} turns involved a moment at all, the moment occurred *after* the beep's onset. Specifically, "I forgot that, um, I put the beeper on, so I was really startled" was an explicit statement about Shirley's reaction to the beep. DES is only interested in the moment *before* the beep's onset.

Here is another turn from Shirley's very-first-sample interview, where she talked about a long time-period after being asked by a DES investigator what had been in her experience at the moment of the beep:

S^{6a}: Oh! Um... I was taking my psychology test online.

Although what she said in this turn was more specific than in her previous turns (S^{2a} and S^{4a}), it referred to period that was several or many minutes in duration.

Another example of Shirley's references to a long time-period came at a later turn in the very-first-sample interview:

S^{10a}: Uh, the anxious—the anxious part [was most of my experience]. ‘Cause I really need that good grade. [Laughs] Um... I remember right before I was, I was—we were doing the independent and dependent variables, and I wasn't, um... I wasn't sure what was the answer for what was the dependent variable [LLC: Mmm]. But like, it was interesting cuz, like, right after, like, the beep and I wrote and then I looked back at the question, I kinda, like, I don't know, cleared my mind for a second and then got the answer.

Here, Shirley indiscriminately talked about a long time-period, reporting on things that occurred both before and after the beep's onset. For instance, “I remember right before I was, I was—we were doing the independent and dependent variables” was about something before the beep, and “right after... the beep... I looked back at the question and I... cleared my mind for a second and then got the answer” detailed a process that occurred after the beep. Although one could quibble about the precise timing of the different components Shirley discussed in turn S^{10a} (perhaps Shirley referred to two seconds before and after the beep; perhaps shorter, perhaps longer), the exact timing does not matter as the conclusion remains the same: Shirley failed to cleave to the moment just before beep onset.

These excerpts are all illustrative of one simple conclusion: Shirley did not cleave to *any* moment during any part of her very-first-sample interview. Thus, she could not have been cleaving to the *specific* moment of interest within DES—the last undisturbed moment at the leading edge of the beep's onset.

(Lack of) Cleaving to Directly Apprehended Experience. By definition, an inner experience is a phenomenon that is present at a specific moment. Because, as we just reviewed, Shirley's very-first-sample interview never focused on any specific moment, her very-first-sample interview could not have described any genuine inner experience(s). Instead, Shirley provided ersatz descriptions (talk that appears to describe phenomena, but in actuality are talk of non-phenomenal things), primarily of context and behavior. We provide examples of each.

We return to Shirley's initial conversational turn of the very-first-sample interview, in which Shirley provided an ersatz description of context:

S^{6a}: Oh! Um... I was taking my psychology test online.

Here, Shirley did not differentiate between facts-of-reality and directly apprehended experience. Even if this turn was an accurate statement about what Shirley had been doing at the moment of the beep, it is in no way descriptive of directly apprehended phenomena.

Even in turns where Shirley may have described directly apprehended experience, she failed to unambiguously make distinctions between experience and additional ersatz descriptions:

S^{10a}: Um, the anxious—the anxious part, most of me. 'Cause I really need that good grade. [Laughs] Um... I remember right before I was, I was—we were doing the independent and dependent variables, and I wasn't, um... I wasn't sure what was the answer for what was the dependent variable [LLC: Mmm]. But like, it was interesting cuz, like, right after, like, the beep and I wrote and then I looked back at the question, I kinda, like, I don't know, cleared my mind for a second and then got the answer.

Except for talk about “the anxious part of me” (potentially a low fidelity description of possible experience), everything else in this turn were ersatz descriptions of context and content: Shirley

talked about what the nature of the quiz questions (independent and dependent variables), about how she did not know the answer, and about what occurred after the beep's onset. All of Shirley's talk—while descriptive of *something*—was *not at all* descriptive of directly apprehended experience.

Although S^{6a} and S^{10a} represent only two specific turns of Shirley's very-first-sample interview, most (if not all) of her other very-first-sample turns are similar in nature, such that they all include undifferentiated talk of context, the content and topics of thought, facts-of-reality, and (potential) kernels of experience.

The examples above are all illustrative of one simple conclusion: Shirley did not cleave to directly apprehended experience during her very-first-sample interview.

Very-First-Sample Interview: Conclusions. Overall, we see that Shirley failed to cleave to any moment and failed to cleave to directly apprehended experience during her very-first-sample interview. We conclude that Shirley's utterances in her very-first-sample interview had a near-zero possibility of any descriptive fidelity because she failed to grasp a particular moment of experience and failed to differentiate phenomena from all else.

Very-Last-Sample Interview

Whereas Shirley's very-first-sample interview did not describe at-a-moment experience, Shirley's very-last-sample interview very likely described at-a-moment experience. This was evidenced by Shirley's improved ability to cleave both to a specific moment and to directly apprehended experience.

Shirley's (improved) temporal and experiential specificity was evident from the initial turn of the very-las-sample interview:

S^{2b}: Number six... um... So, right before the beep, I was think—I was mentally doing math. Of... a hundred times... [laughs] a hundred times one, in my head. Which is one hundred. But [laughs], at that beep, um, it was... a mental thing of... multiplying that hundred times one. And... that feeling of, like, I know the answer *is* a hundred. Is there.

First, let us consider whether Shirley cleaved to a specific moment. Although she began the turn with describing context (“I was mentally doing math... a hundred times one, in my head”), she did not appear to conflate that context with her experience-at-the-moment-of-the-beep, nor did she appear to conflate the moment of the beep with temporally nearby moments. Rather, she explicitly acknowledged and differentiated context from experience caught in flight by beep; “so, right before the beep” and “but at that beep” illustrated her understanding that (a) the moment of interest in DES is very specific, and (b) that she had seemingly apprehended and could recall a discrete and known moment (while setting all other moments aside). Second, let us consider whether Shirley cleaved to directly apprehended experience in S^{2b}. Setting aside the parts of the turn where she explicitly talked about context, she appeared to constrain her description to two directly apprehended, preset-at-the-moment-of-the-beep phenomena: a mental multiplication and a feeling of knowing⁷.

Throughout the remainder of her very-last-sample interview, Shirley appeared consistent in describing the same moment of mental multiplication and a feeling of knowing that she described in S^{2b}. For example:

- In S^{4b}, she essentially provided the same description of a directly apprehended mental-multiplication and feeling-of-knowing: “At that beep, it was... a hundred

⁷ We note that—despite Shirley’s apparent ability to cleave to experience-at-a-moment, S^{2b} had a high subjunctification density; we will further discuss Shirley’s subjunctification in the next section.

- times one, but, the feeling of knowing the answer is a hundred.” This consistency suggests that she was describing a discrete, known moment of experience.
- In S^{15b} and S^{17b}, Shirley provided more details on how the mental math had been present to her as an apparent inner seeing: “The... so, in my head, the, the problem was a hundred times one... And then the equal sign.” This again appeared to describe the mental-multiplication and feeling-of-knowing that Shirley first described in S^{2b}, but now included a seemingly higher-fidelity description of the apprehended phenomena.
 - In S^{21b}, Shirley described the details of her inner seeing, stating, “Yeah, it was, it was... like, literally a hundred and then x one equals [draws out the equation in front of her with her right index finger]. And it was... it was white in bold. And the background was... [quizzically grimaces] it wasn’t black, but it was... black.” Of particular note were the notable differences in descriptive fidelity across this turn. Certain aspects of her inner seeing (such as which numbers and symbols were present, their color, and their orientation) were described clearly, straightforwardly, and with little subjunctification. However, other aspects of her inner seeing (such as the color of the background) caused Shirley significant difficulty as demonstrated by her increased subjunctification and behavioral changes captured on videotape (e.g., quizzical grimacing, strained facial expressions). This strain appeared to be centered more on her communicative difficulty (i.e., Shirley’s inability to find the words to describe her experience faithfully) rather than an apprehension problem (i.e., a failure to have apprehended the phenomenon. Nothing that Shirley said in S^{21b} decreased the believability that a particular phenomenon had been present; Shirley’s talk merely

appeared to signal that describing the background as “black” failed to describe her experience with fidelity).

- In S^{23b}, Shirley appeared to describe the same inner seeing as in S^{21b} and likewise continued to struggle to describe the background of her inner seeing. Shirley was entirely aimed at describing the *black*⁸ background *in spite* of her struggle in doing so, “Yes, it was [a different kind of black]... there was... it wasn’t a very strong or intense black. But the white was... the white of the numbers were intense and it was clear. But the background was... like, yeah, a different type of black.”

Again, we note that Shirley appeared to describe the same mental multiplication and a feeling of knowing in a manner that was consistent, temporally specific, and entirely descriptive of phenomena to the exclusion of all else across multiple turns of her very-last-sample interview. Taken together, Shirley’s steadfast commitment to describing experience (despite her obvious struggle in doing so) throughout her very-last-sample interview strongly signal that she was describing a discrete moment of experience.

⁸ A significant limitation of any transcript is that it does not capture body language, facial expressions, and other nonverbal aspects. In the interview, particularly in S^{21b} and S^{23b}, Shirley appeared strained and sometimes anguished in her responses; it was not merely that Shirley used subjunctifiers in her descriptions, but that she used subjunctifiers while also exhibiting grimaces, starts and stops, a furrowed brow, and looks of frustration. Our perspective is that Shirley’s worded and unworded struggle in S^{21b} and S^{23b} was indicative of Shirley’s endeavor to communicate something important (specifically, that being the characteristics of the *black* background). That Shirley stumbled, made numerous attempts at describing the *black* background, and appeared to strive forward yet remain thwarted in her descriptions was an indication that Shirley was steadfast in describing her experience *despite* the serious challenges that make describing inner experience difficult (e.g., the lack of differentiated vocabulary available to describe difficult-to-word experiences). Moreover, what makes Shirley’s faithfulness compelling is that it represents a challenge of Shirley on Shirley’s terms: It was Shirley (and Shirley alone; *not* the DES investigators) who first mentioned the background of her inner seeing, and it was Shirley (and Shirley alone) who attempted to describe what she saw of the background. In other words, the fact that Shirley went ahead to describe the background *despite the fact* that doing so would invoke “trouble” (because the background was difficult, or impossible, to put into words) signals to us that Shirley was completely devoted to the DES task: to describe her at-the-moment experience in the face of the many “troubles” that imperil that task.

Very-Last-Sample Interview: Conclusions. Overall, we see that Shirley appeared to cleave to a moment and to experience in her very-last-sample interview. We conclude that Shirley's descriptions had the probability (or at least the possibility) of describing with fidelity a moment of experience (perhaps most likely the experience at the beep).

Comparison: Very-First-Sample Qualitative Characteristics vs. Very-Last-Sample Qualitative Characteristics

We have seen that, in her very-first-sample interview, Shirley did not describe any particular moment and did not describe experience. By contrast, Shirley's very-last-sample interview was constrained to a relatively specific time and was mostly limited to describing experience. We conclude that Shirley's very-last-sample interview was *very different from* her very-first-sample interview. Whereas in the very-first interview, she could not possibly have been describing an experience that was directly apprehended at the moment of the beep with any level of fidelity, in the very-last sample she (at least) might have been describing an experience that was directly apprehended at the moment of the beep.

Subjunctification

Previously in Shirley's Quantitative Results and Discussion, we saw that Shirley's subjunctification density significantly decreased between her very-last-sample interview and her very-first-sample interview, and as we have just detailed, there is reason to believe that Shirley's descriptions were of much higher fidelity during her very-last-sample interview than they had been on her very-first-sample interview.

However, we also found that subjunctification density was not the only difference between interviews. The type and manner of subjunctifiers that Shirley used substantially changed between interviews and may provide even greater insight into Shirley's improvement:

Nearly all Shirley's very-first-sample interview subjunctionifiers signaled that she failed to apprehend her experience at-the-moment-of-the-beep (and thus undermined any possibility of describing experience). That is, most very-first-sample subjunctionification was of the *phenomenon-not-apprehended* (PNA) type. By contrast, nearly all her very-last-sample interview subjunctionifiers signaled that, whereas Shirley apprehended the phenomenon adequately, her description was not yet adequate. That is, most very-last-sample subjunctionification was of the *description-falling-short* (DFS) type.

There were three types of PNA subjunctionifiers that were common in Shirley's very-first-sample interview: causal inferences, intentional expressions, and softening expressions. We provide examples of each.

One of most common PNA subjunctionifier that Shirley used in her very-first-sample interview were causal inferences. Here are two examples, with the causal inference subjunctionifiers italicized for emphasis:

- In S^{10a}, "Um, the anxious—the anxious part, most of me. *'Cause I really need that good grade.*"
- In S^{19a}, "I was trying to remember from lecture classes. Um, what was the dependent-independent variable *because we did an activity on, um, on what it was and how, like, to differentiate between the two.*"

The italicized portions of Shirley's turns are explanations of *why* something occurred rather than descriptions of *what* had occurred. Moreover, causal inferences not only thwart the description apprehended experience, but they are also are known to be particularly difficult for people to perform readily and accurately (that was the main thesis of Nisbett and Wilson's (1977) well known paper).

Another common PNA subunctifier in Shirley's very-first-sample interview were intentional expressions. An intentional expression is a specific type of contextual statement: an utterance that communicates a person's intent for their behavior or experience. Here is an example (all subunctifiers are set in italics and with superscripts):

S^{19a}: I was *trying to*¹ remember from lecture classes. *Um*², what was the dependent-independent variable *because*³ we did an activity on, *um*⁴, on what it was and how, *like*⁵, to differentiate between the two. And *I was trying to*⁶ take that example and apply it to this problem.

Here, the two instances of “trying to” communicates the *intent* behind Shirley's behavior but does *not* describe anything that was directly apprehended. As noted by Hurlburt (2011), “‘I was trying to see an image’ means, or at least may mean, ‘I was not seeing an image’” (p. 117).

One other common PNA subunctifier in Shirley's very-first-sample interview were softening expressions (i.e., statements, utterances, and expressions that led away from describing experience-at-a-moment). Here is an example (all subunctifiers are set in italics and with superscripts):

S^{23a}: *Um*¹...² I was still *kinda*³ thinking about the, *well*⁴, writing in, *like*⁵, jotting it down. *Tryna to*⁶ *like*⁷, clear my thoughts on, *like*⁸, this, *like*⁹—¹⁰ a dependent variable is this and independent variable was this. Yeah. [*Laughs*¹¹]

Each subunctifier in this turn (except for “tryna to,” which is an intentional expression) approximated all that Shirley talked about in a way that significantly limited any possibility that Shirley was describing a specific experience with fidelity. Shirley provided at least three possible descriptions of experience: I was thinking about something, I was writing something, I was clearing my thoughts. However, these descriptions referred to three very different experiences—

they were not descriptive of a specific experience-at-a-moment. Moreover, the softening subjunctifiers amplified the lack of fidelity about what Shirley reported on: “*kinda*”³ implied that the possible description of “thinking” should not be understood straightforwardly. In short: every subjunctifier in S^{23a} (and other instances of softening expressions throughout Shirley’s very-first-sample interview) undermined a commitment to a particularized experience.

Thus, all the subjunctifiers in Shirley’s very-first-sample interview had the effect of signaling Shirley had failed to cleave to experience-at-a-moment-of-the-beep. All of her subjunctifiers lowered any possibility of describing specific experience, either because they involved explanations of intention, by reporting causal inferences, or by softening a report. That is, all were PNA subjunctifiers.

By contrast, Shirley’s subjunctifiers on her very-last-sample interview seemed to signal that she was working to refine the fidelity of her descriptions of experience-at-the-moment-of-the-beep (hence the DFS label). The DFS subjunctifiers never undermined a commitment to describing a particular phenomena; because the subjunctifiers were nearly always immediately followed by descriptions of apprehendable phenomena (or at least the possibility thereof), they signal that Shirley *was attempting to give a careful description of experience*. A striking example of Shirley’s use of DFS subjunctifiers came in S^{21b} and S^{23b}, where Shirley appeared to know what her at-the-moment experience was but had difficulty putting her experience into words; set in italics and with superscripts:

S^{21b}: And the background was...¹ [*quizzically grimaces*²] it wasn’t black, but it was...³
black. [*Laughs*⁴]

RTH^{22b}: A different kind of black.

S^{23b}: Yes, it was...⁵ there was...⁶ it wasn't a very strong or intense black. But the white was...⁷ the white of the numbers were intense and it was clear. But the background was...⁸ *like*⁹, yeah, a different type of black.

In S^{21b}, Shirley used subjunctifiers to signal her difficulty in describing blackness, *not* her failure to have apprehended the blackness in the first place. That is, her subjunctifiers reflected a genuine characteristic of Shirley's inner seeing (that the background was *something like, but not entirely* black). This is corroborated by her continued description in S^{23b}; notably, Shirley was able to straightforwardly describe those aspects of her inner experience that were (apparently) clearly apprehended and easily describable (e.g., "the white of the numbers were intense and it was clear"), but struggled to adequately describe the background that had been "a different kind of black." That Shirley used subjunctifiers did *not* diminish the fact that she was tightly constraining her descriptions to (known, but difficult to describe) directly apprehended experience. In other words, Shirley's steadfast commitment to phenomenal-talk that was consistent of the same phenomena indicates her use of DFS subjunctifiers.

Comparison: Very-First-Sample Subjunctification vs. Very-Last-Sample Subjunctification

Shirley's subjunctification improved across every manner between her very-last-interview and her very-first-sample interview. Her subjunctification density on her very-last-sample was significantly lower than her very-first-sample interview, and involved mostly DFS subjunctifiers that helped to refine the fidelity of her descriptions.

Shirley: Overall Conclusion

The goal of this chapter was to examine a single participant (in this case: Shirley) at the very start and the very end of her sampling process to assess any changes in her skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment

of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Shirley cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of her subjunctifiers.

The Very-First-Sample Interview: Did Shirley (Possibly) Describe Experience?

No. She cleaved neither to the moment nor experience, her interview involved a high density of PNA subjunctifiers that signaled her failure to have apprehended her experience-at-a-moment, and the average EMB rating for the interview was low.

The Very-Last-Sample Interview: Did Shirley Improve?

Yes. She appeared to cleave to experience-at-the-moment-of-the-beep, in which she described a (simultaneous) inner-seeing-of-a-math-problem-and-recognition-of-the-answer. The very-last-sample interview involved a significantly lower density of PNA subjunctifiers in comparison to her very-first-sample interview. The subjunctifiers she did use were mostly of the DFS type, signaling she successfully apprehended her experience but struggled to describe her experience. Shirley's subjunctification differed both quantitatively and qualitatively between interviews, suggesting that her very-last-sample interview was more consistent than her very-first-sample-interview in describing directly apprehended phenomena present at-a-moment. Shirley's substantial improvement in her ability to cleave to experience at-a-moment was similarly reflected in the average very-last-sample EMB ratings—they were almost seven times higher than for those of her very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample

Ultimately, we draw the following conclusion: whereas Shirley's very-first-sample interview could not possibly have been a high-fidelity description of experience (because she failed to cleave to any moment and failed to cleave to any experience), it is possible that

Shirley's very-last-sample interview involved high-fidelity descriptions of experience (because she showed improvement in cleaving to a moment and in cleaving to experience). We cannot be certain whether or not fidelity was actually achieved, but Shirley's improvement in cleaving to the moment and to experience, and the change in the manner of her subjunctification, suggests at least the *possibility* that Shirley was apprehending at-the-moment experience in high-fidelity at the end of her sampling participation.

Chapter 9: Results and Discussion for Kayla

Kayla had been an undergraduate subject pool volunteer in the methodological study. As part of her participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki—Kayla had consented to have her videotapes used in studies such as the present one. The present study therefore accessed her methodological-study videotapes and had no other contact with her.

Kayla completed five days of natural environment DES sampling, with 14 days elapsing between her first-day interview and her last-day interview. She had collected a total of 23 samples: 4 samples in her first day, 5 samples in her second day, 4 samples in her third day, 6 samples in her fourth day, and 4 samples in her fifth day.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Kayla's quantitative results are shown in Table 3. Kayla's very-first-sample interview was 470 s in total length, of which she spoke for 165 s across 16 conversational turns. Her very-last-sample interview was 711 s in total length, of which she spoke for 346 s across 40 conversational turns. We divided her very-first-sample and very-last-sample interviews into 3-min intervals; there were three intervals in the very-first-sample interview and four intervals in the very-last-sample interview.

Table 3*Kayla: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	470	711							
Time spoken by participant (s) ^a	165	346							
Number of spoken turns	16	40							
Number of 3-min intervals	3	4							
Total Subjunctification Count ^a	97	185							
Total Subjunctification Density ^{a,b}	0.59 (<i>SD</i> = 0.11)	0.52 (<i>SD</i> = 0.06)	.44	5	.074	−0.56	5	.616	0.88
PNA Subjunctification Density ^{a,b}	0.53 (<i>SD</i> = 0.11)	0.13 (<i>SD</i> = 0.09)	.71	5	.631	−4.76	5	.005	4.18
UTC Subjunctification Density ^{a,b}	0.06 (<i>SD</i> = 0.02)	0.16 (<i>SD</i> = 0.03)	.22	5	.003	−5.69	5	.002	4.13
DFS Subjunctification Density ^{a,b}	0.00 (<i>SD</i> = 0.00)	0.23 (<i>SD</i> = 0.13)	.92	5	.328	2.69	5	.043	2.24
Number of turns with EMB ratings	12	21							
Average EMB Rating ^c	0.52 (<i>SD</i> = .42)	6.31 (<i>SD</i> = 1.82)	.88	31	< .001	10.80	31	< .001	3.91

Note. EMB = Experience at the moment of the beep; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

^a Averaged across the two raters.

^b Density is subjunctification count divided by time spoken by participant (subjunctifiers per s).

^c Average EMB ratings across the two raters for all rated turns of the interview.

Rows 5 through 9 of Table 3 analyze Kayla's subjunctifiers. Row 5 displays the total count of Kayla's subjunctifiers in her very-first- and very-last-sample interviews (averaged

across both raters) and row 6 displays the total subjunctification density (row 5 divided by row 2) and changes to the overall subjunctification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctifiers: phenomena-not-apprehended (PNA) subjunctifiers, unable-to-classify (UTC) subjunctifiers, and description-falling-short (DFS) subjunctifiers

Specifically, the four right-hand columns of rows 7 through 9 in Table 3 show that Kayla's subjunctification changed significantly and substantially between her very-first- and very-last-sample interviews. We found that Kayla's total subjunctification density decreased from the very-first-sample interview ($M = 0.59$ subjunctifiers per second) to the very-last-sample interview ($M = 0.52$ subjunctifiers per second) with a somewhat large ($d = 0.88$) effect size, but this change was not significant due to the small degrees of freedom. PNA (and UTC⁹) subjunctification density significantly decreased from the very-first-sample interview ($M = 0.53$ subjunctifiers per second) to the very-last-sample interview ($M = 0.13$ subjunctifiers per second) with a huge ($d = 4.18$) effect size. By contrast, DFS subjunctifiers significantly *increased* from the very-first-sample interview ($M = 0.00$ subjunctifiers per second) to the very-last-sample interview ($M = 0.23$ subjunctifiers per second) with a huge ($d = 2.24$) effect size. All these changes are consistent with a consequential improvement in Kayla's skill in apprehending and describing experience. Although Kayla's total subjunctification density changed in moderate (but not statistically significant) ways between the very-first-sample and very-last-sample interview, the type of subjunctifiers present in each interview changed dramatically: Whereas Kayla's very-first-sample interview involved a high density of mostly PNA subjunctifiers (and a very low

⁹ Although UTC subjunctification density also significantly decreased from the very-first-sample interview ($M = 0.06$) to the very-last-sample interview ($M = 0.16$) with a huge ($d = 4.18$) effect size, UTC subjunctifiers, as their name implies, merely represent subjunctifiers that could not easily be classified as a PNA or DFS-type subjunctifier; as such, they do not provide insight into the possible fidelity of a participant's report.

density of DFS subjunctionifiers), her very-last-sample interview involved a high density of mostly DFS subjunctionifiers (and a low density of PNA subjunctionifiers), suggesting that she learned to apprehend phenomena but struggled to find the words to describe them adequately.

Rows 10 and 11 of Table 3 analyze EMB ratings for Kayla's sample interviews, counting them in the row 10 and, in the row 11, showing the average EMB rating. We found that Kayla's average EMB rating significantly increased from the very-first-sample interview ($M = 0.52$) to the very-last-sample interview ($M = 6.31$) with a huge ($d = 3.91$) effect size, suggesting an extremely great improvement in Kayla's cleaving-to-a-moment and cleaving-to-experience skill.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Kayla's very-first-sample and very-last-sample interviews are provided in Appendixes E and F, respectively. There, each annotation includes analysis detailing the extent to which Kayla (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctionifiers in that turn. Here, we summarize those results.

Experience at the Moment of the Beep

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. (Successfully) cleaving to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended experience. We now review the extent to which Kayla demonstrated moment- and experience-cleaving skill at the very start and very end of her DES sampling participation.

Very-First-Sample Interview

(Lack of) Cleaving to the Moment. Kayla did not cleave to any specific moment during her very-first-sample interview. Instead, she spoke entirely of relatively long time-periods or made statements that were not about any specific time. We provide examples of each.

K^{2a}: All right. Uh, so... I was, like, I wasn't really feeling anything too much... like, you know. Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else. [Laughs] But um... yeah... uh... I was, I was, like, I guess I felt—like, physically I felt tired. Like, uh... I've been up since like 5:30 in the morning, um... and I did some exercises in the, in the gym that morning as well... and I had a long day. [Laughs] So I have three classes... um, and... my... I had a midterm in one of the classes, so that didn't help. [LLC: Yeah] So yeah.

Here, Kayla reported that the beep had occurred while she and her mother had been making tuna sandwiches—this was talk about a long time-period, not a moment. When Kayla appeared to refer to a more specific moment (that the beep sounded when Kayla “just put... the bread to toast”), putting the “bread to toast” still refers to a relatively long time-period (e.g., placing the bread into the toaster? Adjusting the toaster's settings? Initiating the toaster to begin toasting?). Furthermore, when Kayla reviewed what she had done that day (“I've been up since like 5:30 in the morning... I did some exercises... I have three classes”), these statements provided context or interpretation, not about any specific time.

Here is an example from a later turn of the very-first interview:

K^{4a}: Um... the main thing was just, like, we were, like, we were, like, actually in the middle of making [tuna sandwiches] when [the beeper] went off. So then, um, that was just like, uh... that was the thing that, that, that, uh, we were doing at that moment, so—

Kayla's statement that she was "actually in the middle of making [tuna sandwiches] when [the beeper] went off" referred to a long time-period—a several- or many-minutes long process of making sandwiches. This was not a description of a moment.

Another later-turn example:

K^{18a}: And, oh! Actually, I just remembered, I think I had also gotten a plate for that, for that toast so that, like, whenever, whenever it was ready I could just put it on the plate. This turn involved talk about a general statement of facts (i.e., that she had gotten a plate) and inferred intentional expressions (i.e., her expressed intent explaining why she had gotten a plate); nothing that Kayla said was about any specific time.

These excerpts are all illustrative of one simple conclusion: Kayla did not cleave to *any* moment during any part of her very-first-sample interview. Thus, she could not have been cleaving to the *specific* moment of interest within DES—the last undisturbed moment at the leading edge of the beep's onset.

(Lack of) Cleaving to Directly Apprehended Experience. By definition, an inner experience is a phenomenon that is present at a specific moment. Because, as we just reviewed, Kayla's very-first-sample interview never focused on any specific moment, her very-first-sample interview could not have described any genuine inner experience(s). Instead, Kayla spoke of context and behavior. We provide examples of each.

K^{2a}: All right. Uh, so... I was, like, I wasn't really feeling anything too much... like, you know. Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else. [Laughs] But um... yeah... uh... I was, I was, like, I guess I felt—like, physically I felt tired. Like, uh... I've been up since like 5:30 in the morning, um... and I did some

exercises in the, in the gym that morning as well... and I had a long day. [Laughs] So I have three classes... um, and... my... I had a midterm in one of the classes, so that didn't help. [LLC: Yeah] So yeah.

"I've been up since like 5:30 in the morning...and I had a long day" was about context, not experience. "Physically, I felt tired" may have been a description of experience, but it may have also been a statement of context rather than experience—an introduction to the day's events. Everything else Kayla said was about behavior—things she had done. "When [the beep] went off... my mom and I were making... tuna sandwiches, so I really just put... the bread to toast" was a report of actions Kayla had performed around the moment of the beep, and "I've been up since like 5:30 in the morning... I [had] three classes... I had a midterm in one of the classes" was a long list of actions Kayla had performed throughout the day. Reports about behavior are not descriptive of directly apprehended phenomena.

Here is another example:

K^{6a}: ... I think I had put in the second, uh, set of, like, uh, bread, 'cause like, you know, two tuna sandwiches. I think I put the second one in like uh right before the beep went off. [Quizzically casts eyes upwards; pauses] Yeah, I did. And then, um... yeah. Yeah, that's what I did.

"I had put in the second" was a characterization of context rather than a description of directly apprehended experience.

Notably, even when Kayla was pressed by DES investigators to describe what had been present to her, she continued to talk only about her behavior. For example:

RTH^{25a}: ... so the question is what is in your experience right at the moment when the beep goes off?

K^{26a}: [Pauses] I wanna say I was turning away from the thing? I'm not sure on that.

Consistent with Kayla's reports in all other turns, "I wanna say I was turning away from the thing" was a statement about behavior, and not a description of experience.

The examples above are all illustrative of one simple conclusion: Kayla did not cleave to directly apprehended experience during her very-first-sample interview, instead talking primarily about context and behavior.

Very-First-Sample Interview: Conclusions. Overall, we see that Kayla failed to cleave to any moment and failed to cleave to directly apprehended experience during her very-first-sample interview. We conclude that Kayla's utterances in her very-first-sample interview had a near-zero possibility of any descriptive fidelity because she failed to grasp a particular moment of experience.

Very-Last-Sample Interview

Kayla's very-last-sample interview was consistent with cleaving to directly apprehended experience that occurred at a specific moment. Since the high-fidelity apprehension and description of experience must involve the simultaneous presence of cleaving to a moment and to directly apprehended experience, we are unable to separate our analysis of Kayla's very-last-sample cleaving abilities as independent processes. Therefore, we will review examples from Kayla's very-last-sample interview and examine whether she did simultaneously cleave to a moment and cleave to experience.

Here is Kayla's very first turn from her very-last-sample interview:

K^{2b}: So six, um... I, I decided to do neither of those things and, um, uh—I decided to, like, uh, um... 'cause I, I play piano, like, sometimes. So, I, I have a keyboard in my room and, um... so, I was reading the sheet music on that. Uh, I, I think I printed it out,

like, a few days ago, and I was reading, uh... um... I think it was the third or fourth measure. Um... and I was specifically focused on, like, the left hand, like, trying to figure out, like, how it should sound and like, how to play, how to exactly play it. ‘Cause, like, in that specific measure the right hand and the left hand kind of... kind of are jumbled together. [Laughs] So I was trying to figure out how I would exactly play that.

First, let us consider whether Kayla cleaved to a specific moment. She began the turn describing context (e.g., “I have a keyboard in my room”)—neither cleaving to a moment nor to experience. However, she soon specified a brief, temporally-specific moment: “the third or fourth measure.” Thereafter her description was constrained to those same few seconds. Second, let us consider whether Kayla cleaved to experience. She described experiencing something about her left hand: “I was specifically focused on, like, the left hand, like, trying to figure out, like, how it should sound and like, how to play, how to exactly play it.” Although heavily subjunctified (we will discuss Kayla’s subjunctification in the next section), included in Kayla’s description is the possibility of directly apprehended phenomena. Thus, Kayla’s first turn of the very-last-sample, after a brief statement of context, was a relatively straightforward description of experience at a relatively specific time.

Throughout the remainder of her very-last-sample interview, Kayla appeared consistent in describing the same moment of figuring-out-how-the-piano-should-sound experience that she described in K^{2b}. For example, in K^{4b}, Kayla said:

K^{4b}: “Um... it’s... so, I’m seeing..., so I see the notes, like, on the, on the thing, and I’m trying to... um, visualize how it, how it should sound. So, I guess, in a way, I’m hearing the, um... I’m hearing—I’m trying to like hear it in my mind and at the same time also trying to like, uh, uh... like, play it out on the piano itself.”

In this turn, Kayla appeared to be describing the same third-or-fourth-measure moment as before, and her descriptions were of apprehendable phenomena: seeing, visualizing, and hearing. She expressed difficulty about apprehending those phenomena, but then settled into describing an imaginary hearing. That is, her talk was consistent with experience-at-a-moment.

In later turns, Kayla continued:

K^{14b}: “I’d say that, um... the main thing was, uh... like, playing it was, like, not as present as, um, as like, hearing it in, like—hearing it and then, read, like, reading it as well.”

Here, Kayla described the relative strengths between the various phenomena that she had directly apprehended. These fine-grained distinctions suggest Kayla was attempting to cleave her description to a specific moment of apprehended experience.

Turns later, in K^{22b}, Kayla continued in a similar vein:

K^{22b}: “I have a process about, like, uh, about like, uh, going about, like, learning notes, like, uh, um... uh... I’m not sure how, how exactly to describe it like I know like what notes should, like, with what a note should sound like. Um, so... in my mind I’m trying to, like, hear it, like, and then put it together based on, like, what I’ve heard before. And, what, um... um... what I’ve—what I know that these notes, like, sound like and how long I should hold them for. Which isn’t that long [laughs] ‘cause they’re like sixteenth and eighth notes.”

Although highly subjunctified, Kayla’s description was still consistent with the same (third or fourth measure) time and the same (hearing) experience.

Very-Last-Sample Interview: Conclusions. Overall, we see that Kayla appeared to cleave to a moment and to experience in her very-last-sample interview. We conclude that

Kayla's descriptions had the probability (or at least the possibility) of describing with fidelity a moment of experience (perhaps most likely the experience at the beep).

Comparison: Very-First-Sample Qualitative Characteristics vs. Very-Last-Sample Qualitative Characteristics

We have seen that, in her very-first-sample interview, Kayla did not describe any particular moment and did not describe experience. By contrast, Kayla's very-last-sample interview was constrained to a relatively specific time and was mostly limited to describing experience. We conclude that Kayla's very-last-sample interview was *very different from* her very-first-sample interview. Whereas in the very-first interview, she could not possibly have been describing an experience that was directly apprehended at the moment of the beep with any level of fidelity, in the very-last sample she (at least) might have been describing an experience that was directly apprehended at the moment of the beep.

Subjunctification

As we have just detailed, there is reason to believe that Kayla's descriptions were of much higher fidelity during her very-last-sample interview than they had been on her very-first-sample interview. However, we have also seen in the Quantitative Results and Discussion section that her total subjunctification density did not significantly change from the very-first to very-last sample. Hurlburt (2011) proposed that subjunctification density can generally be thought of as an indicator of descriptive fidelity—that the higher the density (that is, the greater number of subjunctifiers per second), the lower the fidelity. Kayla's sampling suggests that Hurlburt's proposal does not apply for Kayla; despite the lack of significant total subjunctification density change between interviews, it is clear that Kayla changed between her very-first-sample and very-last-sample interviews.

However, the type and manner of subjunctifiers that Kayla used *did* change dramatically between interviews and may provide greater insight into Kayla's improvement: nearly all of Kayla's very-first-sample interview subjunctifiers signaled that she failed to apprehend her experience-at-the-moment-of-the-beep (and thus undermined any possibility of describing experience). In other words, all of Kayla's very-first-sample subjunctification was of the *phenomenon-not-apprehended* (PNA) type. By contrast, the majority of her very-last-sample interview subjunctifiers signaled that, whereas Kayla apprehended the phenomenon adequately, her description was not yet adequate. That is, most very-last-sample subjunctification was of the *description-falling-short* (DFS) type.

There were three types of PNA subjunctifiers that were common in Kayla's very-first-sample interview: softening expressions, intentional expression, and hedges. We provide examples of each.

Here is an example of softening expressions from the first two sentences of Kayla's initial turn from her very-first-sample interview (all subjunctifiers are set in italics and with superscripts):

K^{2a}: All right. *Uh*¹, so...² I was, *like*³, I wasn't *really*⁴ feeling anything too much...⁵ *like*⁶, *you know*⁷. *Um*⁸...⁹ *like*¹⁰...¹¹ when it went off, *uh*¹², my mom and I were making, *like*¹³, *uh*¹⁴, tuna sandwiches, so I really *just*¹⁵ put the toast—the bread to toast and then she did everything else.

Here, Kayla's subjunctifiers signaled that her reports were not to be taken as descriptions of experience-at-a-moment because they undermined a commitment to describing any specific experience. For example, "*Uh*¹, so...² I was, *like*³, I wasn't *really*⁴ feeling anything too much...⁵"

involved five subjunctifiers that de-particularized any commitment to describing a specific experience; the result is a report with very low fidelity.

Another common PNA subjunctifier that Kayla used during her very-first-sample interview were intentional expressions. Here is the last part of turn K^{30a}:

K^{30a}: ... *I was trying to*¹ be careful to like not bump into my mom, because she was behind me, *so, I had to be careful about that*².

“*I was trying to*¹” and “*so, I had to be careful about that*²” communicated intent and provided a (possible) explanation of Kayla’s behavior, but neither intention nor explanation are in any way descriptive of directly apprehended experiences.

Kayla’s very-first-sample interview also included hedges—statements that qualify what follows. Here are examples:

K^{26a}: [Pauses] *I wanna say*¹ I was turning away from the thing?

K^{30a}: *I feel like*² *if I remember*³ about what when I turned away from the toaster...

“*I wanna say*¹,” “*I feel like*²,” and “*if I remember*³” are all warnings: they give notice that what is about to be said is impressionistic or speculative. They alert the interviewer/reader not to believe what is about to be said.

Thus, all the subjunctifiers in Kayla’s very-first-sample interview had the effect of signaling Kayla failed to cleave to experience-at-a-moment-of-the-beep. All subjunctifiers lowered the possibility of describing experience, either by softening a report, by expressing intent, or by hedging, warning that what is about to be said should not be taken as description. That is, all were PNA subjunctifiers.

By contrast, Kayla’s subjunctifiers on her very-last-sample interview generally seemed to signal that she was working to refine the fidelity of her descriptions of experience-at-the-

moment-of-the-beep—we refer to these as DFS subjunctifiers. The DFS subjunctifiers never undermined Kayla’s commitment to describing a particular phenomena; because the subjunctifiers were nearly always immediately followed by descriptions of apprehendable phenomena (or at least the possibility thereof), they signaled that Kayla *was attempting to give a careful description of experience*. Here is one example from Kayla’s initial conversational turn from the very-last-sample interview:

K^{2b}: I was reading, *uh*¹...² *um*³...⁴ *I think*⁵ it was the third or fourth measure. *Um*⁶...⁷ and I was specifically focused on, *like*⁸, the left hand, *like*⁹, *trying to*¹⁰ figure out, *like*¹¹, how it should sound and *like*¹², how to play, how to exactly play it.

- “*uh*¹...² *um*³...⁴ *I think*⁵” was followed by a description of a temporally specific time: somewhere around the third or fourth measure of a song. The subjunctifiers signaled that Kayla was actively limiting the range of possible events—that she was cleaving to a moment that occurred while reading either *this* or *that particular* bar of music.
- “*Um*⁶...⁷” and “*like*⁸” was followed by specific talk about a possible experience: “specifically focused on, *like*⁸, the left hand.” Perhaps her focus was not exactly on the left hand, but at least there was the possibility that the subjunctifiers signaled that she was heading in the direction of describing directly apprehended phenomena.
- “*trying to*¹⁰ figure out, *like*¹¹, how it should sound and *like*¹²” was followed by, “how to play, how to exactly play it.” The difference between the present “*trying to*¹⁰” and that of turn K^{30a} in the very-first-sample is that, in K^{30a}, the trying is the whole supposed experience, whereas in K^{2b} the trying is part of an experiential phenomenon (how it should sound). That is, Kayla’s description was subjunctified *not* because experience

was not apprehended, but (potentially) because Kayla was trying but not able to describe what she apprehended with sufficient fidelity.

There are numerous other examples of DFS subjunctifiers present throughout Kayla's very-last-sample interview. For example, in K^{30b}, Kayla said in response to whether she was hearing two simultaneous external and internal sounds:

K^{30b}: "*Mmm*¹ ...² a little bit less from what I'm hearing from, *like*³, the actual, *like*⁴, piano, but yeah."

Here, her subjunctifiers were always followed by a description of possible phenomena (the hearing of the piano). Whereas the PNA subjunctifiers in Kayla's very-first-sample interview softened any possibility of describing experience, involved inferences of intention, or involved hedging, Kayla's subjunctification in this turn did not otherwise detract from Kayla's description of her directly apprehended experience of hearing-the-piano—they merely qualified the degree to which the real-life piano hearing was present to her.

This is not to suggest, however, that Kayla's cleaving to a moment and to experience during her very-last-sample interview was perfect. In fact, Kayla subjunctified in a way that (like her very-first-sample PNA interview subjunctifiers) undermined her descriptions through her use of hedges and faux generalizations. For example, when Kayla was asked how hearing the piano was present in her experience, she stated:

K^{22b}: *Um*¹, *like*² ...³ *uh*⁴ ...⁵ *it'd be*⁶ how, *um*⁷, how I've heard it, *like*⁸, played—*um*⁹, and how, *um*¹⁰ ...¹¹ *like*¹², *trying to*¹³ ...¹⁴ *hmm*¹⁵. *I have a process*¹⁶ about, *like*¹⁷, *uh*¹⁸, about *like*¹⁹, *uh*²⁰, going about, *like*²¹, learning notes, *like*²², *uh*²³, *um*²⁴ ...²⁵ *uh*²⁶ ...²⁷ *I'm not sure how*²⁸, how exactly to describe it *like*²⁹ I know *like*³⁰ what notes should, *like*³¹, with what a note should sound like. *Um*³², so...³³ in my mind I'm *trying to*³⁴, *like*³⁵, hear it, *like*³⁶,

and then put it together based on, *like*³⁷, what I've heard before. And, what, *um*³⁸ ...³⁹
*um*⁴⁰ ...⁴¹ what I've—⁴² what I know that these notes, *like*⁴³, sound like and how long I
should hold them for. Which isn't that long [laughs] 'cause⁴⁴ they're *like*⁴⁵ sixteenth and
eighth notes, *so*⁴⁶ ...⁴⁷

Initially, Kayla hedged about her in-general process about learning notes: “*it'd be*⁶ how, *um*⁷,
how I've heard it, *like*⁸, played” was a hedge—a speculation about a hypothetical experience and
is not descriptive of any particular experience. Kayla also talked used talked about how she
typically learns music (“*I have a process*¹⁶ ... going about, *like*²¹, learning notes”)—this was a
faux generalization that—correct or not—is not descriptive of her experience-at-the-moment-of-
the-beep. However, Kayla eventually appeared to return to describing her specific experience
when she began describing her apparent figuring-out-how-the-piano-should-sound experience
(starting from “so...³³ in my mind I'm *trying to*³⁴” and ending at the end of the turn), suggesting
that the subjunctifiers around her phenomenal-talk of figuring-out-how-the-piano-should-sound
experience may be DFS subjunctifiers. This turn was one of several such turns throughout
Kayla's very-last-sample interview that featured a highly dense, nonspecific mix of potentially
PNA and DFS subjunctifiers (see K^{26b}, K^{42b}, K^{52b}).

There were also some turns during her very-last-sample interview that were (essentially)
one big PNA subjunctifier:

K^{65b}: Uh... that's, that's a tricky thing about this particular piece 'cause, like, it was
written in, like, uh, a period where like, um... uh... like, there's just—there's not really
like a specific way that the composer had, like, had in mind for it? So, I've, I've heard a
lot of different recordings, like, uh, just like, with like different tempos and all that, so...
there's no *right way* specifically to play it? But, um... I, I have, like, I have a personal,

like, thing that like, that it shouldn't be played, like, too fast—like it sounds it sounds weird playing it kinda fast. [Laughs]

This whole paragraph was not at all descriptive of experience, involving explanations about the piece, generalities about previous times she had heard the piece, and her reasoning about how she should play the music—all are unrelated to directly apprehended experience, and thus signal the presence of PNA subjunctification¹⁰.

Comparison: Very-First-Sample Subjunctification vs. Very-Last-Sample Subjunctification

Overall, the quantification of subjunctification density was not effective as a measure of the fidelity of Kayla's descriptions: both of Kayla's interviews featured a high density of subjunctifiers (broadly defined). However, we did observe notable differences in the types of subjunctifiers present within each interview (that is: the relative proportion of PNA, UTC, and DFS subjunctifiers that contributed to the total subjunctification in each interview changed in composition between the very-first-sample and very-last-sample interviews). Subjunctifiers in Kayla's very-first-sample interview were mostly of the PNA type—utterances that signaled that phenomenon may not have been adequately grasped, and so lowered any possibility of describing a specific moment of experience. In contrast, subjunctifiers in Kayla's very-last-sample interview were mostly of the DFS type—utterances that signaled an attempt to refine the fidelity of describing a specific moment of experience

Kayla: Overall Conclusion

¹⁰ However, we note that the relatively “low quality” response in K^{65b} was provided in response to (perhaps poor) questions in RTH^{62b} and RTH^{64b} about whether she was playing the “right” notes based upon what the composer had in mind.

The goal of this chapter was to examine a single participant (in this case: Kayla) at the very start and the very end of her sampling process to assess any changes in her skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Kayla cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of her subjunctifiers.

The Very-First-Sample Interview: Did Kayla (Possibly) Describe Experience?

No. She cleaved neither to the moment nor experience, her interview involved a high density of (mostly PNA) subjunctifiers, and the average EMB rating for the interview was low.

The Very-Last-Sample Interview: Did Kayla Improve?

Yes. She appeared to cleave to the moment (the third or fourth measure) and to experience (consistently referring to the experience of learning music). The very-last-sample interview still involved a moderate density of subjunctifiers that was not significantly different from the very-first-sample interview, but, unlike the very-first-sample interview, most subjunctifiers were of the DFS type, signaling she successfully apprehended her experience but struggled to describe her experience. Therefore, the EMB ratings for the interview were over twelve times higher than for those of her very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample Interviews

Ultimately, we draw the following conclusion: whereas Kayla's very-first-sample interview could not possibly have been a high-fidelity description of experience (because she failed to cleave to any moment and failed to cleave to any experience), it is possible that Kayla's very-last-sample interview involved high-fidelity descriptions of experience (because she showed improvement in cleaving to a moment and in cleaving to experience). We cannot be

certain whether or not fidelity was actually achieved, but Kayla's improvement in cleaving to the moment and to experience, and the change in the manner of her subjunctification, suggests at least the *possibility* that Kayla was apprehending at-the-moment experience in high-fidelity at the end of her DES sampling participation.

Chapter 10: Results and Discussion for Jake

Jake had been a participant in the psychotherapy study. As part of his participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki—Jake had consented to his videotapes used in studies such as the present one. The present study therefore accessed his psychotherapy-study videotapes and had no other contact with him.

Jake had completed eight days of natural environment DES sampling spread across a roughly four-month time span, with 108 days elapsing between his first-day interview and last-day interview. He had collected a total of 37 samples: 4 samples in his first day, 5 samples in his second day, 6 samples in his third day, 5 samples in his fourth day, 4 samples in his fifth day, 4 samples in his sixth day, 4 samples on his seventh day, and 5 samples on his eighth day.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Jake's quantitative results are shown in Table 4. For Jake, the very-first-sample interview was 642 s in total length, of which Jake spoke for 305.5 s across 35 conversational turns. The very-last-sample interview was 379 s in total length, of which Jake spoke for 258 s across 24 conversational turns. We divided Jake's very-first-sample and very-last-sample interviews into 3-min intervals; there were four intervals in the very-first-sample interview and three intervals in the very-last-sample interview.

Table 4*Jake: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	642	379							
Time spoken by participant (s) ^a	305.5	258							
Number of spoken turns	35	24							
Number of 3-min intervals	4	3							
Total Subjunctification Count ^a	127.5	71							
Total Subjunctification Density ^{a,b}	0.42 (<i>SD</i> = 0.14)	0.28 (<i>SD</i> = 0.16)	.90	5	.006	-1.88	5	.119	0.97
PNA Subjunctification Density ^{a,b}	0.27 (<i>SD</i> = 0.13)	0.04 (<i>SD</i> = 0.03)	.50	5	.255	-2.97	5	.031	2.25
UTC Subjunctification Density ^{a,b}	0.11 (<i>SD</i> = 0.06)	0.08 (<i>SD</i> = 0.05)	.11	5	.809	-0.85	5	.433	0.67
DFS Subjunctification Density ^{a,b}	0.04 (<i>SD</i> = 0.04)	0.16 (<i>SD</i> = 0.10)	.62	5	.136	1.03	5	.349	1.75
Number of turns with EMB ratings	14	10							
Average EMB Rating ^c	2.71 ^d (<i>SD</i> = 1.99)	7.68 (<i>SD</i> = 1.20)	.90	22	< .001	7.01	22	< .001	2.90

Note. EMB = Experience at the moment of the beep.

^a Averaged across the two raters.

^b Subjunctifiers per second: Subjunctification count divided by total time spoken by participant (sec).

^c Average EMB ratings for all rated turns of the interview.

^d Including non-annotated turns ($J^{61a} - J^{75a}$). If non-annotated turns are excluded, then there are 11 very-first-sample and 10 very-last-sample turns, but the results are very similar and remain statistically significant ($t(19) = 6.20$, $p < .001$, $d = 2.71$).

Rows 5 through 9 of Table 4 analyze Jake's subjunctors. Row 5 displays the total count of Jake's subjunctors in his very-first- and very-last-sample interviews (averaged across both raters), and row 6 displays the total subjunctorification density (row 5 divided by row 2) and changes to the overall subjunctorification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctors: phenomena-not-apprehended (PNA) subjunctors, unable-to-classify (UTC) subjunctors, and description-falling-short (DFS) subjunctors.

Specifically, the four right-hand columns of rows 7 through 9 in Table 4 show that Jake's subjunctorification changed significantly and substantially between his very-first- and very-last-sample interviews. We found that Jake's total subjunctorification density decreased from the very-first-sample interview ($M = 0.42$ subjunctors per second) to the very-last-sample interview ($M = 0.28$ subjunctors per second) with a somewhat large ($d = 0.97$) effect size, but this change was not significant due to the small degrees of freedom. PNA subjunctorification density significantly decreased from the very-first-sample interview ($M = 0.27$ subjunctors per second) to the very-last-sample interview ($M = 0.04$ subjunctors per second) with a huge ($d = 2.25$) effect size. By contrast, DFS subjunctors *increased* from the very-first-sample interview ($M = 0.04$ subjunctors per second) to the very-last-sample interview ($M = 0.16$ subjunctors per second) with a substantial ($d = 1.75$) effect size, but this change was not significant due to the small degrees of freedom. All these changes¹¹ are consistent with a consequential improvement in Jake's skill in apprehending and describing experience. Although Jake's total subjunctorification

¹¹ Although UTC subjunctorification density also decreased from the very-first-sample interview ($M = 0.11$ subjunctors per second) to the very-last-sample interview ($M = 0.08$ subjunctors per second) with a moderate ($d = 0.67$) effect size, the change was not significant. However, changes in UTC subjunctorification density does not matter: UTC subjunctors, as their name implies, merely represent subjunctors that could not easily be classified as a PNA or DFS-type subjunctor; as such, they do not provide insight into the possible fidelity of a participant's report.

density changed in moderate (but not statistically significant) ways between the very-first-sample and very-last-sample interview, the type of subjunctionifiers present in each interview changed dramatically: Whereas Jake's very-first-sample interview involved a high density of mostly PNA subjunctionifiers (and a very low density of DFS subjunctionifiers), his very-last-sample interview involved a high density of mostly DFS subjunctionifiers (and a very low density of PNA subjunctionifiers), suggesting that he learned to apprehend phenomena but struggled to find the words to describe them adequately.

Rows 10 and 11 of Table 4 analyze EMB ratings for Jake's sample interviews, counting them in the row 10 and, in the row 11, showing the average EMB rating. We found that Jake's average EMB rating significantly increased from the very-first-sample interview ($M = 2.71$) to the very-last-sample interview ($M = 7.68$) with a huge ($d = 2.90$) effect size, suggesting an extremely great improvement in Jake's cleaving-to-a-moment and cleaving-to-experience skill.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Jake's very-first-sample and very-last-sample interviews are provided in Appendixes G and H, respectively. There, each annotation includes analysis detailing the extent to which Jake (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctionifiers in that turn. Here, we summarize those results.

Experience at the Moment of the Beep

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. Cleaving (successfully) to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to

the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended experience. We now review the extent to which Jake demonstrated moment- and experience-cleaving skill at the very start and very end of his DES sampling participation.

Very-First-Sample Interview

(Lack of) Cleaving to the Moment. Jake did not cleave to any specific moment during his very-first-sample interview.

Here is one example from Jake's very-first-sample interview; the first half of his initial conversational turn:

J^{2a}: So, I had it [looks at his notes]—uh, 12:57, I don't know if the time matters too much. Um... so the the first time, uh, it beeped, I was actually driving—the person, a friend of mine, said, “okay, I need to... I need to park the car to get my experiences.” Um... I was actually thinking, like, immediately, “what is it that I am—that I just experienced?” Um, I was listening to... a song... um, just before. And, in my head, um... the chorus was playing. Um, I was thinking about, uh... I was trying to, like, process the fact that, um... what was that beep for again? It was for the study.

Here, Jake detailed a long time-period that included an undifferentiated mix of pre- and post-beep context. For instance: “I was listening to... a song... um, just before” referred to what had occurred *before* the beep's onset, and (a) “okay, I need to... I need to park the car to get my experiences”; (b) “I was actually thinking... ‘what is it that I am—that I just experienced?’”; and (c) “I was trying to, like, process the fact that... what was that beep for again?” all referred to things that occurred *after* the beep's onset. Thus, Jake was not cleaving to *any specific moment*.

Not only did Jake fail to cleave to the moment in the early parts of J^{2a}, but he also went on to acknowledge his ignorance about what constituted the moment of interest. Below is the remaining, second-half portion of Jake's J^{2a} turn, with italics added for emphasis:

J^{2a}: (continued) So, I was thinking about—so um, when I, *when I describe my inner experiences, am I supposed to describe like, what happens during the beep, or occurring right before or is there like a certain time frame that I should focus on?* Because that, that was the thing that actually was coming to mind like, it's like wait, I actually didn't clarify that this beep occurred, was, was I supposed to like—okay, that's what I just, like, was my inner experience, or, is it what I'm doing, like, right now or should I start, like, monitoring that? So, actually, that's kind of an actual question, too, so...

The text set in italics was Jake's explicit admission that he did not understand the moment of interest within DES—that is, the last, undisturbed moment just before the beep's onset. Thus, that Jake asked for clarification about what moment DES investigators were interested in raises doubt about the fidelity of his entire very-first-sample description. The skilled DES participant should display minimal confusion about the moment of interest versus all other moments. A failure to cleave to the moment is a failure at the DES task: an inability to cleave to the moment of the beep means that describing directly apprehended experience present *at the moment of the beep* is very likely to be impossible, if not significantly hampered.

Jake continued to demonstrate temporal imprecision across later turns from the very-first-sample interview. Here are a few examples:

- In J^{6a}, Jake noted the beep had gone off while he was listening to “the chorus of a song.” Although what he said in J^{6a} was more specific than J^{2a}, the chorus of a song refers to an interval of several or many seconds.

- In J^{13a}—and in contrast to J^{6a}—Jake amended the timing of the beep’s onset and stated that the beep occurred after he had finished listening to a song (“There was nothing—I was not listening to anything, but [the song] was just playing, kinda, in my head.”). Although Jake appeared to make greater differentiations between what happened far before the moment of the beep (i.e., playing the song through his speakers) and what may have been closer to beep onset (i.e., sitting in silence, playing the chorus in his imagination), he still talked about an ambiguous time-periods and failed to cleave to the single, discrete moment just before the beep’s onset.
- In J^{22a}, Jake remained consistent in talking about the same sitting-in-silence-and-playing-the-chorus-in-imagination interval that he referred to in J^{13a}. However, J^{22a} continued to refer to an ambiguously long period of time; Jake failed to describe the moment just before beep onset.
- In J^{37a}, Jake provided further details about the song he was innerly hearing (Beyonce singing the chorus of *Walk on Water*) and noted that the beep occurred somewhere within “that chorus section of, like, Beyonce and stuff.” Although J^{37a} was more specific than any previous turn, J^{37a} still did not straightforwardly describe any specific moment (let alone the moment just before beep onset).

Thus, even though Jake’s account of what occurred around the moment of the beep ostensibly became more and more detailed over the course of his very-first-sample interview, his talk never cleaved to a specific moment; at best, he talked about a time-period of hearing the chorus of *Walk on Water*.

Taken together, these excerpts are all illustrative of one simple conclusion: Jake did not cleave to *any* moment during any part of her very-first-sample interview. Thus, he could not

have been cleaving to the *specific* moment of interest within DES—the last undisturbed moment at the leading edge of the beep’s onset.

(Lack of) Cleaving to Directly Apprehended Experience. By definition, an inner experience is a phenomenon that is present at a specific moment. Because, as we just reviewed, Jake’s very-first-sample interview never focused on any specific moment, his very-first-sample interview could not have described any genuine inner experience(s). Instead, the most defining characteristic of Jake’s cleaving-to-experience skill during his very-first-sample interview was the elusiveness of a *high-fidelity* description of directly apprehended experience. Below is an outline of Jake’s report about his experience throughout his very-first-sample interview:

- In the opening turn of the interview (J^{2a}), the only aspect of the turn that potentially referred to experience-at-a-moment was “and, in my head, um... the chorus was playing.” All else in the turn involved ersatz descriptions—talk about context, procedural questions, and reports of Jake’s reaction to the beep’s onset.
- In J^{6a}, Jake continued to talk about the same listening-to-the-chorus report he stated in J^{2a}: “Then, that—what was going on was just like the, the chorus of a song that I was listening to on the, um, on the, uh... um, Bluetooth speakers I was using.” However, it was unclear whether that statement was descriptive of experience or was simply a report of situational context.
- In J^{13a}, Jake amended his purported at-the-moment experience from J^{6a}, in which he clarified that he “had just listened to [the song], actually. There was nothing—I was not listening to anything, but it was just playing, kinda, in my head.” Note that this turn was similar to what Jake stated in J^{2a} about the chorus playing in his head; however, it is also worth noting that neither of Jake’s talk in J^{2a} nor J^{13a} described with much fidelity as to

how the chorus had been directly present to (i.e., had been directly apprehended/experienced by) Jake.

- In J^{19a}, Jake noted that the inner hearing of the chorus had been “auditorily clear.” This provided the first description of how the directly apprehended inner hearing phenomena had been present, but emerged from a highly subjunctified turn (Jake’s subjunctifiers will be discussed in far greater detail in the next section).
- In J^{22a}, Jake said, “I’m just listening to the song—well yeah, I’m just... the song is still fresh in my mind I guess, and so—.” This utterance ambiguated Jake’s purported inner hearing description, as “still fresh in my mind” was an *explanation* about experience as opposed to a *description* of experience (in other words, J^{22a} introduced uncertainty as to whether Jake was describing phenomena or was talking about something else).
- J^{37a} provided more details about Jake’s inner hearing: “Uh... it was, uh... Beyonce. Um... singing the chorus of a song called *Walk on Water*. So, it was—it was just like, the, um... I forget how the chorus goes, but, um... it was that, it was that chorus section of, like, Beyonce and stuff.” This turn provided greater information regarding what Jake was potentially experiencing: an inner hearing of Beyonce singing the chorus of *Walk on Water*. However, this turn *was not descriptive of how* the inner hearing had been directly present to Jake; moreover, it referred to a several-or-many-seconds-long experience, which inherently *was not* and *could in no way be* descriptive of experience-at-a-moment.
- When asked to describe what he had heard, Jake in J^{44a} said, “It was only, uh, it’s a piano background, so it was just piano and her.” Similar to J^{37a}, this turn provided greater information about the *content* of Jake’s (possible) experience, but it did *not* describe (a)

how those phenomena had been directly present and (b) failed to straightforwardly describe a specific experience-at-a-moment.

- When pressed by DES investigators to state how the inner hearing had been directly apprehended (see RTH^{45a}, RTH^{47a}, and RTH^{49a}), Jake failed to provide such descriptions. This was most evidence in J^{50a}, where Jake turned to talking about a hypothetical scenario to describe his inner hearing experience: “I don’t know if I, like, in my head at the time it captured every detail? But, I, I know that it’s like, if, if I were to, like, like hear the song again, it’s like, okay, I heard—definitely heard most of it.” This talk about a hypothetical scenario moved Jake’s talk *away* from describing experience-at-a-moment.

To reiterate: Although Jake’s talk (at best) throughout his very-first-sample interview appeared to consistently reference a possible directly apprehended experience (innerly hearing the chorus of *Walk on Water*), we have seen that Jake’s failure to cleave to a moment makes it ambiguous as to whether any of Jake’s talk of experience described a particular experience-at-a-moment or was an inferred report about a long time-period. In addition, Jake’s talk was of relatively low-fidelity, such that even if Jake were to be describing experience, he demonstrated only low-to-moderate ability.

Very-First-Sample Interview: Conclusions. Overall, we see that Jake very-first-sample interview involved a failure to cleave to any moment and thus likely involved a failure to cleave to directly apprehended experience. We conclude that Jake’s utterances in his very-first-sample interview had little possibility of any descriptive fidelity because he failed to grasp a particular moment of experience and failed to differentiate phenomena from all else.

Very-Last-Sample Interview

Jake's very-last-sample interview was consistent with cleaving to directly apprehended experience that occurred at a specific moment. Since the high-fidelity apprehension and description of experience must involve the simultaneous presence of cleaving to a moment and to directly apprehended experience, we are unable to separate our analysis of Jake's very-last-sample cleaving abilities as independent processes. Therefore, we will review examples from Jake's very-last-sample interview and examine whether he did simultaneously cleave to a moment and cleave to experience.

Jake's improved cleaving to experience-at-a-moment was evidenced by his consistency across conversational turns. In fact, the opening turn of his very-last-sample interview (when considered alone) was of relatively low fidelity, in that it was not explicitly descriptive of experience at the moment of the beep:

J^{2b}: [Looks downward at notes] Okay, number five. Okay, so, we had the food to go and we were walking out of the restaurant. And, um... and—[laughs] this one is, uh, kinda funny, but, uh, I was trying to think of a different topic to distract slash avoid thinking about, um, the idea of, uh... tryphobia, um, which is the, the fear of, of pores. Um, and in the restaurant I was talking about—with my little brother—like, I just have kinda this aversion to, like, like, pores in the skin, right? And we had, um... like, been talking about it and I was just getting kinda like, like iffy about the whole concept and we had looked up a picture and I had the picture etched into my mind and, um... and I was like, “okay, we, we—you know—let's just think about something else.” And, um... and... I remember trying to think of, like, “what's, what's a different topic other than, you know, this one that seems to be, like, forcing itself into my mind?” um, when, when it had beeped. So...

First, let us consider whether Jake cleaved to a specific moment: his talk consisted of both context (looking at a picture, talking to his brother, walking out of a restaurant) and of describing a (apparent) thinking-type event consonant with experience-at-a-moment: distract-slash-avoid-thoughts-of-lingering-trypophobia. However, both the talk of context and talk of the potential moment ambiguate whether what Jake said in J^{2b} referenced a specific moment. Second, let us consider whether Jake cleaved to experience: his talk consisted mostly of either context (which was not at all descriptive of experience) or was about the *content* of the (potential) distract-slash-avoid-thoughts-of-lingering-trypophobia; it was *not* straightforwardly descriptive of how the distract-slash-avoid thinking had been directly present in his experience.

The fidelity of this moment of experience, however, became clearer in an exchange that occurred between Jake and the DES investigators in the turns immediately preceding J^{2b}:

AK^{3b}: So... before the beep, you guys had been talking about this fear of pores [J: Mhm], with you and your brother [J: Mhm]. And you looked up a picture [J: Mhm], and then at this moment you're walking out—are you guys still talking... about it?

J^{4b}: Yeah? Yeah. Not about that [AK: Okay], but, more about... um... I don't even remember what we were talking about, but I remember thinking that I... still have this in my mind—

Note that the question posed by the DES investigator in AK^{3b} was a question about timing—AK^{3b} asked about the behaviors and events leading up to the moment of the beep (and *not* about what experience was present at the moment). And, in spite of the invitation presented by AK^{3b} to move in a direction *away* from describing his experience, Jake ultimately ended his turn with returning to (what appeared to be a known and familiar) description of directly apprehended experience consistent with his thinking-type, distract-slash-avoid-thoughts-of-lingering-

trypophobia experience described in J^{2b} (“I remember thinking that I... still have this in my mind—”).

Later in the interview, Jake continued to display consistency (in describing the same moment of experience as previous turns) and stronger moment- and experience-cleaving skills. For instance, when asked if he was still looking at a picture that had originally triggered his thought of trypophobia, Jake said:

J^{13b}: Um... I... think the picture... was not there. I, I think it was, um... it was more, I had this kind of disgust that, uh... I don't even know if that's the right word, but just this sense of disgust? Um, from that conversation. And, um... I remember—you know, just thinking about what is it that I can... change the topic to, to kind of, get rid of this disgust or avoid or, you know, like, refocus.

This turn is notable for several reasons. First (from the perspective of cleaving to a moment): J^{13b} was consistent with (a) describing experience-at-a-moment (that is, Jake's talk appeared consonant with possible phenomena present at-a-moment; it did *not* outwardly appear to refer to a long time-period or anything else that was not a moment) and (b) describing the *same* apparent moment-of-experience as in previous turns (that is, the distract-slash-avoid-thoughts-of-lingering-trypophobia experience). Second (from the perspective of cleaving to experience): Jake made distinctions between what was (“I had this... sense of disgust”) and was not (“I... think the picture... was not there”) directly present to him at the moment of the beep. Although this distinction was situated amongst many subjunctifiers (and we will provide further analysis of Jake's subjunctification in the next section), the subjunctifiers did not diminish the fact that Jake, of his own accord, made some differentiation about what was and was not part of his at-the-

moment experience. That is: that subjunctifiers were present did not diminish the fact that Jake constrained his talk (with difficult) to describe experience with fidelity.

Jake continued to make fine-grained discriminations about the same distract-slash-avoid-tryphobia experience across multiple later turns of the very-last-sample interview, and these discriminations occurred in spite of “leading” questions posed to Jake by DES investigators.

Below is one such example:

AK^{17b}: So is this a, a thought process? The, the thinking-type experience?

J^{18b}: Um, yeah.

AK^{19b}: And are there words? Specific words present?

J^{20b}: Um... I don't think so. I—I think it's... yeah, [shakes head] I don't think so. I think it's more of just um... just... the idea of it.

Here, Jake was *not* led on by suggestions made by the DES investigators: for instance, he denied AK^{19b}'s suggestion of words when talking in J^{20b} (“Um... I don't think so. I—I think it's... yeah, [shakes head] I don't think so”), and in fact strengthened that denial by offering his own description of directly apprehended experience that *emerged independently of any suggestion made by DES investigators*—that the wanting-to-change-the-subject experience was “more of just um... just... the idea of it.” That Jake was not led on by leading questions and instead provided his own description of an (unworded) avoiding-thoughts-of-lingering-tryphobia can be taken as evidence of Jake's improved ability to cleave to a moment and to directly apprehended experience.

A final example of Jake's improved cleaving skills came in a turn near the conclusion of the interview. In the turns presented below, RTH^{29b} inquired about whether Jake had an alternative conversation topic that had been part of his at the moment experience:

RTH^{29b}: And new possibilities? Are they—

J^{30b}: No, I didn't get that far.

RTH^{31b}: Haven't gotten there yet. Okay.

Note that Jake was *not* led on by the question posed in RTH^{29b}. Rather, Jake (in a completely straightforward, non-subjunctified manner) *denied* RTH^{29b}'s suggestion. Distinguishing what was and was not part of experience is indicative of a participant who successfully cleaved to a moment and to experience, as one can only reasonably make such distinctions if one has knowledge and familiarity with a discrete moment of experience.

Very-Last-Sample Interview: Conclusions. Overall, we see that Jake appeared to cleave to a moment and to experience in his very-last-sample interview. We conclude that Jake's descriptions had the probability (or at least the possibility) of describing with fidelity a moment of experience (perhaps most likely the experience at the beep).

Comparison: Very-First-Sample Qualitative Characteristics vs. Very-Last-Sample Qualitative Characteristics

We have seen that, in his very-first-sample interview, Jake's did not describe any particular moment and so did not describe experience. By contrast, Jake's very-last-sample interview was constrained to a relatively specific time and was mostly limited to describing experience. We conclude that Jake's very-last-sample interview was *very different from* his very-first-sample interview. Whereas in the very-first interview, there was an extremely low possibility that he was able to describe experiences that had been directly apprehended at the moment of the beep with fidelity, in the very-last sample he (at least) might have been describing an experience that was directly apprehended at the moment of the beep.

Subjunctification

As we have just detailed, there is reason to believe that Jake's descriptions were of much higher fidelity during his very-last-sample interview than they had been on his very-first-sample interview. However, we have also seen in the Quantitative Results and Discussion section that Jake's total subjunctification density did not significantly change from the very-first to very-last sample. Hurlburt (2011) proposed that subjunctification density can generally be thought of as an indicator of descriptive fidelity—that the higher the density (that is, the greater number of subjunctifiers per second), the lower the fidelity. Jake's sampling suggests that Hurlburt's proposal does not apply for Jake; despite the lack of significant subjunctification density change between interviews, it is clear that Jake changed between his very-first-sample and very-last-sample interviews.

Rather than focusing simply on Jake's total subjunctification density on his two sample interviews, we can instead focus on analyzing the type and manner of subjunctifiers that Jake used; in doing so, we find that the type of subjunctifiers Jake used within each sample interview *did* change dramatically, and may provide greater insight into Jake's improvement. Nearly all of Jake's very-first-sample interview subjunctifiers signaled that he failed to apprehend his experience-at-the-moment-of-the-beep (and thus undermined any possibility of describing experience). In other words, all of Jake's very-first-sample subjunctification was of the *phenomenon-not-apprehended* (PNA) type. By contrast, the majority of his very-last-sample interview subjunctifiers signaled that, whereas Jake apprehended the phenomenon adequately, his description was not yet adequate. That is, most very-last-sample subjunctification was of the *description-falling-short* (DFS) type.

There were three types of PNA subjunctifiers that were either common or notable in Jake's very-first-sample interview: utterances that signaled Jake was not following the sampling procedure, verb forms in the subjunctive mood, and softening expressions.

We begin by discussing the most notable PNA subjunctifier present in Jake's very-first-sample interview: his utterances that signaled he was had not followed the sampling procedures. Here is an example, with the subjunctifier set in italics for emphasis:

J^{2a}: ... so um, when I, *when I describe my inner experiences, am I supposed to describe like, what happens during the beep, or occurring right before or is there like a certain time frame that I should focus on?* Because that, that was the thing that actually was coming to mind like, it's like wait, I actually didn't clarify that this beep occurred, was, was I supposed to like—okay, that's what I just, like, was my inner experience, or, is it what I'm doing, like, right now or should I start, like, monitoring that? So, actually, that's kind of an actual question, too, so...

These types of procedural questions are considered PNA subjunctifiers because “a comment or question about the procedure indicates that the subject is not (yet) doing the procedure, that is, is not describing experience” (Hurlburt, 2011, p. 117); they literally illustrate the phenomenon-not-apprehended label. This observation is true of Jake's comment in J^{2a}. That Jake expressed an ignorance about the moment of the beep is a clue that Jake did not cleave to a moment (and, subsequently, did not cleave to directly apprehended experience-at-a-moment).

Additionally, one common PNA subjunctifier that Jake used in his very-first-sample interview was his use of verb forms in the subjunctive mood. *Subjunctive* is defined in the *Oxford English Dictionary* as “designating or relating to a verbal mood that refers to an action or state as conceived (rather than as a fact) and is therefore used chiefly to express a wish,

command, exhortation, or a contingent, hypothetical, or prospective event.” Here is one conversational turn with multiple verb-forms-in-the-subjunctive-mood, all of which are set in italics and with superscripts:

J^{59a}: ... Um, I mean in the same way it’s like—*if I were to repeat you asking that question in my head*¹, um... I, *I would say*² it’s, yeah, in my head... Uh... it’s kind of—like, *if you were talkin’ to me*³, um, the same way that it’s like I’m kind of processing it as you’re speaking to me is the same way that I’m hearing it in my head as... *if I were to replay it*⁴.

All four instances of italicized text in J^{59a} grammatically signal that Jake was talking about a hypothetical event instead of describing experience-at-a-moment.

Another common PNA subjunctifier that occurred throughout Jake’s very-first-sample interview was softening expressions (i.e., statements, utterances, and expressions that led away from describing at-the-moment experience). Here is one example, with all subjunctifiers set in italics and with superscripts:

J^{37a}: *Uh*¹...² it was, *uh*³...⁴ Beyonce. *Um*⁵...⁶ singing the chorus of a song called *Walk on Water*. So, it was—⁷ it was just *like*⁸, the, *um*⁹...¹⁰ *I forget how the chorus goes*¹¹, but, *um*¹²...¹³ it was that, it was that chorus section of, *like*¹⁴, *Beyonce and stuff*¹⁵.

Each subjunctifier in this turn in some way signaled that Jake was not describing directly apprehended experience. For instance, “it was that chorus section of, *like*¹⁴, *Beyonce and stuff*¹⁵” involved subjunctifiers that approximated any possible description of a particular experience. “

Thus, all the subjunctifiers in Jake’s very-first-sample interview had the effect of signaling Jake had failed to cleave to experience-at-a-moment-of-the-beep. All of his subjunctifiers lowered the possibility of describing specific experience, either by signaling he

was not yet adequately performing the sampling task, by reporting hypothetical situations, or by softening a report. That is, all were PNA subjunctifiers.

By contrast, Jake's subjunctifiers on his very-last-sample interview generally seemed to signal that he was working to refine the fidelity of her descriptions of experience-at-the-moment-of-the-beep—we refer to these as DFS subjunctifiers. The DFS subjunctifiers never undermined Jake's commitment to describing a particular phenomena; because the subjunctifiers were nearly always immediately followed by descriptions of apprehendable phenomena (or at least the possibility thereof), they signaled that Jake *was attempting to give a careful description of experience*.

Of note: Jake did not begin his very-last-sample interview clearly describing experience. His initial conversational turn was highly subjunctified, though Jake provided a “first-draft” description of his at-the-moment experience:

J^{2b}: I was trying to think of a different topic to distract slash avoid thinking about, um, the idea of, uh... tryphobia

The subjunctifiers in this turn were of an indeterminate type, as it was unclear whether Jake was cleaving to experience-at-a-moment or was speaking of approximated experience. However, it became clear over the course of Jake's subsequent conversational turns that he was, indeed, striving for fidelity by cleaving to experience-at-the-moment-of-the-beep. Here are some examples, with the subjunctifiers set in italics and with superscripts:

- In J^{8b}, Jake appeared to describe the same, distract-slash-avoid-thoughts-of-lingering-tryphobia experience as he described in J^{2b}: “So I’m just thinking, *like*^{1...2} I wanna—I want to talk about something that will get my mind off of it.” Note that there were only

two subjunctifiers (“*like*¹...²”) which reflected Jake’s previously subjunctified talk of potential experience stated in J^{2b}.

- In J^{13b}, Jake again described the same apparent moment of experience that he provided in J^{2b} and J^{8b}: “I, *I think*¹ it was, *um*²... it was more, I had this *kind of*³ disgust that, *uh*⁴...⁵ *I don’t even know*⁶ if that’s the right word, but just this sense of disgust?⁷ *Um*⁸, from that conversation. And, *um*⁹... I remember—¹⁰ *you know*¹¹, just thinking about what is it that I can... change the topic to, to *kind of*¹², get rid of this disgust or avoid or, *you know*¹³, *like*¹⁴, refocus.” Despite the many subjunctifiers present in this turn, the subjunctifiers did not detract from the fact that Jake was describing (with difficulty) directly apprehended experience. That is: the subjunctifiers did not ambiguate nor detract from the fact that Jake’s was talking (with great difficulty) about his apparent distract-slash-avoid-thoughts-of-lingering-trypophobia experience.
- J^{16b} provided another instance of Jake talking about the same moment of experience as in J^{2b}, J^{8b}, and J^{13b}: “*Like*¹, there was no topic that, *like*², my mind had settled on. *It was more of a*³, I was considering possibilities of...⁴ considering the notion of, *of*⁵, maybe, *maybe*⁶ I should change the subject. *Or*⁷, let’s change the subject.” Here, Jake appears to make phenomenal-references about an experience he has consistently described across multiple conversational turns, but does so with great difficulty.
- In J^{20b}, Jake said, “*Um*¹...² *I don’t think*³ [there were words present]. I—I *think*⁴ it’s...⁵ yeah, [shakes head] *I don’t think so*⁶. *I think*⁷ it’s *more*⁸ of just *um*⁹...¹⁰ just...¹¹ the idea of it.” This turn featured high subjunctification density amidst a fully constrained description of experience. Everything Jake said in J^{20b} was consistent with describing a

moment of experience; the fact that he used (DFS) subjunctifiers did not negate his attempt to be descriptive.

- Lastly, in J^{34b}, Jake responded to a question posed by DES investigators about whether a feeling of disgust was present to Jake at the moment of the beep: “Yeah. *Um*¹, that’s a good question. I, *I think*², *um*³...⁴ I, I know earlier, I was, *like*⁵, *kinda*⁶ feeling *like*⁷ itchy *or*⁸ uncomfortable. *Um*⁹, *like*¹⁰, even *kind of*¹¹, *like*¹², skin crawling sensation, *but*¹³...¹⁴ when I was walking out the restaurant, *I don’t think so*¹⁵ [shakes head]. *I think it was*¹⁶...¹⁷ almost exclusively, if not exclusively, *like*¹⁸, a thinking process.” The first part of J^{34b} (up until “, *but*¹³...¹⁴”) involved Jake talking about context leading up to the beep, and such talk appeared to include PNA subjunctifiers (for example: “I was, *like*⁵, *kinda*⁶ feeling *like*⁷ itchy *or*⁸ uncomfortable” approximated the potential experience and de-particularized (or at least lessened the descriptive fidelity of) an apparent description of itchy/discomfort); however, that context is not the aim of the turn, as the second half of J^{34b} was entirely talk aimed at describing the same, consistent distract-slash-avoid-thoughts-of-lingering-tryphobia experience that Jake described across the entire very-last-sample interview.

Thus, Jake’s very-last-sample interview subjunctifiers signaled changes in Jake’s ability to cleave to a moment and to experience. Although he subjunctified, he did so around phenomenal references; his DFS subjunctifiers signaled wavering around the words used to describe experience, whereas his commitment to consistently describing the same distract-slash-avoid-thoughts-of-lingering-tryphobia experience remained unwavering throughout the very-last-sample interview. Thus, most subjunctifiers used were DFS subjunctifiers.

Comparison: Very-First-Sample Subjunctification vs. Very-Last-Sample Subjunctification

Overall, the quantification of total subjunctification density was not effective as a measure of the fidelity of Jake's descriptions: both of Jake's interviews featured a high density of subjunctifiers (broadly defined). However, we did observe notable differences in the types of subjunctifiers present within each interview (that is: the relative proportion of PNA, UTC, and DFS subjunctifiers that contributed to the total subjunctification in each interview changed in composition between the very-first-sample and very-last-sample interviews). Subjunctifiers in Jake's very-first-sample interview were mostly of the PNA type—utterances that signaled that phenomenon may not have been adequately grasped, and so lowered any possibility of describing a specific moment of experience. In contrast, subjunctifiers in Jake's very-last-sample interview were mostly of the DFS type—utterances that signaled an attempt to refine the fidelity of describing a specific moment of experience

Jake: Overall Conclusion

The goal of this chapter was to examine a single participant (in this case: Jake) at the very start and the very end of his sampling process to assess any changes in his skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Jake cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of his subjunctifiers.

The Very-First-Sample Interview: Did Jake (Possibly) Describe Experience?

Not likely. He failed to cleave to the moment and so likely failed to cleave to experience; his interview involved a high density of PNA subjunctifiers that signaled his failure to have apprehended his experience-at-a-moment, and the average EMB rating for the interview was low.

The Very-Last-Sample Interview: Did Jake Improve?

Yes. He appeared to cleave to experience-at-the-moment-of-the-beep, in which he described an (unworded) avoiding-thoughts-of-lingering-trypophobia, thinking-type experience. The very-last-sample interview still involved a moderate density of subjunctifiers that was not significantly different from the very-first-sample interview, but, unlike the very-first-sample interview, most subjunctifiers were of the DFS type, signaling she successfully apprehended her experience but struggled to describe her experience. Moreover, there was (in comparison to the very-first-sample interview) a significant and substantial decrease in the density of PNA subjunctifiers on the very-last-sample interview. Therefore, the EMB ratings for the interview was over three times higher than for those of his very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample

Ultimately, we draw the following conclusion: whereas Jake's very-first-sample interview had a near-zero possibility of being a high-fidelity description of experience (because he failed to cleave to any moment and failed to adequately cleave to experience), it is possible that Jake's very-last-sample interview involved high-fidelity descriptions of experience (because he showed improvement in cleaving to a moment and in cleaving to experience). We cannot be certain whether or not fidelity was actually achieved, but Jake's improvement in cleaving to the moment and to experience, and the change in the manner of his subjunctification, suggests at least the *possibility* that Jake was apprehending at-the-moment experience in high-fidelity at the end of his sampling participation.

Chapter 11: Results and Discussion for Macy

Macy had been a participant in the psychotherapy study. As part of her participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki —Macy had consented to her videotapes used in studies such as the present one. The present study therefore accessed her psychotherapy-study videotapes and had no other contact with her.

Macy completed eight days of natural-environment DES sampling spread across a roughly three-month time span, with 90 days elapsing between her first-day interview and her last-day interview. She had collected a total of 34 samples: 6 samples in her first day, 5 samples in her second day, 3 samples in her third day, 4 samples in her fourth day, 5 samples in her fifth day, 6 samples in her seventh day, and 5 samples in her eighth day.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Macy’s quantitative results are shown in Table 5. For Macy, the very-first-sample interview was 323 s in total length, of which Macy spoke for 135 s across 28 conversational turns. The very-last-sample interview was 476 s in total length, of which Macy spoke for 258.5 s across 28 conversational turns. We divided Macy’s very-first-sample and very-last-sample interviews into 3-min intervals; there were two intervals in the very-first-sample interview and three intervals in the very-last-sample interview.

Table 5*Macy: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	323	476							
Time spoken by participant (s) ^a	135	258.5							
Number of spoken turns	28	28							
Number of 3-min intervals	2	3							
Total Subjunctification Count ^a	55.5	71							
Total Subjunctification Density ^{a,b}	0.41 (<i>SD</i> = 0.07)	0.28 (<i>SD</i> = 0.06)	.95	3	.013	-2.36	3	.065	2.20
PNA Subjunctification Density ^{a,b}	0.08 (<i>SD</i> = 0.04)	0.02 (<i>SD</i> = 0.01)	.37	3	.545	-2.49	3	.055	2.30
UTC Subjunctification Density ^{a,b}	0.13 (<i>SD</i> = 0.14)	0.01 (<i>SD</i> = 0.01)	.99	3	.011	-2.03	3	.098	1.59
DFS Subjunctification Density ^{a,b}	0.20 (<i>SD</i> = 0.11)	0.25 (<i>SD</i> = 0.06)	.62	3	.263	1.00	3	.364	0.13
Number of turns with EMB ratings	17	20							
Average EMB Rating ^c	5.18 (<i>SD</i> = 2.14)	8.00 (<i>SD</i> = 1.31)	.73	35	< .001	4.92	35	< .001	1.62

Note. EMB = Experience at the moment of the beep; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

^a Averaged across the two raters.

^b Density is subjunctification count divided by time spoken by participant (subjunctifiers per s).

^c Average EMB ratings across the two raters for all rated turns of the interview.

Rows 5 through 9 of Table 5 analyze Macy's subjunctifiers. Row 5 displays the total count of Macy's subjunctifiers in her very-first- and very-last-sample interviews (averaged

across both raters), and row 6 displays the total subjunctification density (row 5 divided by row 2) and changes to the overall subjunctification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctifiers: phenomena-not-apprehended (PNA) subjunctifiers, unable-to-classify (UTC) subjunctifiers, and description-falling-short (DFS) subjunctifiers.

Specifically, the three right-hand columns of rows 6 through 8 in Table 5 show that Macy's total, PNA, and UTC subjunctification densities decreased substantially (as evidenced by the huge effect sizes in the right-most column of rows 6 through 8) but not significantly between her very-first- and very-last-sample interviews. By contrast, the three right-hand columns of row 9 show that Macy's DFS subjunctification density showed neither substantial nor significant change between the very-first- and very-last-sample interview. However, Macy used more DFS subjunctifiers on her very-first-sample interview ($M = 0.20$, 49% of her total subjunctifiers) than any of our other participants (the average DFS subjunctification density on the very-first-sample interview for all other participants is 0.03, or 6.5% of their total subjunctifiers), suggesting that Macy demonstrated a relatively high level of skill in cleaving to experience at-a-moment at the outset of sampling. Thus, taking Macy's subjunctification data together, the substantial reduction in total and PNA subjunctification density in Macy's very-last-sample interview (in comparison to her very-first-sample interview subjunctification densities) suggest that Macy's skill improved even though she was comparatively skilled to begin with.

Rows 10 and 11 of Table 5 analyze EMB ratings for Macy's sample interviews, counting them in row 10 and, in row 11, showing the average EMB rating. We found that Macy's average EMB rating significantly increased from the very-first-sample interview ($M = 5.18$) to the very-

last-sample interview ($M = 8.00$) with a substantial ($d = 1.62$) effect size, suggesting extremely great improvement in Macy's cleaving-to-a-moment and cleaving-to-experience skill.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Macy's very-first-sample and very-last-sample interviews are provided in Appendix I and J, respectively. There, each annotation includes analysis detailing the extent to which Macy (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctifiers in that turn. Here, we summarize those results.

Very-First-Sample Interview

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. Cleaving (successfully) to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended experience. We now review the extent to which Macy demonstrated moment- and experience-cleaving skill at the very start and very end of her DES sampling participation.

Macy's very-first-sample interview involved some possibility of describing experience-at-the-moment-of-the-beep. During some conversational turns, her descriptions appeared to be consistent with describing a moment of experience; this would imply she was able to cleave to experience-at-the-moment-of-the-beep. However, in other conversational turns, Macy's talk appeared more consistent with generalized reports of her experience across a long time-period. The type and nature of her subjunctifiers were also inconsistent: although there were some instances where the subjunctifiers appeared to signal that Macy did not adequately apprehend

any phenomenon (and so failed to describe any particular experience), there were other instances where the type of subjunctifier used was less clear.

Because Macy appeared to display some degree of moment- and experience-cleaving skill during her very-first-sample interview, the following section provides examples selected from Macy's very-first-sample interview that are illustrative of both her moment- and experience-cleaving skills, and of the type of subjunctifiers she used: we will begin by reviewing instances where it appeared Macy failed to cleave to experience-at-the-moment-of-the-beep and used (mostly phenomenon-not-apprehended; PNA) subjunctifiers. Then we will review instances where it appeared Macy cleaved to experience-at-the-moment-of-the-beep and used (a mostly indeterminate type of) subjunctifiers.

We begin by reviewing Macy's first turn from her very-first-sample interview, with all subjunctifiers set in italics and with superscripts:

M^{2a}: *Um*¹, I was really worried that I did it wrong, [laughs] [SAM: Okay] *um*², *just because*³ I hadn't—I had turned it on, and hadn't received a beep yet. *Um*⁴...⁵ so, that's actually when I had texted you, saying, "I haven't gotten it," *something like that*⁶. *Um*⁷...⁸ and I was just—I was worried, *um*⁹...¹⁰ that I was doing it wrong.

Macy failed to cleave to a specific moment: she talked about time in two different ways, neither of which successfully described a moment. Macy began the turn by saying: "I had turned it on, and hadn't received a beep yet." This was talk about a long time-period (since she turned it on), not a moment. Even when Macy appeared to refer to a more specific moment (that the beep sounded when Macy had "actually" just texted DES investigators), that referred to a temporally ambiguous period—did "that's actually when I had texted you" refer to the millisecond just after pressing the "send" button, or a few seconds later, or a few minutes later?

Importantly, Macy had forgotten her sampling notes when she appeared for first-day expositional interview. This may have been partially or entirely responsible for Macy's inability to speak about the moment of the beep. In an important sense, it doesn't matter: on her first sampling day, Macy was, for whatever reason, unable or unwilling to cleave to the moment-of-the-beep.

Because inner experience inheres in moments, the lack of temporal specificity made it impossible for Macy to cleave to directly apprehended experience. Instead of describing experience, Macy talked about context, provided causal inferences, and used PNA subjunctifiers that further solidified our conclusion that she was not describing a particular experience. For example, "that's actually when I had texted you, saying, 'I haven't gotten it,'" was talk of context (which was followed by an explicitly undermining expression "*something like that*"⁶ that signaled that her talk was not describing a specific experience). Moreover, Macy began the turn by using a causal inference: "*just because*"³... I had turned it on, and hadn't received a beep yet." This subjunctifier, in combination with the presence of other PNA subjunctifiers and the lack-of-sampling notes, suggests that Macy was inferring causation rather than describing experience.

In later turns of the interview, however, Macy appeared to describe a known and specific moment involving worry/chest pressure. However, for all the reasons outlined above, it is also possible that Macy's descriptions were more consistent with talk about inferred reports from context that occurred during a long time-period. For example, Macy said the following in M^{6a}:

M^{6a}: Yeah, yeah. It was just the... "oh no, I did this wrong!" *kind of thing*¹.

Although Macy's description was consistent with the same "worry" noted in M^{2a}, we have seen that Macy's failure to cleave to a moment makes it ambiguous as to whether this turn described a particular moment of experience or was an inferred report about a long time-period. Moreover,

the subjunctifier present in M^{6a} also was indeterminate from the perspective of its type and function: “*kind of thing*¹” could be understood as making a report non-specific (thus signaling that Macy may have failed to apprehend her experience at-the-moment-of-the-beep, and so was a PNA subjunctifier), or it could also be understood as an effort to improve the fidelity of describing the “oh no, I did this wrong!” (ostensibly difficult-to-put-into-words, and so was a *description-falls-short* or DFS subjunctifier) experience.

Turn M^{16a} provides another example of Macy’s typical very-first-sample interview characteristics:

M^{16a}: Um¹...² it was just very, um³...⁴ like⁵, it *just made me*⁶ worry that I wasn’t doing it correctly, *I guess*⁷. It was the... like⁸—*I don’t know*⁹—pressure on my chest *kind of*¹⁰...

Although consistent with the worry/chest pressure of previous turns, it again was unclear whether this turn described a specific moment or was an inferred report about a long time-period. Moreover, M^{16a} was another heavily subjunctified turn that involved a mix of PNA subjunctifiers and indeterminate subjunctifiers. For example, “it *just made me*⁶ worry that I wasn’t doing it correctly” was a causal inference—a speculation about the cause of the worry. However, “like⁸—*I don’t know*⁹—pressure on my chest *kind of*¹⁰...” involved indeterminate subjunctifiers. They could be understood as signaling she did not adequately apprehend the phenomenon at the moment-of-the-beep, and so she ambiguated her report here to de-particularize any potential description of experience (because “like⁸—*I don’t know*⁹” implied that what follows should not be understood straightforwardly, and “*kind of*¹⁰...” signaled that what came before was an approximation—a PNA subjunctifier), or the subjunctifiers could be understood as Macy trying to find the words to refine the fidelity of her description of chest pressure (and so was a DFS subjunctifier).

Very-First-Sample Interview: Conclusions. Overall, we see that Macy's very-first-sample interview involved some possibility of describing experience-at-the-moment-of-the-beep, although the extent of that possibility remains indeterminate. She appeared to cleave to experience-at-the-moment-of-the-beep in low-to-moderate ways throughout the interview: in some turns, it appeared that she failed to cleave to-experience-at-the-moment-of-the-beep (e.g., the first conversational turn), but in other turns, her reports were consistent with cleaving to experience-at-the-moment-of-the-beep. Her subjunctifiers also varied across the interview: most of her subjunctifiers were DFS, but some subjunctifiers were indeterminate as it was unclear whether they were approximating characterizations of in-general experience (which would imply they were PNA subjunctifiers) or whether they were refining the fidelity of descriptions of directly apprehended experience (which would imply they were DFS subjunctifiers).

Very-Last-Sample Interview

Macy's very-last-sample interview was consistent with cleaving to directly apprehended experience that occurred at a specific moment. Therefore, we will review examples selected from Macy's very-last-sample interview and examine whether she did simultaneously cleave to a moment and cleave to experience; we will also discuss the type and nature of her (mostly DFS) subjunctifiers used.

Here is the first turn from her very-last-sample interview:

M^{2b}: *Um*¹, the last one—I was, *um*², laying down and, *uh*³...⁴ cat had come and laid down with me, and my thought at the moment of the beep was, *um*⁵, there was: “My cat is so cute!” [M laughs] And, *um*⁶...⁷ seeing her mental image of, *like*⁸, her...⁹ smiling?¹⁰
*Like*¹¹, closed eyes, smiling. *Um*¹², in my head. At the same time.

Although Macy began describing context, she soon explicitly acknowledged the moment of the beep and described two simultaneous experiences that were consistent with at-a-moment experience: “My cat is so cute!” and a mental image of her cat smiling. Regarding subunctifiers, none diminished the fidelity of her descriptions; all were followed by further descriptions of phenomena. For example, the three subunctifiers in “seeing her mental image of, *like*⁸, her...⁹ smiling?¹⁰” were immediately followed by additional descriptions of experience: that the image was of Macy’s cat “closed eyes, smiling” and that the phenomena were present “at the same time.” Hence, they were all DFS subunctifiers.

Throughout the remainder of her very-last-sample interview, Macy appeared consistent in describing the same moment of experience that she described in M^{2b}. Here is an example exchange between Macy and the investigator:

SAM^{13b}: Kay. And this is—this is something you’re actually seeing?

M^{14b}: Yeah. It was something I had seen just a second ago.

SAM^{15b}: So— [pause]

M^{16b}: It was something I had seen just a second ago, and then I had thought about it at the beep. Yes.

Note that Macy spoke about the timing of the moment of apprehended experience with zero subunctification: she was constrained to describing an innerly seen image of a scene that, just prior to the moment of the beep, she had externally seen.

Here is another example:

M^{25b}: So. [She adjusts her left arm, then her right, then twists her body. She laughs at herself and her movements.] Sorry, I’m like, I’m trying to recreate it. *Um*¹...² I was

looking at her like this [M is pretending to look directly at her cat, which was positioned to M's right side] and she was looking towards that [straight ahead] way.

Macy described the same moment as in all previous turns and provided very specific details of her inner seeing. That is, she described the particular scene she had seen at the moment of the beep, even to go as far as to recreate the scene within the interview; in contrast, she did *not* talk in generalities or in a manner inconsistent with a particularized moment.

Here is a final example of Macy's typical skill during her very-last-sample interview:

M^{30b}: *Um*¹, it was, *um*², it wasn't talking. It *wasn't really*³ hearing, it was just *like*⁴ thinking. The words were present. They're, *um*⁵...⁶ it was, *uh*⁷...⁸ *I don't think*⁹ there was much emotion attached to it. *Um*¹⁰, it was just a recognition of "my cat's so cute."

Macy appeared to describe the same moment of experience as in all previous turns. Although heavily subjunctified, her turn was entirely aimed at describing phenomena, ending with a description of experience: "it was just a recognition of 'my cat's so cute.'" Notably, Macy did *not* subjunctify about *what* she experienced—her subjunctifications acknowledged a difficult-to-describe apprehended experience. That is, her subjunctifiers were of the DFS type.

Very-Last-Sample Interview: Conclusions. Overall, Macy appeared to cleave to a moment of directly apprehended experience in her very-last-sample interview: the majority of what she said was consistent with grasping a particular moment of experience. Her subjunctifiers were (mostly) refinements aimed at improving the details of her description.

Macy: Overall Conclusion

The goal of this chapter was to examine a single participant (in this case: Macy) at the very start and the very end of her sampling process to assess any changes in her skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment

of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Macy cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of her subjunctifiers.

The Very-First-Sample Interview: Did Macy (Possibly) Describe Experience?

Maybe, but it is unclear. Macy did not outrightly fail to cleave to experience-at-the-moment-of-the-beep: her utterances at times were possibly consistent with describing worry/chest tightness apprehended at the moment of the beep. At other times, however, Macy's utterances were consonant with failures to cleave to experience-at-the-moment-of-the-beep: the initial conversational turn of the interview was not clearly constrained a specific moment, thus imperiling the possibility that she could have described phenomena. Her interview also involved a high density of subjunctifiers (broadly defined), and the average EMB rating for the interview was moderate.

Additionally, Macy did not have her first-day sampling notes to refer to during the interview.

The Very-Last-Sample Interview: Did Macy Improve?

Yes. She appeared to cleave to the moment and to experience (consistently describing the details of an inner seeing and the characteristics of the innerly spoken statement). The very-last-sample interview involved a substantially lower density of both total subjunctifiers and PNA subjunctifiers, specifically—both of these findings demonstrate that Macy described her experience in a more straightforward manner across her entire very-last-sample interview (in comparison to her very-first-sample interview), likely due to improvements in apprehending her

experience¹². Moreover, the EMB ratings for the interview was more than 1.5 times higher than for those of her very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample Interviews

Ultimately, we draw the following conclusion: whereas Macy's very-first-sample interview may have been a possible (perhaps low-fidelity) description of experience, it is likely that Macy's very-last-sample interview *did* involve a relatively high-fidelity descriptions of experience (because she showed improvement in cleaving to a moment and in cleaving to experience). We cannot be certain whether or not fidelity was actually achieved, but Macy's improvement in cleaving to the moment and to experience, and the change in the manner of her subjustification, suggests at least the *possibility* that Macy was apprehending at-the-moment experience in high-fidelity at the end of her sampling participation.

¹² Although we do not know with certainty whether Macy actually got better at apprehending her experience, the substantially lower PNA subjustification density of the very-last-sample interview meant that she talked in ways that were consistent with describing specific phenomena more frequently on her very-last-sample interview compared to her talk on her very-first-sample interview.

Chapter 12: Results and Discussion for Emma

Emma had been a participant in the psychotherapy study. As part of her participation in that study—which had been approved by the Institutional Review Board of the University of Nevada, Las Vegas following standards issued in the Declaration of Helsinki—Emma had consented to have her videotapes used in studies such as the present one. The present study therefore accessed her psychotherapy-study videotapes and had no other contact with her.

Emma completed eight days of natural environment DES sampling spread across an 11-week time span, with 77 days elapsing between her very-first interview and her very-last interview. She collected a total of 29 samples: 4 samples in her first day, 3 samples in her second day, 6 samples in her third and fourth days, 3 samples in her fifth and sixth days, and 4 samples each in her seventh and eighth days.

Quantitative Results and Discussion

The data analysis procedure is described fully in Chapter 6, and Emma's quantitative results are shown in Table 6. For Emma, the very-first-sample interview was 421 s in total length, of which Emma spoke for 149.5 s across 16 conversational turns. The very-last-sample interview was 111 s in total length, of which Emma spoke for 43.5 s across 11 conversational turns. We divided Emma's very-first-sample and very-last-sample interviews into 3-min intervals; there were three intervals in the very-first-sample interview and one intervals in the very-last-sample interview.

Table 6*Emma: Quantitative Results*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>Statistic</i>	<i>df</i>	<i>p</i>	<i>d</i>
Length of interview (s) ^a	421	111							
Time spoken by participant (s) ^a	149.5	43.5							
Number of spoken turns	16	11							
Number of 3-min intervals	3	1							
Total Subjunctification Count ^a	45.5	16							
Total Subjunctification Density ^{a,b,c}	0.31 (<i>SD</i> = 0.14)	0.37 ^d	.85	2	.146	$\chi^2 = 0.01$	1	.950	0.42 ^e
PNA Subjunctification Density ^{a,b,c}	0.17 (<i>SD</i> = 0.06)	0.00 ^d	.13	2	.870	$\chi^2 = 0.07$	1	.787	3.01 ^e
UTC Subjunctification Density ^{a,b,c}	0.08 (<i>SD</i> = 0.05)	0.07 ^d	.25	2	.747	$\chi^2 = 0.00$	1	.990	0.10 ^e
DFS Subjunctification Density ^{a,b,c}	0.07 (<i>SD</i> = 0.05)	0.30 ^d	.99	2	.010	$\chi^2 = 0.15$	1	.695	4.64 ^e
Number of turns with EMB ratings	5	7							
Average EMB Rating ^f	2.81 (<i>SD</i> = 1.02)	8.46 (<i>SD</i> = .68)	.97	10	< .001	<i>t</i> = 11.60	10	< .001	10.17

Note. EMB = Experience at the moment of the beep; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

^a Averaged across the two raters.

^b Density is subjunctification count divided by time spoken by participant (subjunctifiers per s).

^c Because there was only one 3-minute interval on the very-last-sample interview, it was not possible to compute a *t*-test.

^d Because there was only one 3-minute interval on the very-last-sample interview, it was not possible to compute its *SD*.

^e Emma's effect sizes were calculated using very-first-sample standard deviations because there was only one very-last-sample interval.

^f Average EMB ratings across the two raters and across all rated turns of the interview.

Rows 5 through 9 of Table 6 analyze Emma's subjunctors. Row 5 displays the total count of Emma's subjunctors in her very-first- and very-last-sample interviews (averaged across both raters), and row 6 displays the total subjunctorification density (row 5 divided by row 2) and changes to the overall subjunctorification density across both interviews. Rows 7 through 9 display the density for the three subtypes of subjunctors: phenomena-not-apprehended (PNA) subjunctors, unable-to-classify (UTC) subjunctors, and description-falling-short (DFS) subjunctors.

We used an *N-I* Chi-squared test¹³ to examine the change in subjunctorification density between Emma's very-first-sample and very-last-sample interviews. The four right-hand columns of rows 6 through 9 in Table 5 show our findings: there was no significant nor substantial changes in total, PNA, UTC, and DFS subjunctorification densities between Emma's interviews. We conclude that, for Emma, subjunctorification density alone does not provide much insight into her skill.

Rows 10 and 11 of Table 6 analyze EMB ratings for Emma's sample interviews, counting them in row 10 and, in row 11, showing the average EMB rating. We found that Emma's average EMB rating significantly increased from the very-first-sample interview ($M = 2.81$) to the very-last-sample interview ($M = 8.46$) with a huge ($d = 10.17$) effect size, suggesting extremely great improvement in Emma's cleaving-to-a-moment and cleaving-to-experience skill.

¹³ We note that our data violates some assumptions needed to properly perform an *N-I* Chi-squared test as outlined in Campbell (2007) and Richardson (2011). Notably, we performed this test by treating subjunctorification density as a proportion (i.e., the proportion of seconds with subjunctors in them) and evaluated the difference in proportions between the two interview subjunctorification densities. Given the non-significant difference between Emma's very-first-sample and very-last-sample subjunctorification densities, we contend that the violation of these assumptions are negligible, as the ultimate conclusion would remain the same.

It is worth highlighting a major limitation regarding Emma's sample interviews. Compared to other participants, Emma's very-first-sample and very-last-sample interviews were both short in length: 149.5 and 43.5 seconds, respectively. The relative terseness of her interviews means that there were a limited number of turns to analyze. Thus, added caution should be exercised when attempting to generalize findings from either of her very-first-sample or very-last-sample interviews. Additionally, we provided EMB ratings for only five of the 16 very-first-sample turns. We stopped providing EMB ratings at the conversational turn where Emma disclosed she had not followed DES sampling instructions while wearing the beeper. As such, this context should be considered in understanding Emma's EMB analysis. A further discussion of the limitations of Emma's analysis is provided in Chapter 16.

Qualitative Results and Discussion

A complete, turn-by-turn annotated transcript of Emma's very-first-sample and very-last-sample interviews are provided in Appendix K and L, respectively. There, each annotation includes analysis detailing the extent to which Emma (1) cleaved to a moment in that turn, (2) cleaved to experience in that turn, and (3) used subjunctifiers in that turn. Here, we summarize those results.

Experience at the Moment of the Beep

To reiterate: pristine, directly apprehended experience are phenomena that are present at a specific moment. Thus, the high-fidelity apprehension of inner experience means that participants must cleave to experience-at-the-moment-of-the-beep. (Successfully) cleaving to experience-at-the-moment-of-the-beep requires two, interrelated skills: the ability to cleave to the last, undisturbed moment prior to beep onset and the ability to cleave to directly apprehended

experience. We now review the extent to which Emma demonstrated moment- and experience-cleaving skill at the very start and very end of her DES sampling participation.

Very-First-Sample Interview

(Lack of) Cleaving to the Moment. Emma did not cleave to any specific moment during her very-first-sample interview. Notably, Emma stated she had not worn earphones while using the random beeper and explicitly stated she failed to apprehend the moment of the beep. So, in place of cleaving to a moment, Emma made statements about long time-periods. We provide examples below.

We begin by reviewing Emma's acknowledgement that she did not wear earphones while sampling with the beeper. Upon receiving clarification from DES investigators about what constituted the specific moment of interest (i.e., one microsecond before beep onset), Emma said the following:

E^{16a}: ... right when the beep went off... I, like, had it in my pocket without the headphones in, and I heard something, like, "wait what is that?" And... then I'm like, "wait, is it the beeper?", and then I pulled the beeper out of my pocket and I heard it beeping and then I turned off the button so, like, the beeping, like, stopped—like it made me pulled me out of, like, the conversation and maybe—or "what am I—what am I hearing?" [RTH: Okay] And then... I'm like, "oh, it must be the beeper."

The fact that Emma could not easily identify the leading edge of the beep complicated her possible apprehension of the last, undisturbed moment before the beep: "wait what is that?" and "what am I hearing?" explicitly signaled Emma's confusion about identifying the moment of the beep. Additionally, Emma's comment that she had been "pulled... out of, like, the conversation" was an acknowledgement that attending to the (ambiguous) beep lowered the

possibility that she cleaved to the moment of the beep. Moreover, “I heard something, like, ‘wait what is that?’ And... then I’m like, ‘wait, is it the beeper?’” and “I pulled the beeper out of my pocket... I turned off the button” showed Emma reacting to the beep rather than to moment of interest (i.e., the moment *just before* beep onset). That Emma spoke about any moment other than the moment of the beep decreased the likelihood that she cleaved to the moment of the beep. The sum effect of Emma’s inability to attend to the beep was that she could not have cleaved to a moment, and thus means that all of Emma’s very-first-sample utterances suffered from low (if any) temporal specificity.

Emma’s failure to cleave to a moment becomes clearer when reviewing other conversational turns from the very-first-sample interview. Here is one such example:

E^{4a}: ... and I was, like, thinking of what it would be like to talk to the person, like, explaining well, like, why I wear the big brace while I’m here on campus and why I wear a little brace at home. And thinking about that ’cause I’m scared of falling here on campus [RTH: Okay] when I walk.

This report referred to a long time-period: Emma’s talk of multiple potential conversation topics (“explaining... why I wear the big brace while I’m here on campus... [that] I’m scared of falling here on campus”) signaled this was a reference to a period of indeterminate length, likely spanning several seconds to several minutes. A conversation is descriptive of a process, and a process cannot be apprehended at a moment.

Similarly, Emma was not constrained to a discrete moment in later turns of the very-first-sample interview. At E^{12a}, Emma described an ongoing conversation with multiple topics:

E^{12a}: Um... I'm in like an x-ray room, or, talking to them explaining why, like, explaining about why... what's going on, like, that I fell, I rolled my ankle, and I—they think it might be fractured, and...

Although “I’m in like an x-ray room” may have described an experiential moment, “explaining about why... what’s going on, like, I fell, I rolled my ankle, and... it might be fractured” was a list of several, separate topics that could not possibly have been discussed or apprehended in a single moment.

These excerpts are all illustrative of one simple conclusion: Emma did not cleave to *any* moment during any part of her very-first-sample interview. Thus, she could not have been cleaving to the *specific* moment of interest within DES—the last undisturbed moment at the leading edge of the beep’s onset.

(Lack of) Cleaving to Directly Apprehended Experience

By definition, an inner experience is a phenomenon that is present at a specific moment. Because, as we just reviewed, Emma’s very-first-sample interview never focused on any specific moment, her very-first-sample interview could not have described any genuine inner experience(s). Instead, Emma provided ersatz descriptions and faux generalizations. We provide examples of each.

Some of Emma’s very-first-sample interview turns involved ersatz descriptions—statements that appeared to be of experience, but instead referred to context and other, non-phenomenal things. Here is one example:

E^{4a}: Yesterday, I turned it on at about five-ish and it went off at about 5:28. [RTH: Okay] so it hadn’t been on that long. Um, I was cooking dinner, um...

In this turn, nothing that Emma said was descriptive of phenomena. The time of day the beep occurred and behaviors she had been doing around the moment of the beep—even if true—have nothing to do with Emma’s directly apprehended experience.

Emma also used faux generalizations in her very-first-sample interview. Here is one such example:

E^{4a}: ... I also notice I have inner conversations with myself. [Chuckles and smiles] Um... sometimes, like, just talking to myself sometimes I’m envision I’m talking to somebody else.

“I notice I have” and “sometimes” are characterizations about her (supposed) in-general experience, and statements about in-general experience (whether accurate or not) cannot be descriptive of a specific experience.

Emma’s talk about ersatz descriptions and faux generalizations are illustrative of one simple conclusion: Emma did not cleave to directly apprehended experience during her very-first-sample interview.

Very-First-Sample Interview: Conclusions. Overall, we see that Emma failed to cleave to any moment and failed to cleave to directly apprehended experience during her very-first-sample interview. We conclude that Emma’s utterances in her very-first-sample interview had a near-zero possibility of any descriptive fidelity because she failed to grasp a particular moment of experience.

Very-Last-Sample Interview

Emma’s very-last-sample interview was consistent with cleaving to directly apprehended experience that occurred at a specific moment. Since the high-fidelity apprehension and description of experience must involve the simultaneous presence of cleaving to a moment and to

directly apprehended experience, we are unable to separate our analysis of Emma's very-last-sample cleaving abilities as independent processes. Therefore, we will review examples from Emma's very-last-sample interview and examine whether she did simultaneously cleave to a moment and cleave to experience.

Here is Emma's very first turn from her very-last-sample interview:

E^{2b}: [looking at notes] I was, uh, feeling chest... chest pain.

That was a straightforward description of that was consonant with directly apprehended phenomena present at a single, specific moment.

Throughout the remainder of her very-last-sample interview, Emma consistently described possible phenomena present at a specific moment, and most turns appeared to describe the same moment of feeling-of-chest-pain experience that she described in E^{2b}. For example:

- In E^{6b}, she said, "I'm, like, aware that, there's... the pain in my chest." Although being "aware" of chest pain may be contrasted with "feeling chest pain" described in E^{2b}, it still featured chest pain as a primary characteristic and was still consistent with describing directly apprehended phenomena present at a moment.
- In E^{10b}, Emma said, "I'm, like, feeling it but I'm not... like, really, that engaged on thinking about it." This again appeared to describe the feeling-chest-pain experience described in previous turns. Emma additionally was able to make clear that her at-the-moment of experience was a sensory experience ("I'm, like, feeling it") and *not* a cognitive experience ("I'm not... that engaged on thinking about it").
- In E^{12b}, Emma described the characteristics of her chest pain, stating that it had been "a dull, achey" pain.
- In E^{14b}, Emma described the location of her chest pain: "Just the center [of my chest]."

The main takeaway: Emma appeared to describe the same feeling-chest-pain experience in a manner that was consistent, temporally specific, and entirely descriptive of phenomena to the exclusion of all else across multiple turns of her very-last-sample interview.

Very-Last-Sample Interview: Conclusions. Overall, we see that Emma appeared to cleave to a moment and to experience in her very-last-sample interview. We conclude that Emma's descriptions had the probability (or at least the possibility) of describing with fidelity a moment of experience (perhaps most likely the experience at the beep).

Comparison: Very-First-Sample Qualitative Characteristics vs. Very-Last-Sample Qualitative Characteristics

We have seen that, in her very-first-sample interview, Emma did not describe any particular moment and did not describe experience. By contrast, Emma's very-last-sample interview was constrained to a relatively specific time and was mostly limited to describing experience. We conclude that Emma's very-last-sample interview was *very different from* her very-first-sample interview. Whereas in the very-first interview, she could not possibly have been describing an experience that was directly apprehended at the moment of the beep with any level of fidelity, in the very-last sample she (at least) might have been describing an experience that was directly apprehended at the moment of the beep.

Subjunctification

As we have just detailed, there is reason to believe that Emma's descriptions were of much higher fidelity during her very-last-sample interview than they had been on her very-first-sample interview. However, we have also seen in the Quantitative Results and Discussion section that her subjunctification density did not significantly change from the very-first to very-last sample. Hurlburt (2011) proposed that subjunctification density can generally be thought

of as an indicator of descriptive fidelity—that the higher the density (that is, a greater number of subjunctifiers per second), the lower the fidelity. Emma’s sampling suggests that Hurlburt’s proposal does not apply for Emma; despite the lack of significant change between interviews, it is undeniable that Emma changed between her very-first-sample and very-last-sample interviews.

Therefore, it is desirable and necessary to consider qualitatively the way in which Emma’s type and manner of subjunctification changed between interviews; doing so may provide greater insight into Emma’s improvement. We observe that nearly all of Emma’s very-first-sample interview subjunctifiers signaled that she failed to apprehend her experience-at-the-moment-of-the-beep (and thus undermined any possibility of describing experience). In other words, all of Emma’s very-first-sample subjunctification was of the *phenomenon-not-apprehended* (PNA) type. By contrast, nearly all her very-last-sample interview subjunctifiers signaled that, whereas Emma apprehended the phenomenon adequately, her description was not yet adequate. That is, most very-last-sample subjunctification was of the *description-falling-short* (DFS) type.

There were three types of PNA subjunctifiers that were common in Emma’s very-first-sample interview: causal inferences, hedges, and softening expressions. We provide examples of each.

Here is an example of causal inferences from one of Emma’s first conversational turns in her very-first-sample interview (both causal inferences are set in italics and with superscripts):

E^{4a}: ... And, I envision—*'cause*¹ I’m probably gonna go get my x-ray done today for my ankle, and I was, like, thinking of what it would be like to talk to the person, like, explaining well, like, why I wear the big brace while I’m here on campus and why I wear

a little brace at home. And thinking about that ‘*cause I’m scared of falling here on campus*².

Both instances of “‘cause” are inferred explanations as to why something (potentially) occurred, but in no way provided any description of directly apprehended experience.

Another common PNA subjunctifier that Emma used during her very-first-sample interview were hedges, or statements that signal what is about to be said are speculations. Here is an example, with all subjunctifiers set in italics and with superscripts:

E^{8a}: I, I imagine myself talking to a doctor. *I imagine male*¹ *since most of the sports medicine people I’ve talked to have been male doctors*².

“*I imagine male*¹” literally means that what is being provided is guessed—it is not to be taken as a description of an experience that had been apprehended. Moreover, note that all that follows the hedge is a (possibly incorrect) causal inference—that Emma has mostly interacted with male sports medicine doctors says nothing descriptive about her experience-at-a-moment.

Emma’s very-first-sample interview also involved softening expressions. Here is an example:

E^{12a}: *Um*^{1...2} I’m in *like*³ an x-ray room, *or*⁴, talking to them explaining why, *like*⁵, explaining about why...⁶ what’s going on, *like*⁷, that I fell, I rolled my ankle, and I—⁸ they think it might be fractured, and...

All of these subjunctifiers undermined any commitment to describing a particular experience.

“I’m in *like*³ an x-ray room,” implied that what was being described may or may not have been true; the “*or*⁴” in “I’m in *like*³ an x-ray room, *or*⁴, talking to them explaining why, *like*⁵” proposes two reports of experience, which lessens the fidelity of a single experience-at-a-moment; and the long list of possible topics of discussion (“what’s going on, *like*⁷, that I fell, I

rolled my ankle”) approximated the conversation and was not descriptive of any particular experience-at-a-moment.

Thus, all the subjunctifiers in Emma’s very-first-sample interview had the effect of undermining any communication about directly apprehended experience, either by reporting on causal inferences, by hedging, or by softening a report. Thus, all were PNA subjunctifiers.

By contrast, Emma’s subjunctifiers on her very-last-sample interview seemed to signal that she was working to refine the fidelity of her descriptions of experience-at-the-moment-of-the-beep—hence, DFS subjunctifiers. The DFS subjunctifiers never undermined Emma’s commitment to describing a particular phenomena; because the subjunctifiers were nearly always immediately followed by descriptions of apprehendable phenomena (or at least the possibility thereof), they signaled that Emma *was attempting to give a careful description of experience*.

Here is an example from E^{10b} (all subjunctifiers are set in italics with superscripts):

E^{10b}: I’m, *like*¹, feeling it but I’m not...² *like*³, really, that engaged on thinking about it. Here, both “likes” qualified a distinction between feeling and thinking; that is, Emma was wholly constrained to describing experience, and the subjunctifiers did not undermine the specificity of her report. In fact, the most straightforward interpretation of her utterances was that she was trying to refine what she meant by the distinction between feeling and thinking—a distinction that was entirely aimed at a providing a high-fidelity description of experience.

Here is another example of DFS subjunctifiers from the first sentence of E^{4b} (all subjunctifiers are set in italics with superscripts):

E^{4b}: *Um*¹, I was *kinda*² *like*³...⁴ feeling that [the chest pain] was there.

All of these subjunctifiers are immediately situated by a description of phenomena (the feeling of chest pain). The most likely interpretation of these subjunctifiers is that they were used as a means of refining the description of chest pain.

This is not to suggest, however, that Emma's very-last-sample interview was entirely consistent with high skill. In the last turns of the very-last-sample interview, Emma subjunctified in a way that signaled that she may have failed to grasp her experience-at-a-moment undermined her descriptions through her use of softening expressions (all subjunctifiers are set in italics with superscripts):

RTH^{18b}: And, is the—so the previous beep, we talked about the hearing of the construction. But not really attending to it.

E^{19b}: Yeah.

RTH^{20b}: Is that the same—more or less the same kind of a deal; a different sensory deal here?

E^{21b}: *I think so*¹.

RTH^{22b}: So I'm... I'm hearing construction, or I guess I'm hearing the construction, or I'm feeling my chest... sort of the same deal?

E^{23b}: *I think so*².

The two instances of “I think so” in E^{21b} and E^{23b} are examples of UTC subjunctifiers: Although they may be aimed at describing experience (which would make them DFS subjunctifiers) they may also be hedges (which would make them PNA subjunctifiers) or somewhere in between (which would make them UTC subjunctifiers)¹⁴.

¹⁴ We note that these subjunctifiers may have been caused by RTH's abstract line of questioning and Emma's difficulty in understanding RTH's questions. In other words, Emma's subjunctification in E^{21b} and E^{23b} may have been more a reflection of Emma's confusion regarding RTH's questions rather than her ignorance or unfamiliarity about her experience-at-the-moment-of-the-beep.

Comparison: Very-First-Sample Subjunctification vs. Very-Last-Sample Subjunctification

Overall, the quantification of subjunctification density was not effective as a measure of the fidelity of Emma's descriptions: both of Emma's interviews featured a high density of subjunctifiers that did not change between interviews. However, we did observe notable differences in the types of subjunctifiers present within each interview (that is: the relative proportion of PNA, UTC, and DFS subjunctifiers that contributed to the total subjunctification in each interview changed in composition between the very-first-sample and very-last-sample interviews). Subjunctifiers in Emma's very-first-sample interview were mostly PNA subjunctifiers—utterances that signaled that phenomenon may not have been adequately grasped, and so lowered any possibility of describing a specific moment of experience. In contrast, subjunctifiers in Emma's very-last-sample interview were mostly DFS subjunctifiers—utterances that signaled an attempt to refine the fidelity of describing a specific moment of experience.

Emma: Overall Conclusion

The goal of this chapter was to examine a single participant (in this case: Emma) at the very start and the very end of her sampling process to assess any changes in her skillfulness to engage in the sampling task (describing directly apprehended experience present at the moment of the beep). By *skillfulness*, we specifically considered (using both quantitative and qualitative means) the extent to which Emma cleaved to experience-at-the-moment-of-the-beep; we also considered the nature of her subjunctifiers.

The Very-First-Sample Interview: Did Emma (Possibly) Describe Experience?

No. She cleaved neither to the moment nor experience, her interview involved a moderately high density of subjunctifiers (mostly PNA), and the average EMB rating for the interview was low. Most notably, Emma did not follow the instructions for sampling and did not

wear earphones while using the beeper. This meant that she had (explicitly stated) difficulties cleaving to the moment of the beep.

The Very-Last-Sample Interview: Did Emma Improve?

Yes. She appeared to cleave to experience-at-the-moment-of-the-beep, in which she described an awareness of chest tightness. The very-last-sample interview still involved a moderate density of subjunctifiers that was not significantly different from the very-first-sample interview, but, unlike the very-first-sample interview, most subjunctifiers were of the DFS type, signaling she successfully apprehended her experience but struggled to describe her experience. Therefore, the EMB ratings for the interview were over three times higher than for those of her very-first-sample interview.

Comparing the Very-First-Sample and Very-Last-Sample Interviews

Ultimately, we draw the following conclusion: whereas Emma's very-first-sample interview could not possibly have been a high-fidelity description of experience (because she failed to cleave to any moment and failed to cleave to any experience), it is possible that Emma's very-last-sample interview involved high-fidelity descriptions of experience (because she showed improvement in cleaving to a moment and in cleaving to experience). We cannot be certain whether or not fidelity was actually achieved, but Emma's improvement in cleaving to the moment and to experience, and the change in the manner of her subjunctification, suggests at least the *possibility* that Emma was apprehending at-the-moment experience in high-fidelity at the end of her sampling participation.

Chapter 13: Overall Results

The present study examined whether DES participants demonstrated changes in their skill to engage in the DES task—to apprehend and describe directly apprehended experience present at the moment of the beep. To give the iterative process the greatest possible latitude to work, we compared the very-first-sample interview to the very-last-sample interview of six DES participants from two previous DES investigations. We quantitatively and qualitatively assessed participant’s skill in engaging in the DES task by considering the extent to which each participant (a) cleaved to a moment and (b) cleaved to experience; we also considered (c) participant’s subjunctifier use (density and type). In the previous chapters, we treated each participant as an individual $N = 1$ case study; we now consider overarching findings that were common across our six case studies.

We will first review and discuss the overall quantitative results across all participants. Then, we will discuss the qualitative results of the very-first-sample interview across all participants. Lastly, we will discuss the notable changes observed in the very-last-sample interview by contrasting qualitative results of the very-last-sample interview with what was observed on the very-first-sample interview and the implications of these changes.

Quantitative Results

Comparing Quantitative Results of Very-First-Sample Interviews vs. Very-Last-Sample Interviews for Each Participant

Table 7 provides a summary of the direction and magnitude of change in subjunctification density and EMB ratings for each of the six individual participants in this study, reprinting results from each individual participant’s chapter. We see that the direction of change was universal for each participant from the very-first-sample interview to the very-last-

sample interview (with the exception of Emma's change in total subjunctification density): every individual participant's total, PNA, and UTC subjunctification density decreased while their DFS subjunctification density and EMB rating increased. Moreover, as displayed in the bottom panel of Table 7, the median effect sizes of these changes were all substantial. Taken together, these trends signals each and every participants' improvement in cleaving to experience-at-a-moment between interviews.

Table 7

Subjunctification Density and EMB Rating Change from the Very-First-Sample Interview to the Very-Last-Sample Interview for Each Participant

Partic.	Subjunctification Density									
	Total		PNA		UTC		DFS		EMB Rating	
	Change	<i>d</i>	Change	<i>d</i>	Change	<i>d</i>	Change	<i>d</i>	Change	<i>d</i>
Amelia ^a	Decrease*	3.12	Decrease*	5.32	Decrease	1.65	Decrease	4.45	Increase*	6.33
Shirley ^b	Decrease*	6.13	Decrease*	3.01	Decrease*	2.80	Decrease*	1.43	Increase*	8.14
Kayla ^c	Decrease	0.88	Decrease*	4.18	Decrease*	4.13	Decrease*	2.24	Increase*	3.91
Jake ^d	Decrease	0.97	Decrease*	2.25	Decrease	0.67	Decrease	1.75	Increase*	2.90
Macy ^e	Decrease	2.20	Decrease	2.30	Decrease	1.59	Decrease	0.13	Increase*	1.62
Emma ^f	Increase	0.43	Decrease	3.01	Decrease	0.10	Decrease	4.64	Increase*	10.17
Across Participants										
Median	Decrease	1.59	Decrease	3.01	Decrease	1.62	Increase	2.00	Increase	5.12

Note. Partic. = Participant; PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short.

* Within participant, $p < .05$

^a Reprinted from Table 1 for participant Amelia

^b Reprinted from Table 2 for participant Shirley

^c Reprinted from Table 3 for participant Kayla

^d Reprinted from Table 4 for participant Jake

^e Reprinted from Table 5 for participant Macy

^f Reprinted from Table 6 for participant Emma

Comparing Quantitative Results of Very-First-Sample Interviews vs. Very-Last-Sample Interviews

Subjunctification Density. Table 8 summarizes the average subjunctification density (both by type and in total) across both interviews for all participants, reprinting results from each individual participant's chapter.

Table 8*Comparing Subjunctification Density Across All Participants*

Participant (Study)	Total <i>M</i> (<i>SD</i>)		PNA <i>M</i> (<i>SD</i>)		UTC <i>M</i> (<i>SD</i>)		DFS <i>M</i> (<i>SD</i>)	
	First	Last	First	Last	First	Last	First	Last
Amelia (Methodological) ^a	0.37 (0.06)	0.16 (0.10)	0.37 (0.08)	0.02 (0.02)	0.01 (0.01)	0.04 (0.04)	0.01 (0.01)	0.10 (0.04)
Shirley (Methodological) ^b	0.32 (0.02)	0.15 (0.04)	0.17 (0.07)	0.01 (0.01)	0.10 (0.03)	0.03 (0.01)	0.05 (0.04)	0.11 (0.04)
Kayla (Methodological) ^c	0.59 (0.11)	0.52 (0.06)	0.53 (0.11)	0.13 (0.09)	0.06 (0.02)	0.16 (0.03)	0.00 (0.00)	0.23 (0.13)
Jake (Psychotherapy) ^d	0.42 (0.14)	0.28 (0.16)	0.27 (0.13)	0.04 (0.03)	0.11 (0.06)	0.08 (0.05)	0.04 (0.04)	0.16 (0.10)
Macy (Psychotherapy) ^e	0.41 (0.07)	0.28 (0.06)	0.08 (0.04)	0.02 (0.01)	0.13 (0.14)	0.01 (0.01)	0.20 (0.11)	0.25 (0.06)
Emma (Psychotherapy) ^f	0.31 (0.14)	0.37	0.17 (0.06)	0.00	0.08 (0.05)	0.07	0.07 (0.05)	0.30
Across Participants								
<i>M</i>	0.40	0.29	0.27	0.04	0.08	0.07	0.06	0.19
(<i>SD</i>)	(0.10)	(0.14)	(0.16)	(0.05)	(0.04)	(0.05)	(0.07)	(0.08)
<i>t</i> (5) ^g	-2.83		-4.40		-0.53		3.92	
<i>p</i>	.037		.007		.618		.011	
<i>d</i>	0.90		1.90		0.35		1.69	

Note. PNA = Phenomena-not-apprehended; UTC = Unable-to-classify; DFS = Description-falling-short; First = Very-first-sample interview; Last = Very-last-sample interview.

^a Reprinted from Table 1 for participant Amelia

^b Reprinted from Table 2 for participant Shirley

^c Reprinted from Table 3 for participant Kayla

^d Reprinted from Table 4 for participant Jake

^e Reprinted from Table 5 for participant Macy

^f Reprinted from Table 6 for participant Emma

^g Dependent samples

As shown at the bottom of Table 8, we performed dependent-samples *t*-tests to compare the average change in the subjunctification density by subjunctifier type. We found that total subjunctification density significantly decreased from the very-first-sample interview ($M = 0.40$ subjunctifiers per second) to the very-last-sample interview ($M = 0.29$ subjunctifiers per second) with a large ($d = 0.90$) effect size; we similarly found that the average PNA subjunctification density significantly decreased from the very-first-sample interview ($M = 0.27$ subjunctifiers per second) to the very-last-sample interview ($M = 0.04$ subjunctifiers per second) with a substantial ($d = 1.90$) effect size. By contrast, average DFS subjunctification density significantly *increased* from the very-first-sample interview ($M = 0.06$ subjunctifiers per second) to the very-last-sample interview ($M = 0.19$ subjunctifiers per second) with a substantial ($d = 1.69$) effect size. These findings suggest that, on average¹⁵, participants' talk reflected participants' significant improvement in cleaving to experience-at-a-moment between their two interviews.

We found no significant or substantial difference in UTC subjunctification density between the two interviews. Because UTC subjunctifiers merely represent subjunctifiers that could not easily be classified as a PNA or DFS-type subjunctifier, they do not provide insight into the possible fidelity of a participant's report, and thus this finding is irrelevant to the main aims of the current study.

EMB Ratings. Table 9 summarizes the average EMB ratings across both interviews for all participants, reprinting results from each individual participant's chapter.

¹⁵ The analyses in Tables 7 and 8 are Galtonian, the kind most frequently used in psychological research. See footnote 4.

Table 9*Comparing EMB Ratings Across All Participants*

Participant (Study)	EMB Rating <i>M (SD)</i>	
	First	Last
Amelia (Methodological) ^a	1.65 (1.16)	8.97 (1.16)
Shirley (Methodological) ^b	1.33 (0.99)	9.10 (0.90)
Kayla (Methodological) ^c	0.52 (0.42)	6.31 (1.82)
Jake (Psychotherapy) ^d	2.71 (1.99)	7.68 (1.20)
Macy (Psychotherapy) ^e	5.18 (2.14)	8.00 (1.31)
Emma (Psychotherapy) ^f	2.81 (1.02)	8.46 (0.68)
Across Participants		
<i>M (SD)</i>	2.37 (1.63)	8.09 (1.03)
<i>t(5)</i> ^g		7.90
<i>p</i>		< .001
<i>d</i>		4.21

Note. EMB = Experience at the moment of the beep; First = Very-first-sample interview; Last = Very-last-sample interview.

^a Reprinted from Table 1 for participant Amelia.

^b Reprinted from Table 2 for participant Shirley.

^c Reprinted from Table 3 for participant Kayla.

^d Reprinted from Table 4 for participant Jake.

^e Reprinted from Table 5 for participant Macy.

^f Reprinted from Table 6 for participant Emma.

^g Dependent samples.

As shown at the bottom of Table 9, we performed a dependent-samples *t*-test to compare the average change in EMB rating. We found that average EMB ratings significantly increased from the very-first-sample interview ($M = 2.28$) to the very-last-sample interview ($M = 8.09$) with a huge ($d = 4.21$) effect size. This finding suggests (similar to the implications of subjunctification density described above) an extremely large improvement in participants' cleaving to experience-at-the-moment-of-the-beep between their two interviews.

Reliability. Table 10 shows subjunctification densities ratings for each rater by interview and participant. As shown in the bottom panel of Table 10, we assessed interrater reliability in three ways. First, we computed the Pearson correlation between raters' subjunctification densities across the very-first-sample interviews. This assesses whether raters agreed on subjunctification ratings for naïve participants, when (presumably) individual differences in participants' natural level of subjunctification would be greatest. Then we computed the Pearson correlation between raters' subjunctification densities across the very-last-sample interviews. This assesses whether raters agreed on subjunctification ratings for participants who had been trained in DES reporting, when (presumably) their individual differences had been reduced by training (and reliability might be expected to be lessened by reduction of range). Then we computed the Pearson correlation between raters' subjunctification densities across all interviews. This confounds individual differences and training effects, but reliability might be expected to be higher because of that confound. As shown in the bottom panel of Table 10, it doesn't much matter how those reliabilities are computed: they are acceptably high (following

the recommendations of Multon, 2010) for the subjunctification measurements that are of most interest¹⁶ (i.e., total, PNA, and DFS subjunctifiers).

¹⁶ UTC subjunctifiers had low to moderate interrater reliability across the individual sample interviews ($r = .64$; $r = .74$) and across both interviews ($r = .65$), respectively. However, because UTC subjunctifiers referred only to subjunctifiers that could not be straightforwardly categorized as being either PNA or DFS subjunctifiers, and because UTC subjunctifiers were not interpreted throughout this study, the interrater reliability of UTC subjunctifiers are inconsequential.

Table 10*Subjunctification Densities by Rater*

Sample interview	Participant	Total ^a		PNA ^a		UTC ^a		DFS ^a	
		Rater		Rater		Rater		Rater	
		CK	RTH	CK	RTH	CK	RTH	CK	RTH
First	Amelia	.41	.32	.40	.30	.01	.01	.00	.01
	Shirley	.34	.31	.17	.20	.13	.06	.05	.05
	Kayla	.55	.55	.43	.55	.12	.00	.00	.00
	Jake	.43	.37	.22	.30	.12	.05	.10	.02
	Macy	.47	.40	.14	.04	.16	.19	.16	.16
	Emma	.28	.17	.21	.08	.06	.03	.02	.06
Last	Amelia	.17	.08	.02	.00	.03	.02	.11	.06
	Shirley	.17	.15	.01	.00	.06	.01	.10	.14
	Kayla	.51	.51	.14	.14	.20	.13	.17	.25
	Jake	.20	.17	.01	.04	.06	.04	.13	.10
	Macy	.27	.27	.03	.01	.01	.00	.23	.26
	Emma	.40	.34	.00	.00	.14	.00	.26	.34

Pearson's *r* Across Participants

Very-first-sample ^b	.97	.83	.64	.81
Very-last-sample ^c	.99	.96	.74	.92
Both interviews ^d	.97	.91	.65	.91

Note. First = Very-first-sample interview; Last = Very-last-sample interview; Both interviews = Both very-first-sample and very-last-sample interviews.

^a Subjunctification density averaged within individual raters for each respective sample interview.

^b Pearson's *r* of all of CK's very-first-sample interview subjunctification densities compared with all of RTH's very-first-sample subjunctification densities.

^c Pearson's *r* of all of CK's very-last-sample interview subjunctification densities compared with all of RTH's very-last-sample subjunctification densities.

^d Pearson's *r* of all of CK's subjunctification densities for both interviews compared with all of RTH's subjunctification densities for both interviews.

Table 11 shows EMB ratings for each rater by interview and participant. As shown in the bottom panel of Table 11, and parallel to the analysis described for Table 10, we assessed interrater reliability in three ways. As in Table 10, it doesn't much matter how the EMB reliability is computed: they are all acceptably high (following the recommendations of Multon, 2010).

Table 11*EMB Ratings by Rater*

Sample interview	Participant	EMB Rating ^a	
		Rater	
		CK	RTH
First	Amelia	1.18	2.12
	Shirley	0.73	1.93
	Kayla	0.25	0.33
	Jake	2.43	3.00
	Macy	4.94	7.24
	Emma	1.62	4.00
Last	Amelia	8.07	9.87
	Shirley	9.04	9.15
	Kayla	6.07	6.86
	Jake	7.65	7.70
	Macy	8.10	7.90
	Emma	5.72	6.50

Pearson's *r* Across Participants

Very-first-sample ^b	0.95
Very-last-sample ^c	0.84
Both interviews ^d	0.96

Note. EMB= Experience-at-the-moment-of-the-beep; First = Very-first-sample interview; Last = Very-last-sample interview; Both interviews = Both very-first-sample and very-last-sample interviews.

^a EMB rating averaged within individual raters for each respective sample interview.

^b Pearson's *r* of all of CK's very-first-sample interview EMB ratings compared with all of RTH's very-first-sample interview EMB ratings.

^c Pearson's *r* of all of CK's very-last-sample interview EMB ratings compared with all of RTH's very-last-sample interview EMB ratings.

^d Pearson's *r* of all of CK' EMB ratings for both interviews compared with all of RTH's EMB ratings for both interviews.

Quantitative Results: Conclusions

As assessed using subjunctification density and EMB ratings, participants' ability to cleave to experience-at-a-moment improved substantially from the very-first-sample interview to the very-last-sample interview. Very-first-sample interviews involved high total and PNA subjunctification densities and low EMB ratings, which suggests that naïve participants failed to cleave to a specific moment or to directly apprehended experience. By contrast, very-last-sample interviews involved substantially lower total and PNA subjunctification densities and higher EMB ratings, which suggests that with practice, participants improved in their ability to engage in the DES task: they spoke in a manner more consistent with successfully cleaving to experience-at-the-moment-of-the-beep. In instances where participants used subjunctifiers at all in their very-last-sample interview, approximately two-thirds of those subjunctifiers were DFS, suggesting that very-last-sample subjunctification was the result of the difficulty in describing phenomena.

Qualitative Results

We qualitatively assessed three characteristics of participant's skill within very-first-sample and very-last-sample interviews: cleaving to a moment, cleaving to experience, and the type and manner of subjunctifiers used. We begin by first discussing the two types of subjunctifiers that were identified as part of this study. We then presenting the common characteristics of very-first-sample interviews. Once we have established how participants naïve to the DES process performed on the very-first-sample interview, we present changes in participant's skill by contrasting participant's skill during the very-last-sample interviews with what was observed during the very-first-sample interviews.

Types of Subjunctifiers

Following Hurlburt (2011), it has been customary to use subjunctification density as an indicator of descriptive fidelity—the higher the density (of subjunctifiers per second spoken), the lower the fidelity. This recommendation has remained unquestioned within the DES literature due in large part to way subjunctifiers have long been defined as “anything that gives a sign that a subject’s utterance is not to be confidently understood as a straightforward description of momentary experience” (Hurlburt, 2011, p. 116).

Hurlburt’s definition of a subjunctifier implies (correctly) that all subjunctifiers are undermining in nature. Subjunctifiers signal that anything within its vicinity (either preceding or subsequent) should not be straightforwardly understood. However, although all subjunctifiers communicate an undermining of sorts, the *manner* in which subjunctifiers undermine *does* vary—that is, not all subjunctifiers undermine in the same way. The results from this study led us to identify two different types of subjunctifiers: those that signal that the phenomenon was not apprehended adequately (we have called them *phenomenon-not-apprehended* or PNA subjunctifiers), and those that signal that the description was not adequate even though the phenomenon seemed to have been apprehended adequately (we have called them *description-falling-short* or DFS subjunctifiers). We present operational definitions and examples of PNA and DFS subjunctifiers below.

We recognize a subjunctifier as being a PNA subjunctifier when it occurs in the vicinity of talk that *does not* make a single (or otherwise consistent) phenomenal reference(s). In other words, PNA subjunctifiers signal that there is no possibility that the talk is describing a specific phenomenon, either because what is being said does not describe any phenomenon (e.g., generalities, statements of causation) or because the talk characterizes something that might be a phenomenon but is inconsistent (for example: describing one putative phenomenon but then

morphing into describing a different putative phenomenon with no recognition of transition or simultaneity).

Here is an example of the use of PNA subjunctifiers (from Amelia's very-first-sample interview). All subjunctifiers are set in italics and with superscripts:

A^{1a}: “Actually, my first beep I was *like*¹, *I dunno*², I was thinking of why the beeper didn't go off [laughs]. So the whole time I was just wondering...³ when it would beep *because*⁴ it took *like*⁵, maybe about an hour before it beeped? So I thought, *like*⁶, *maybe*⁷ I should call you...⁸ text you...⁹ *like*¹⁰, there was some kind of problem...¹¹ and then it just beeped. And I knew it worked. And that was it. [laughs] It was a simple one.”

In this turn, there are at least four possible phenomena being invoked: I was thinking of why...; I was wondering when...; maybe I should call you; maybe I should text you. Note that if these reports are of phenomena, the phenomena are very different from each other; that is, they refer to four different experiences (not simply variations of the same experience). Additionally, note the way in which the subjunctifiers contribute to the approximation of experience: “*like*¹, *I dunno*²” explicitly signals that what follows should not be understood straightforwardly, and “so I thought, *like*⁶, *maybe*⁷” de-particularizes Amelia's report and diminishes the likelihood Amelia is cleaving to a specific experience-at-a-moment. Thus, the subjunctifiers in A^{1a} signal that the talk could *not possibly* be aimed at a particular phenomenon; therefore, these are PNA subjunctifiers, and therefore it is likely that no particular phenomenon had been apprehended.

We note that these conclusions emerge from the nature of Amelia's talk itself—we are not mind-reading, not hypothesizing about *why* Amelia subjunctified, not comparing Amelia's talk to some epistemologically questionable assumption about the “accuracy” of Amelia's descriptions. Instead, we consider only the literal, grammatical effects of the words

(subjunctifiers) Amelia used and from that direct observation conclude that what Amelia said had no possibility of describing phenomena. In short, as illustrated in A^{1a}, PNA subjunctifiers indicate that a description has low (or no) fidelity.

In contrast to PNA subjunctifiers, we recognize a subjunctifier as being a DFS subjunctifier when it occurs in the vicinity of talk that *does* make a single (or otherwise consistent) phenomenal reference(s), but the words used in those references are delivered in a halting, inconsistent, or otherwise unconfident way. Here is an example of the use of DFS subjunctifiers (from Shirley's very-last-sample interview). All subjunctifiers are set in italics and with superscripts:

S^{21b}: Yeah, it was, it was...¹ *like*², literally a hundred and then x one equals [draws out the equation in front of her with her right index finger]. And it was...³ it was white in bold. And the background was...⁴ [*quizzically grimaces*⁵] it wasn't black, but it was...⁶ black. [Laughs⁷]

In this turn, everything that Shirley talked about was descriptive of a single, directly apprehended phenomenon (an inner seeing of a math problem). That is, Shirley did *not* equivocate about her experience, did *not* conflate her experience with statements of in-general experience, did *not* conflate her experience with non-experiential things, and so on; her consistency suggests that Shirley was talking about experience apprehended at-a-moment. Because all the subjunctifiers in this turn occur within talk that was aimed at a single phenomena, they signal that Shirley herself judges that her *description* of the phenomenon is not yet of adequate fidelity.

We observe that every subjunctifier in S^{21b} lead Shirley's description *towards* a particularized experience; that is, these DFS subjunctifiers signal Shirley's struggle to describe phenomena with fidelity. Whereas PNA subjunctifiers sow doubt that any particular experience

is being described (because they generalize and/or approximate any talk of experience), DFS subjunctifiers do the opposite: there is little doubt that a particular experience is being described, and the subjunctifiers merely refine the description of the particular experience.

Like our consideration of recognizing PNA subjunctifiers, we are not mind-reading, not hypothesizing about *why* Shirley subjunctified, not comparing Shirley 'stalk to some epistemologically questionable assumption about the "accuracy" of her descriptions. Instead, we considered only the literal, grammatical effects of the words (subjunctifiers) she used.

The Very-First-Sample Interview: Did Participants Describe Experience?

We found that no participant during their very-first-sample interviews straightforwardly described their experience at any moment (much less at the last, undisturbed moment before the onset of the beep), and (therefore) failed to cleave to any experience (much less the experience present at the moment of the beep). On average, subjunctifiers were also dense across very-first-sample interviews and were comprised primarily of PNA subjunctifiers.

The Very-First-Sample Interview: Failures of Cleaving to the Moment. Participants failed to cleave a moment as evidenced by one of three shortcomings: their reports suffered either from *temporal indeterminacy*, *temporal imprecision*, or *temporal incorrectness*. Table 12 provides an overview of each type of temporal shortcoming.

Table 12*Cleaving to the Moment of the Beep and Failures to do so*

	Aimed at some temporal interval	Aimed at one particular moment	Aimed at the moment of the beep	Brief description
Temporal indeterminacy	✗	✗	✗	No particular moment
Temporal imprecision	✓	✗	✗	Some unspecified set of moments
Temporal incorrectness	✓	✓	✗	The wrong moment
Cleaving to the moment	✓	✓	✓	The moment of the beep

Temporal indeterminacy. Temporal indeterminacy refers to instances where a participant talked about things that had no relevancy towards time. Here is a typical example from Emma’s very-first-sample interview:

E^{4a}: ...I also notice I have inner conversations with myself. [Chuckles and smiles] Um... sometimes, like, just talking to myself sometimes I’m envision I’m talking to somebody else.

This entire turn is a timeless generalization—a statement that is unrelated to any specific moment. Note that whether the generalization is true or false does not matter from the standpoint of temporal specificity: even if the generalization is true, it is not a description of any particular moment. A report that does not specify any particular moment cannot possibly cleave to any specific moment, let alone to the moment of the beep. Thus, the first row of Table 12 has all X’s—temporally indeterminate reports fail to meet any of the stated criteria of cleaving to a moment.

Temporal imprecision. Temporal imprecision refers to instances where a participant talks about a specific time-period (or several moments) but fails to limit itself to a single moment. Unlike temporal indeterminacy, the time is of some relevance to the participant—that is, the participant was discussing an event that occurred at some particular time, but the timing is not constrained to any particular moment. Here is a typical example from Amelia’s very-first-sample interview:

A^{1a}: “Actually, my first beep I was like, I dunno, I was thinking of why the beeper didn’t go off [laughs]. So the whole time I was just wondering... when it would beep because it took like, maybe about an hour before it beeped? So I thought, like, maybe I should call you... text you... like, there was some kind of problem... and then it just beeped. And I knew it worked. And that was it. [laughs] It was a simple one.

Here, Amelia talked about a long time-period: “so the whole time...maybe an hour.”

Furthermore, “and I knew it worked” was aimed at a time *after* the beep. Thus, A^{1a} is temporally imprecise in two ways: it refers to both a long period (an hour) and to several moments (both before and after the beep).

Here is another example of temporal indeterminacy from Kayla’s very-first-sample interview:

K^{2a}: Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else.

This specified a temporally particular event (the making-of-tuna-sandwiches took place on a particular day at a particular time), but the event has a long duration—perhaps hundreds of individual moments could occur during the five-or-so minutes of making of sandwiches.

Temporal imprecision is an improvement over temporal indeterminacy—we are at least talking about some discrete time (hence the checkmark in the second row of Table 12; temporal imprecision does involve some temporal interval). But that time is still far too long for DES (hence the X’s for all other cleaving-to-a-moment criteria).

Temporal incorrectness. Temporal incorrectness refers to instances where a participant appears to talk about experience at a specific moment, but the moment involved could not have been the moment of the beep. Here is an example from Shirley’s very-first-sample interview:

LLC^{1a}: All right, so... what, if anything, was in your experience at the moment of the first beep?

S^{2a}: Um, I was scared. [Laughs]

LLC^{3a}: Okay.

S^{4a}: I didn’t know what was—I forgot that, um, I put the beeper on, so I was really startled. Um...

Shirley is describing a fairly specific moment—the time of being scared/startled by the beep. Although this description was aimed at a specific moment (hence the two checkmarks in the third row of Table 12; temporal incorrectness involves some temporal interval and one specific moment), it is the wrong moment—the moment of interest to DES is *before* the beep, but the moment of the startle must be *after* the beep (hence the X for the criteria of aiming at the moment of the beep).

Failures of Cleaving to the Moment: Conclusions. DES is interested in only one temporal moment, usually called “the moment of the beep,” and sometimes metaphorically called “the millisecond right before the beep,” the “moment caught in flight by the beep,” the “last undisturbed moment before the beep,” or the moment “interrupted by the onset of the

beep.” Inner experience is (by definition) private, so we cannot observe directly whether a moment being described actually occurred at this target moment. However, if a description is temporally indeterminate (not about any particular time at all), it *cannot possibly* be about the moment of the beep. If a description of temporally imprecise (about a long period of time or about any of several moments), it *cannot possibly* be about the moment of the beep. If a description of temporally incorrect (about a particular moment but that moment is not possibly the moment of the beep—for example, is after the beep), it, too, *cannot possibly* be about the moment of the beep. The takeaway: reports that are temporally indeterminate, imprecise, or incorrect have no possibility of describing DES’s moment of interest. However, if a description appears to be temporally precise (i.e., describes a moment) and appears to be about the moment of the beep, then it could *possibly* be about the moment of the beep. We could speculate that it is *likely* that the described moment is indeed the moment of the beep, but we cannot be certain of that conclusion. Perhaps the person is referring to a precise moment, but that moment is (say) exactly 10 s before the beep.

The Very-First-Sample Interview: Failures of Cleaving to Directly Apprehended Experience. We have discussed temporal specificity; we turn now to experiential specificity. When asked the “one legitimate” DES question (“What, if anything, was in your experience at the moment of the beep?”), we observed that participants in their very-first-sample interview often provided reports that may appear to be descriptions of phenomena but in reality are not such descriptions, instead being either *ersatz descriptions* or *faux generalizations*. Table 13 provides an overview of these descriptive shortcomings.

Table 13*Cleaving to Directly Apprehended Experience and Failures to do so*

Item	Brief Description	Example
Ersatz descriptions	Talk that (a) does not appear to be about experience and (b) is not descriptive of directly-apprehended-at-a-moment experience.	“I was taking a psychology test online.”
Faux generalizations	Talk that (a) does appear to be about experience but (b) is not actually descriptive of directly-apprehended-at-a-moment experience.	“I always talk to myself when I think.”
Descriptions	Talk that (a) does appear to be about experience and (b) actually is descriptive of directly-apprehended-at-a-moment experience.	“I was seeing three rectangles of color; orange, orange, and then blue.”

Ersatz Descriptions. “Ersatz” is defined in the Merriam-Webster dictionary as “being a usually artificial and inferior substitute or imitation.” Within the context of DES, an ersatz description is something that a participant says that in no way describes directly apprehended experience. Ersatz descriptions are *substitutes* for describing experience; they are references about things such as context, past behavior, and other non-experiential things (*instead of* describing directly apprehended phenomena).

Here is an example of an ersatz description from Emma’s very-first-sample interview:

E^{4a}: Yesterday, I turned it on at about five-ish and it went off at about 5:28, [RTH: Okay] so it hadn’t been on that long.

This entire excerpt is an ersatz description—Emma is talking about context rather than describing inner experience.

Here is another example of an ersatz description from Kayla's very-first-sample interview:

K^{2a}: Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else.

Kayla's talk here is either about context or behavior. Nothing was descriptive of inner experience.

Faux Generalizations. Faux generalizations have previously been described as statements that appear to sound like statements of one's in-general experience but are "faux, rather than true, generalities, [because they are] based on heuristics such as recency or salience rather than on inductive process" (Hurlburt & Akhter, 2006, pp. 277-278). Thus, faux generalizations are, by definition, examples of failure to cleave to experience because a faux generalization is an utterance that sounds like a characterization of experience but in actuality is a general statement unconstrained to describing a particular experience. Here is example from Emma's very-first-sample interview:

E^{4a}: ... I was thinking—I also notice I have inner conversations with myself. [Chuckles and smiles] Um... sometimes, like, just talking to myself sometimes [I] envision I'm talking to somebody else.

"I have inner conversations with myself" is a generalization about experience. It is a *faux* generalization because it is not based on an actually observed series of observations (that is, it is *not* of the form "I have randomly sampled myself before and discovered that 39% of my inner experiences involve inner conversations").

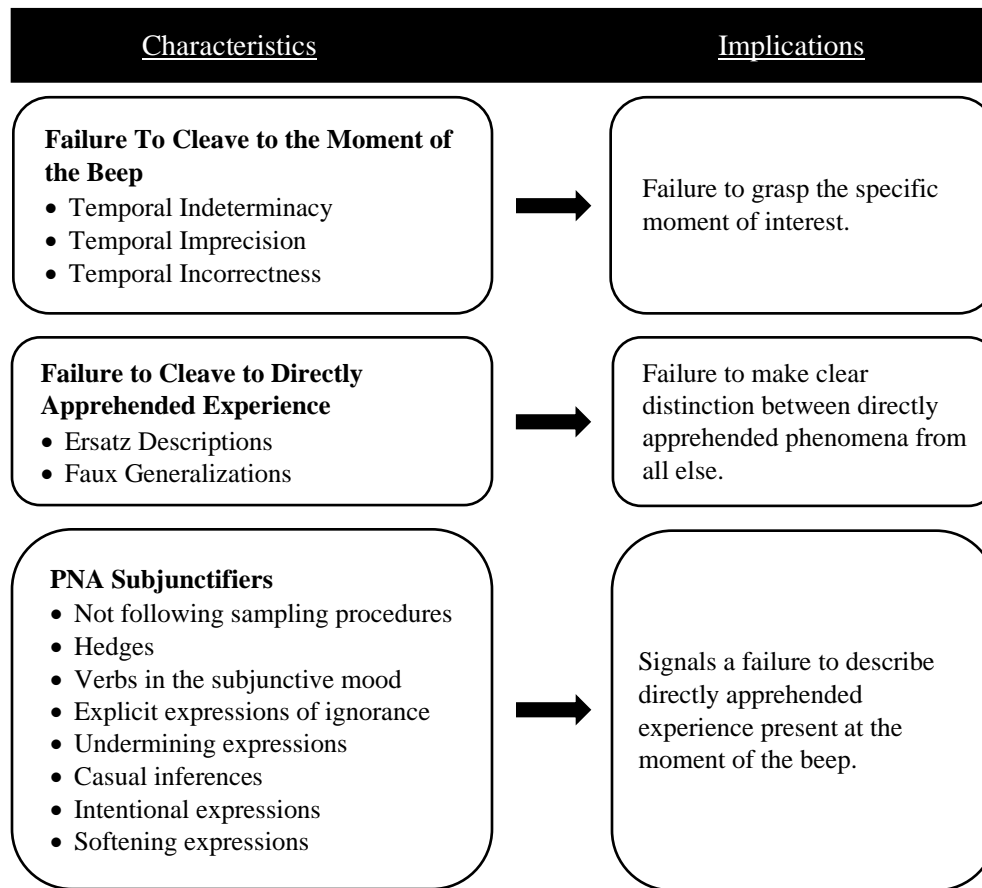
Failures of Cleaving to Directly Apprehended Experience: Conclusions. The phenomena of interest in DES are deceptively simple: phenomena that presents itself directly, unambiguously, and “before the footlights of consciousness” (James, 1890) to a particular individual at a particular moment in time. However, we emphasize the use of the word “deceptively,” as it can often be challenging (but necessary) to distinguish between description of phenomena and ersatz descriptions and faux generalizations. Ersatz descriptions and faux generalizations are challenging because they—in a manner of speaking—are descriptive of *something*, but they do *not* describe directly apprehended experience.

The Very-First-Sample Interview: PNA Subjunctifiers. Given the frequent difficulties participants encountered in cleaving to a moment and cleaving to experience, PNA subjunctifiers comprised nearly all subjunctifiers in very-first-sample interviews. Few (if any) conversational turns across all participants were consistent with describing experience-at-a-moment, and so, both by definition and by analyzing the subjunctifiers’ function, few DFS subjunctifiers were present in very-first-sample interviews because no phenomena were described.

The Very-First-Sample Interview Conclusions: A Summary of First-Day Interview Qualitative Characteristics. Figure 3 provides a summary of the qualitative characteristics observed in the very-first-sample interviews; it also provides an interpretation of each characteristic’s significance from the perspective of the DES task. We note that these findings are an averaged set of characteristics that emerged across considering all participants within this study. As such, Figure 3 merely represents an in-general characterization of a *typical* participant on a *typical* very-first-sample DES interview.

Figure 3

Very-First-Sample Expositional Interview Qualitative Characteristics



Note. PNA = Phenomena-not-apprehended.

There were two consequential characteristics that were present across all participants. First, all very-first-sample interviews displayed some failure(s) to cleave to a specific moment. At best, participants constrained their report to a relatively specific period of time near the beep sounding (see participant Macy) but did not unambiguously describe the moment of the beep. At worst, participants did not follow the procedure for DES sampling and, in so doing, destroyed any possibility of apprehending a moment or experience (see participant Emma). Second, all

participants used a large number of PNA subjunctifiers throughout their very-first-sample interviews. This resulted in low fidelity descriptions (or general characterizations that had no descriptive fidelity whatsoever) across all very-first-sample interviews.

In summary, participants during their very-first-sample interviews did not cleave to any particular moment, and therefore could not be understood to be cleaving to the moment of the beep. Because inner experience inheres in moments, it was therefore not possible for participants to be describing experience at the moment of the beep.

The Very-Last-Sample Interview: Did Participants Improve?

We found that all participants' very-last-sample interviews were consistent with describing phenomena apprehended at-a-moment. This was due in large part to simultaneous and interconnected improvements observed in participants' cleaving to a moment and cleaving to experience, leading to participants' overall improvement in cleaving to experience-at-the-moment-of-the-beep; moreover, subjunctifiers were also significantly less dense across very-last-sample interviews in comparison to the very-first-sample interviews. Those subjunctifiers that remained signaled that the phenomenon had been adequately apprehended but the descriptions were not adequate—that is, descriptions now used DFS subjunctifiers rather than PNA subjunctifiers.

The Very-Last-Sample Interview: Improvements in Cleaving to Experience-At-The-Moment-of-the-Beep. Table 14 compares the initial conversational turn spoken by participants during their very-first-sample and very-last-sample interviews; it also includes the top-line annotation relevant to each aspect of DES skill in bold text face, reprinted from each participant's annotated transcript. There is a clear and compelling trend across sampling days.

All initial very-first-sample interview turns failed to cleave to the moment of the beep. Although some participants may have described some aspect of possible experience (such as Shirley, Jake, and Macy), the universal lack of precision about cleaving to the moment of the beep drastically lowered the likelihood that participants were describing experience with fidelity (they, instead, likely reported on heuristics, inferences, or presuppositions). Moreover, all very-first-sample interviews involved PNA subjunctifiers. The bottom line: participants were undeniably bad at the DES task during their very-first-sample interview; all participants failed to unambiguously cleave to experience-at-the-moment-of-the-beep.

By contrast, all initial very-last-sample interview turns were *not* undeniably bad at the DES task during their very-last-sample interview; their reports were generally consistent with describing experience-at-the-moment-of-the-beep. No initial very-last-sample interview turn unambiguously failed to cleave to a moment; in reality, most participants appeared to describe experience-at-the-moment-of-the-beep. No initial very-last-sample interview turn unambiguously failed to cleave to directly apprehended experience; in reality, most participants appeared to constrain their description to phenomena. No initial very-last-sample interview included (exclusively or primarily) PNA subjunctifiers; in reality, where subjunctifiers were used, they were DFS subjunctifiers that were aimed at modifying descriptions of directly apprehended experience.

Table 14

Comparing the Initial Conversational Turns Spoken by Participants During Their Very-First-Sample and Very-Last-Sample Interviews

Participant (Study)	Very-First-Sample Interview	Very-Last-Sample Interview
Amelia (Methodological)	<p>A^{1a}: Actually, my first beep I was like, I dunno, I was thinking of why the beeper didn't go off [laughs]. So the whole time I was just wondering... when it would beep because it took like, maybe about an hour before it beeped? So I thought, like, maybe I should call you... text you... like, there was some kind of problem... and then it just beeped. And I knew it worked. And that was it. [laughs] It was a simple one.</p> <p><i>Moment? No.</i> <i>Experience? No.</i> <i>Subjunctifiers? High density of PNA subjunctifiers.</i></p>	<p>A^{1b}: The next one... I was looking at the emails on my phone; I could feel the phone in my left hand, but I could also feel, like, the dryness of my eyes. No thoughts or feelings. But I could see the border around my phone, and the different emails I received, but no... actual words. Just, like, colors.</p> <p><i>Moment? Likely.</i> <i>Experience? Likely.</i> <i>Subjunctifiers? Low density of indeterminate and DFS subjunctifiers</i></p>
Shirley (Methodological)	<p>S^{4a}: I didn't know what was—I forgot that, um, I put the beeper on, so I was really startled. Um...</p> <p><i>Moment? No.</i> <i>Experience? Not likely.</i> <i>Subjunctifiers? Moderate subjunctification density, all of which were PNA subjunctifiers.</i></p>	<p>S^{2b}: Number six... um... So, right before the beep, I was think—I was mentally doing math. Of... a hundred times... [laughs] a hundred times one, in my head. Which is one hundred. But [laughs], at that beep, um, it was... a mental thing of... multiplying that hundred times one. And... that feeling of, like, I know the answer <i>is</i> a hundred. Is there..</p> <p><i>Moment? Likely.</i> <i>Experience? Yes.</i> <i>Subjunctifiers? Moderate subjunctification density; all were DFS subjunctifiers</i></p>

Kayla
(Methodological)

K^{2a}: All right. Uh, so... I was, like, I wasn't really feeling anything too much... like, you know. Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else. [Laughs] But um... yeah... uh... I was, I was, like, I guess I felt—like, physically I felt tired. Like, uh... I've been up since like 5:30 in the morning, um... and I did some exercises in the, in the gym that morning as well... and I had a long day. [Laughs] So I have three classes... um, and... my... I had a midterm in one of the classes, so that didn't help. [LLC: Yeah] So yeah.

Moment? **No.**

Experience? **No.**

Subjunctifiers? **High density, all were PNA subjunctifiers.**

Jake
(Psychotherapy)

J^{2a}: So, I had it [looks at his notes]—uh, 12:57, I don't know if the time matters too much. Um... so the the first time, uh, it beeped, I was actually driving—the person, a friend of mine, said, “okay, I need to... I need to park the car to get my experiences.” Um... I was actually thinking, like, immediately, “what is it that I am—that I just experienced?” Um, I was listening to... a song... um, just before. And, in my head, um... the chorus was playing. Um, I was thinking about, uh... I was trying to, like, process the fact that, um... what was that beep for again? It was for the study. So, I was thinking about—so um, when I, when I describe my inner experiences, am I supposed to describe like, what happens during the beep, or occurring right before or is there like a certain time frame that I should focus on? Because that, that was the thing that actually was coming to mind like, it's like wait, I actually didn't clarify that this beep occurred, was, was I supposed to like—okay, that's what I just, like, was my inner experience, or, is it what I'm doing, like, right now or should I start, like, monitoring that? So, actually, that's kind of an actual question, too, so...

K^{2b}: So six, um... I, I decided to do neither of those things and, um, uh—I decided to, like, uh, um... 'cause I, I play piano, like, sometimes. So, I, I have a keyboard in my room and, um... so, I was reading the sheet music on that. Uh, I, I think I printed it out, like, a few days ago, and I was reading, uh... um... I think it was the third or fourth measure. Um... and I was specifically focused on, like, the left hand, like, trying to figure out, like, how it should sound and like, how to play, how to exactly play it. 'Cause, like, in that specific measure the right hand and the left hand kind of... kind of are jumbled together. [Laughs] So I was trying to figure out how I would exactly play that.

Moment? **Maybe.**

Experience? **Maybe.**

Subjunctifiers? **High density, both PNA and DFS subjunctifiers present.**

J^{2b}: [Looks downward at notes] Okay, number five. Okay, so, we had the food to go and we were walking out of the restaurant. And, um... and—[laughs] this one is, uh, kinda funny, but, uh, I was trying to think of a different topic to distract slash avoid thinking about, um, the idea of, uh... tryphobia, um, which is the, the fear of, of pores. Um, and in the restaurant I was talking about—with my little brother—like, I just have kinda this aversion to, like, like, pores in the skin, right? And we had, um... like, been talking about it and I was just getting kinda like, like iffy about the whole concept and we had looked up a picture and I had the picture etched into my mind and, um... and I was like, “okay, we, we—you know—let's just think about something else.” And, um... and... I remember trying to think of, like, “what's, what's a different topic other than, you know, this one that seems to be, like, forcing itself into my mind?” um, when, when it had beeped. So...

<p>Macy (Psychotherapy)</p>	<p><i>Moment?</i> No. <i>Experience?</i> Ambiguous. <i>Subjunctifiers?</i> High density, nearly all were PNA subjunctifiers.</p> <p>M^{2a}: Um, I was really worried that I did it wrong, [laughs] [SAM: Okay] um, just because I hadn't—I had turned it on, and hadn't received a beep yet. Um... so, that's actually when I had texted you, saying, "I haven't gotten it," something like that. Um... and I was just—I was worried, um... that I was doing it wrong.</p>	<p><i>Moment?</i> Nonspecific. <i>Experience?</i> Nonspecific. <i>Subjunctifiers?</i> Both PNA and DFS subjunctifiers were present.</p> <p>M^{2b}: Um, the last one—I was, um, laying down and, uh... cat had come and laid down with me, and my thought at the moment of the beep was, um, there was: "My cat is so cute!" [M laughs] And, um... seeing her mental image of, like, her... smiling? Like, closed eyes, smiling. Um, in my head. At the same time.</p>
<p>Emma (Psychotherapy)</p>	<p><i>Moment?</i> No. <i>Experience?</i> Possibly. <i>Subjunctifiers?</i> Moderate subjunctification density; most were PNA subjunctifiers.</p> <p>E^{4a}: Yesterday, I turned it on at about five-ish and it went off at about 5:28. [RTH: Okay] so it hadn't been on that long. Um, I was cooking dinner, um... and then I was thinking—I also notice I have inner conversations with myself. [Chuckles and smiles] Um... sometimes, like, just talking to myself sometimes I'm envision I'm talking to somebody else. And, I envision—'cause I'm probably gonna go get my x-ray done today for my ankle, and I was, like, thinking of what it would be like to talk to the person, like, explaining well, like, why I wear the big brace while I'm here on campus and why I wear a little brace at home. And thinking about that 'cause I'm scared of falling here on campus. [RTH: Okay] When I walk.</p>	<p><i>Moment?</i> Yes. <i>Experience?</i> Yes. <i>Subjunctifiers?</i> High density, all were DFS subjunctifiers.</p> <p>E^{2b}: [looking at notes] I was, uh, feeling chest... chest pain.</p>
	<p><i>Moment?</i> Mostly no. <i>Experience?</i> Mostly no. <i>Subjunctifiers?</i> High density, nearly all were PNA subjunctifiers.</p>	<p><i>Moment?</i> Probably. <i>Experience?</i> Yes. <i>Subjunctifiers?</i> All were DFS subjunctifiers.</p>

Note. PNA = Phenomena-not-apprehended; DFS = Description-falling-short.

Improvements in Cleaving to Experience-At-The-Moment-of-the-Beep: Conclusions.

Table 14 focuses on only two brief excerpts from much longer interviews for each participant—a few seconds at the beginning of each interview. We note that one conversational turn is not wholly illustrative of an entire interview (and thus encourage the reader to refer to each participant’s annotated transcripts and their individual results and discussion section for an in-depth analysis). However, the fact that such stark differences emerge *despite* considering just a single turn is evidence of the degree of difference observed between the very-first and very-last interview days. Even if participants did not display “perfection” in their ability to cleave to experience-at-the-moment-of-the-beep, we see that all participants improved when comparing their very-last-sample interview to their very-first-sample interview.

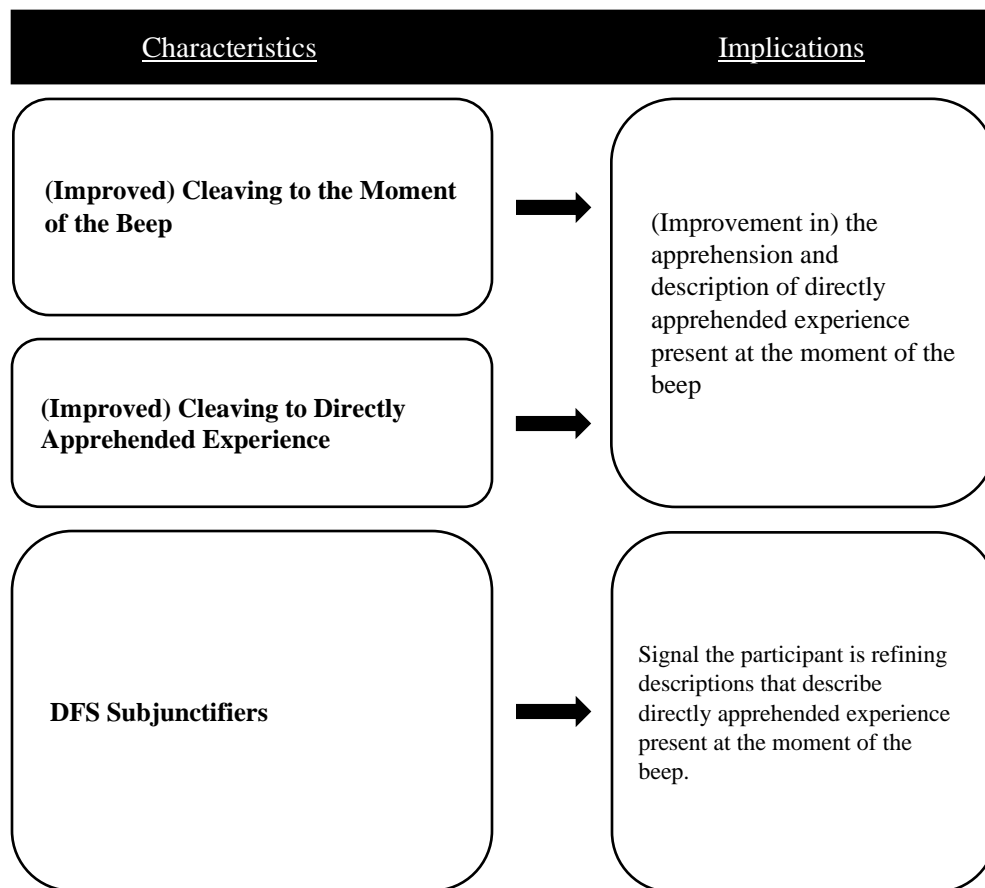
The bottom line: there are significant and evident differences between the very-first-sample and very-last-sample interviews. Whereas participants’ very-first-sample interviews had a low possibility of describing experience with fidelity (because of failures cleaving to any moment and failures cleaving to experience), it is possible that participants’ very-last-sample interviews involved high-fidelity descriptions of experience (because of improvement in cleaving to experience-at-the-moment-of-the-beep).

The Very-Last-Sample Interview: DFS Subjunctifiers. Given the observed improvements in participants’ ability to provide descriptions that were consistent with cleaving to experience-at-a-moment, DFS subjunctifiers comprised nearly all subjunctifiers in very-last-sample interviews. Most conversational turns across all participants were consistent with describing experience-at-a-moment, and so, both by definition and by analyzing the subjunctifiers’ function, where subjunctifiers occurred on the very-last-sample interviews, they were all of the DFS type.

The Very-Last-Sample Interview Conclusions: A Summary of Very-Last-Sample Interview Characteristics. Figure 4 provides a summary of the notable characteristics observed in this study's very-last-sample interviews and an interpretation of each characteristic's significance from the perspective of the DES task.

Figure 4

Very-Last-Sample Expositional Interview Qualitative Characteristics



Note. DFS = Description-falling-short.

There were three consequential characteristics that were present across all participants' very-last-sample interviews. First, participants in all very-last-sample interviews were able to talk in ways that were consistent with describing a moment (that is, their reports were constrained to describing a specific moment and avoided talk about periods of time or talk that referred to no particular moment). Second, participants in all very-last-sample interviews were able to talk in ways that were consistent with describing experiential phenomena (that is, their reports were constrained to describing things that could be directly apprehended and avoided talk about presuppositions, general characterizations, statements-of-reality, reports about behavior, and so on). Third, to the extent that participants used subjunctifiers during their very-last-sample interviews, those subjunctifiers were mostly of the DFS type, signaling the participant's active engagement with the DES task—to describe directly apprehended experience with fidelity (that is, the DFS subjunctifiers were aimed at finding the words to describe the experience; the experience always remained clear and was never itself undermined).

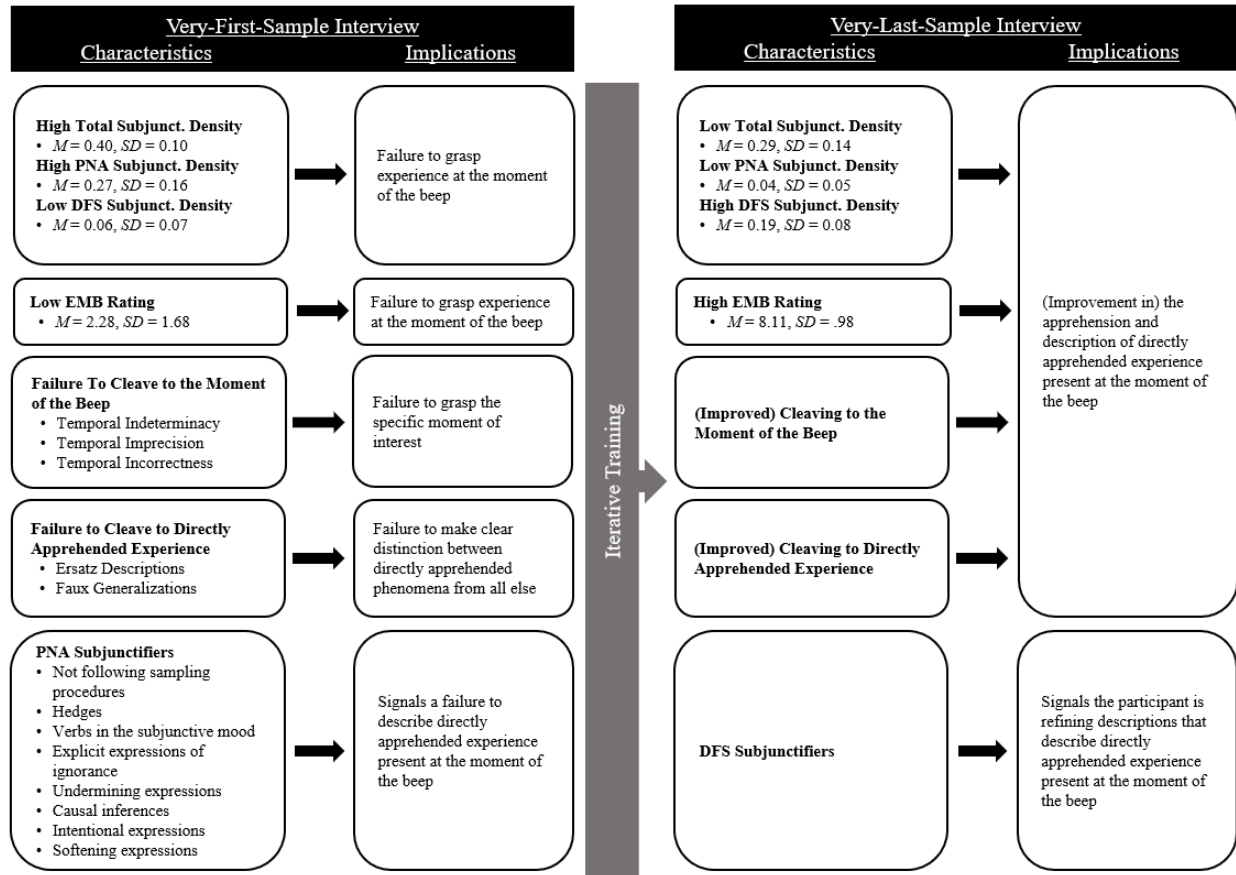
In sum, the talk of participants during their very-last-sample interviews was consonant with the task of describing experience-at-the-moment-of-the-beep with fidelity.

Overall Results: Comparing Quantitative and Qualitative Changes Between the Very-First-Sample and Very-Last-Sample Interviews

Figure 5 presents an overall comparison of the qualitative and quantitative changes observed between the very-first-sample and very-last-sample interviews.

Figure 5

Comparing Very-First-Sample and Very-Last-Sample Expositional Interview Characteristics



Note. Subjunct. = Subjunctification; PNA = Phenomena-not-apprehended; DFS = Description-falling-short; EMB = Experience at the moment of the beep.

At the start of their participation in sampling, naïve participants universally failed to cleave to any moment, and because experience inheres in moments, it was not possible that they cleaved to directly apprehended experience. These failures were also reflected in the quantitative measures: participants' talk during very-first-sample interviews generally involved high total subjunctification and PNA subjunctification densities, low DFS subjunctification density, and

low EMB ratings. Taken together, all these characteristics signaled that naïve participants have difficulty apprehending and describing a specific moment and specific experience.

By the end of their participation in sampling, participants universally showed substantial improvement in cleaving to experience-at-a-moment: each participant's talk became more consistent with successfully cleaving to a specific moment and cleaving to directly apprehended experience. These improvements were also reflected in the quantitative measures of participant's abilities: participants' talk during the very-last-sample interviews generally involved low total and PNA subjunctification densities, high DFS subjunctification density, and high EMB ratings. Taken together, all these characteristics signaled that participants had acquired substantial skill in apprehending and describing a specific moment and specific experience. While this study does not itself provide evidence, it is reasonable to conclude that the described experience-at-a-moment faithfully reflected experience that was actually present at the moment of the beep.

Chapter 14: Overall Discussion

DES is built on the recognition that pristine inner experience inheres in moments, and therefore describing inner experience with fidelity requires participants to cleave to a specific moment (the target is the moment of the beep) and to cleave to experience (the target is whatever phenomena had been directly apprehended as present at the moment of the beep). Anything short of grasping experience-apprehended-as-ongoing-at-the-moment-of-the-beep would fall well short of DES' goal.

DES claims that most people, at the start of sampling, are unskilled at cleaving to experience-at-the-moment-of-the-beep, so DES uses first-day interviews as training for future sampling days and discards first-day samples from data analysis (because of the low possibility that they describe experience with fidelity). Moreover, DES claims that most participants improve over time: that participants after each round of sampling-and-interviewing are better able to cleave to experience-at-the-moment-of-the-beep than they were on the previous round. In particular, DES claims that this iterative training (the successive rounds of collecting new samples, engaging in the joint attempt at describing experience with investigators) causes participants' improvement. However, none of those claims have been studied adequately.

The present study investigated changes in participants' ability to cleave to experience-at-a-moment from the beginning to the end of their DES sampling. We examined the first-day and last-day interviews of six participants. By comparing their very-first-sample interview to their very-last-sample interview, we found that across all quantitative and qualitative measures, participants showed improvement in their ability to provide descriptions of experience-at-a-moment.

These findings support DES' long-held-but-not-formally-investigated claim that naïve participants struggle with engaging in DES during the early rounds of their DES participation. Our participants' very-first-sample interviews often involved temporal indeterminacy and imprecision, as predicted by the unsystematic observations of Hurlburt (2011), who claimed participants often failed to constrain their reports to a specific moment. Our participants' very-first-sample interviews also often failed to cleave to directly apprehended experience (and instead involved talk about things such as context or faux generalizations), as predicted by the unsystematic observations of Hurlburt (2009) and Hurlburt and Schwitzgebel (2007). Taken together, these findings support the typical DES practice of discarding first-day interview samples from DES data analysis.

Our results also provide evidence supporting the notion that participants' skill improves across sampling, conceptually replicating Brouwers (2016), who found that ratings of participants' "access to experience" were significantly higher for video clips drawn from participants' last-day sample interview compared to clips drawn from first-day interviews. The current study expanded on Brouwers (2016) by considering change both within- and across-participants. Brouwers had shown that, in general, last-day utterances were less subjunctified than first-day utterances. We showed that, on average, a participant's own very-last-sample talk was less subjunctified than that same participant's very-first-sample talk. We found that whereas participants' talk in their very-first-sample interview displayed varying levels of temporal and phenomenological specificity, participants' talk in their very-last-sample-interview was much more constrained to describing a specific moment and directly apprehended experience.

Brouwers (2016) found no significant changes in ratings of subjunctification between first-day and last-day interviews. In contrast, we found that total subjunctification density

significantly decreased from first-day to last-day interviews. Brouwers' subjunctification rating method used relatively unskilled raters, whereas the present study used skilled raters.

Furthermore, Brouwers' study was aimed at brief video clips, where the context of each had been removed. The present study, by keeping the entire very-first-sample and very-last-sample interviews, kept the context of each utterance intact.

Furthermore, the present study suggests that total subjunctification density itself may be of less importance in signaling fidelity than is attending to the type of subjunctifier used (e.g., PNA vs. DFS subjunctifiers). Even in those participants who's total subjunctification density did not significantly change between interviews, the type of subjunctifiers used in each respective interview changed in substantial and usually significant ways. As a result, our results suggest that DES investigators, instead of following the principle that lower subjunctification density suggests higher fidelity (Hurlburt, 2011), should follow the principle that lower *PNA* subjunctification density suggests higher fidelity.

In sum, we found that participants improve in cleaving to experience-at-a-moment. Because inner experience is private, there is no guarantee that the moment to which participants cleave is the moment "a microsecond before" beep onset. It is likely, for example, that "mentally reacting" to the beep requires *X* milliseconds, so the moment being described is actually *X* milliseconds after the beep's physical onset. There is reason to believe from other observations that for most participants, this is a very small offset. Furthermore, there is no guarantee that the experience to which participants cleave is the experience that was actually ongoing at the moment of beep onset. It is likely, for example, that responding to the beep distorts ongoing inner experience to some degree, or perhaps even creates inner experience where there was none originally. At the present state of the art, these possibilities cannot be ruled

out, although it is possible that with future substantial advances in techniques such as fMRI, science might be able to investigate the time course of experiential characteristics. At present, it seems likely that participants' improvement in cleaving to experience-at-a-moment was actually an improvement of the fidelity of their description of experience-at-the-moment-of-the-beep—they had acquired, across sampling, a better grasp of what constituted a moment and what constituted experience and had practiced responding to the beep, and therefore it seems likely that they did indeed describe whatever had been in their experience at the last, undisturbed moment prior to beep onset.

This study found improvement when comparing the very-first-sample to the very-last-sample, but it did not investigate when that improvement occurred. Perhaps one sampling day of training accounted for most of the effect; perhaps the improvement was acquired gradually across the sampling days. Further research would be required to quantify that.

Furthermore, this study did not examine whether it was the iterative training itself that was responsible for participants' change in skill. Iterative training certainly did not hurt participants' ability, because all participants were substantially better by the end of their participation in DES sampling than at the beginning, so at the very least, iterative training had no harmful effects. Iterative training *is designed* to facilitate participants' improvement, but it is possible that some other, unknown variable actually better explains the changes that were observed in participants.

Chapter 15: Broader Implications

Although the focus of this study was narrow in scope, the implications of this study have broader ramifications. If science is to create a robust science of inner experience, investigators must think carefully about the methods used to apprehend and describe inner experience and how such methods may help participants improve their cleaving to experience-at-particular-moments. What is clear from this study is that, despite the ostensibly straightforward task of apprehending and describing one's inner experience, doing so is far from easy for most people to do without some form of (probably iterative) training.

First, our findings demonstrate that *anything* short of cleaving to a specific moment implies that there is very little (arguably zero) possibility of grasping experience with fidelity. This high degree of temporal specificity is a function of the constraints imposed by the nature of inner experience. Because inner experience is ever-changing moment-to-moment, an adequate method must be clear about what moment is of interest and under consideration while avoiding all else. Moreover, because pre-selected moments of inner experience (whether that moment is/was pre-selected by the participant or the investigator) may not match everyday inner experience, the moment of interest should be a random moment to allow for the study of pristine inner experience (as opposed to artificial, contrived, or personally alluring inner experience). DES attempts to mitigate this hazard by using the random beeper to have participants cleave to the last, undisturbed moment just before beep onset, but this is simply one possibility. Other methods that seek to study inner experience must consider how to identify a random-but-specific moment.

Second, our findings demonstrate that *anything* short of cleaving to directly apprehended experience implies there is very little (arguably zero) possibility of grasping experience with

fidelity. This high degree of phenomenological specificity is a function of the constraints imposed by the nature of inner experience. Because directly apprehended experience is the only phenomena that can be reasonably introspected-and-reported-on, an adequate method must be clear about cleaving-to-phenomena while avoiding all else. DES attempts to mitigate this hazard by doing just that: DES focuses solely on describing directly apprehended phenomena and doing whatever can reasonably be done to achieve that goal (as evidenced by its use of, for example, interviews with multiple investigators to disentangle non-phenomenal talk from descriptions of experience; its constant practice of the bracketing of presuppositions to confront the unconscious assumptions that may distort the high-fidelity apprehension of experience, and so on). However, the ways by which DES attempts to cleave to experience is simply one possibility. Other methods that seek to study inner experience must consider how to cleave to directly apprehended experience.

Third, our findings demonstrate the essential importance of training (likely iterative in nature) to make possible high-fidelity descriptions of experience. Most first-person and introspection studies recognize the importance of participant training and include instructions and tutorials prior to collecting data. For instance, nearly all introspective methods described in Chapter 2 (the experience sampling method (ESM), ecological momentary assessment (EMA), the think-aloud method (TA), articulated thoughts during simulated situations (ATSS), and the micro-phenomenological interview method) include some pre-study training. One specific example is Janssens et al.' (2021) ESM study, in which the authors provided all participants with didactic instructions, a guided demo of the full ESM task, and the ability to ask questions of investigators prior to engaging in ESM sampling. Although this type of training may provide participants important context to the task ahead of them, the observed difficulties across all very-

first-sample DES interviews *despite* similar pre-sampling training in DES (in addition to numerous other instances of re-stating DES' instructions and aims within the very-first-sample interview and despite numerous, open-beginninged invitations for participants to describe their experience) clearly demonstrate the insufficiencies of prior-to-sampling training. We suspect that no amount of prior-to-sampling information, definitions, or clarifications from investigators are able to improve the fidelity of participant's cleaving alone.

Moreover, we contend that repeated data collection (without intercalated iterative training) may not improve apprehension or description skill—in fact, it may make such skills worse because participants (and their reports of experience) are never challenged. Iterative training involves successive improvement in apprehending and describing experience, and as we have seen, this only comes from the continuous practice of having a participant collect new samples of experience, attempt to describe those experiences, have constructive conversations with investigators that collaborate with the participant to guide the discussion back to experience-at-a-moment, have the participant recognize their shortcomings, and so on, so that they may ultimately be better equipped to apprehend and describe their experience upon their next sampling. Procedures that simply repeat data collection—whether through the administration of self-report questionnaires or interviews—do not allow for the dynamic processes described in DES' iterative training. Although other forms of iterative training may be possible, the takeaway is that some form of iterative training is necessary to describe experience with fidelity. Other methods that seek to study inner experience must consider how to implement some form of iterative training for their participants.

Future Directions

Our findings showed that people are able to improve their ability to provide descriptions with iterative training, which optimistically suggests the possibility of developing a science of inner experience. Our studies suggest that one-shot or otherwise ineffectively trained methods of inquiring about inner experience are inadequate, but can be improved.

We have seen that even though inner experience is transient and evanescent, training can allow it to be investigated as long as the training is temporally specific. We have seen that even though talk that is supposed to be about inner experience typically (at first) involves many things (e.g., presuppositions, self-theories, behavior, context, etc.) other than experience, training might allow experience to be investigated as long as the training restricts our consideration to directly apprehendable phenomena while avoiding all other talk. Adhering to both cleave-to-the-moment and cleave-to-experience constraints¹⁷ does not guarantee success, nor does it address certain insurmountable pitfalls¹⁸. However, both constraints—if achieved—represent substantial improvements to the possibility of studying inner experience with fidelity. This study provided many examples of descriptions that work within these constraints—participant’s very-last-sample interviews were largely consonant with descriptions of experience-at-the-moment-of-the-beep.

¹⁷ There are over 100 more constraints that could be discussed (see Hurlburt, 2011), but we have restricted our discussion here to the most relevant components of DES that formed the main thrust of the current study.

¹⁸ Such as the fact that we cannot—at the current state-of-the-art—make claims about the accuracy of self-report due to the private nature of inner experience.

Chapter 16: Limitations

This chapter discusses some methodological considerations regarding our study design, the materials used in this study, and the components of the procedure that are necessary to better understand this study's results.

Small Sample Size

Our sample size was very small. Thus, any group-level conclusions must be interpreted with caution. However, we note that the six participants considered in this study is consistent with recommendations for the sample sizes of idiographic qualitative research studies (Robinson, 2014). Moreover, our use of the Wundtian method of generating nomothetic conclusions if and only if such conclusions were true across all participants provides a very promising initial (but tentative) bedrock for future investigation.

Imperfection of EMB Ratings

EMB ratings are inherently limited and should not be interpreted as being the determinant indicator of a participant's skill. Because EMB ratings are our attempts at generating a unidimensional numerical value for a multidimensional, non-numerical process (the extent to which a particular conversational turn describes experience-at-the-moment-of-the-beep), EMB ratings are inherently "squishy." For example, EMB ratings can be affected by the context in which a rater provides their ratings: Rating an interview when one is blind to its ending versus rating an interview after one has viewed it many times over can affect a rater's understanding of the degree to which a participant may be cleaving to experience-at-the-moment-of-the-beep (see participant Kayla and Macy for examples). In other instances, EMB ratings can be affected by the context of the interview itself: Participants' utterances are often nuanced and resist black-

and-white categorization (e.g., that what they are saying demonstrates cleaving vs. failure to cleave); an interviewer's question may be misleading; and so on.

While acknowledging the squishy nature of the EMB ratings, we see them as no worse than coding systems in other studies that provide quantification of some complex and perhaps ill-defined constructs. Moreover, we believe there are two counterarguments that are important safeguards to mitigate the limitations of the EMB rating system and how it was applied in this study.

First, there were multiple procedural steps we implemented to control for the flaws of the EMB ratings: we (a) used multiple raters to provide (b) independent ratings for each interview; once both raters completed this task, we (c) met to collaboratively review each rated turn of the interview, with (d) the goal of arriving at ratings that captured best a participant's skill and *not* for the sake of consensus (this is similar to the process of how DES arrives at generating categorical codes for a participant's salient characteristics; see Krumm, 2019 for an example). Second, we fully recognize the limits of EMB ratings and do not advocate for its widespread use as the primary means of interpreting the quality and/or skillfulness of DES participants. We fully acknowledge that EMB ratings alone do not and cannot possibly capture the complexity inherent in assessing skill within a DES context. However, we *do* think that EMB ratings *when used as one small data point amidst an array of other data points* (as we have done in this study) may be helpful in assessing a participant's general ability to engage in the DES task.

EMB Ratings are Arbitrary

The EMB ratings of Emma's very-first-sample (Chapter 12) provide an illustrative example of the arbitrary nature of EMB ratings; in doing so, it also highlights the benefit of using both quantitative and qualitative analysis in assessing participant's cleaving. As was discussed in

Chapter 12, only five of the 16 conversational turns in Emma's very-first-sample interview were given EMB ratings since she failed to wear earphones while sampling, thus implying Emma could not have performed the DES task (or at the very least, the task became very difficult). To strike a balance between being too conservative (rating none of her turns) or too liberal (rating all of her turns despite her not fully following the DES procedure), we rated only those turns of the interview where the aim of the interview was to describe Emma's experience at the moment of her very-first-beep. Both raters mutually determined that the shift of the interview changed at the conversational turn Emma disclosed that she did not wear earphones, after which the goal of the interview shifted to provide iterative training to improve Emma's ability to grasp and describe her experience on her next sampling day.

Had we continued to provide EMB ratings, it is possible that Emma's very-first-sample average EMB ratings would have been, on average, higher or lower than what was reported. Ultimately, however, we believe determining Emma's very-first-sample EMB rating simply does not much matter: although the numerical EMB rating may be debatable, it is *not* debatable that Emma's very-first-sample interview did not possibly describe a moment of experience. By contrast, her very-last-sample interview did (at least possibly) describe a moment of experience.

Imperfection of Counting Subjunctifiers

Any count of subjunctifiers should be treated with some degree of skepticism, as the counting of subjunctifiers is very rarely straightforward. Recall that subjunctifiers are defined as "anything that gives a sign that a subject's utterance is not to be confidently understood as a straightforward description of momentary experience" (Hurlburt, 2011, p. 116). Given this definition, it is often unclear as to how one should go about quantifying one subjunctifier from another. For instance: does body language (e.g., shrugging and grimacing) count as separate

subjunctifiers in addition to what a participant says? How does one count long pauses in a participant's speech (is it a single subjunctifier, or is it only a subjunctifier when it is preceded by a spoken-aloud subjunctifier (e.g., "um"), or does it not count as a subjunctifier at all)? Does a hedge such as "I feel like if I were to talk to myself" count as a single subjunctifier or two subjunctifiers ("I feel like" and "if I were to talk to myself")? There are no correct answers to these questions, but it ultimately does not matter much. No matter how you count subjunctifiers, what is apparent is that subjunctifiers exist and attending to them offers important insight into whether or not we are meeting the DES task (describing a moment of experience with fidelity).

We explicitly acknowledge the imperfect nature of counting subjunctifiers. However, we contend there are four counterarguments and important safeguards applied to this study's procedures to mitigate the limitations of subjunctifiers.

First, as this study demonstrated, the *count* of subjunctifiers is not necessarily the most important characteristic of subjunctification—the *nature* of the subjunctification is at least as (or more) important than the count. Second—similar to the strategies used to mitigate the limitations of EMB ratings—we (a) used multiple raters to provide (b) independent ratings for each interview in which both raters (c) met to collaboratively review all subjunctification counts of the interview, with (d) the goal of arriving at a count that best captured a participant's subjunctification within the interview (and *not* for the sake of consensus). Third, the problematic nature of counting subjunctifiers can be mitigated by attending to subjunctification density; this is consonant with Hurlburt's (2011) recommendations, and we did so in this study. Fourth, we fully recognize the limits of subjunctifiers do not advocate for its widespread use as the primary means of interpreting the quality and/or skillfulness of DES participants. We fully acknowledge that attending to subjunctifiers and/or subjunctification density alone do not and cannot possibly

capture the complexity inherent in assessing skill within a DES context. However, we *do* think that attending to subjunctions *when used as one small data point amidst an array of other data points* (as we have done so in this study) may be helpful in assessing a participant's general ability to engage in the DES task.

Raters Were Not Blind

Raters knew whether a videotape they were about to rate was of a very-first-sample or a very-last-sample interview for a particular participant. Because expositional interviews involve the discussion of multiple beeped samples of experience, it is impossible to mask the context clues that make the sample interview status obvious. For example, very-first-sample interviews often involved re-explaining the instruction and aims of the DES sampling procedure (thus signaling the participant's naivety), and very-last-sample interviews typically included some reference to or discussion of a previous sample.

Conversational Turns are Arbitrary

Defining conversational turns informed many parts of this study's procedure. For example, a period where a participant spoke for 10 s, was interrupted by an interviewer follow-up question for 1.5 s, and where the participant continued speaking for another 8 s could be considered a single conversational turn or could be broken up into three turns (participant, interviewer, participant). The difference between these two organizations lead to different data: the former results in one annotation and one EMB rating, while the latter results in two annotations and two EMB ratings. To mitigate this limitation, we used similar strategies used to control for the limitations of subjunctions and EMB ratings: once a transcript draft was created, we (a) used multiple reviewers that (b) independent viewed the videotaped interviews that (c)

met to collaboratively review interview transcript, with (d) the goal of arriving at a transcript that best honored the flow of the interview.

Raters Evolve

As was discussed previously, there are significant difficulties and limitations regarding EMB ratings. One of these is that the multiple-immersion nature of the research process sometimes resulted in a rater arriving at the opinion that his earlier ratings were incorrect. For example, in the process of writing Kayla's results and discussion, rater CK returned to Kayla's videotaped interviews and re-rated four of the 16 conversational turns of the very-first-sample interview and three of the 40 conversational turns of the very-last-sample interview. All of CK's re-rated turns for the very-first-sample day were *lower* than his original set of EMB ratings and all of CK's re-rated turns for the very-last-sample day were *higher* than his original set of EMB ratings. That is, he now saw Kayla as making more improvement than he originally did.

Faced with such discrepant ratings, we presented results and analyses based on the raters' original ratings. None of the re-ratings changed the main findings of this study. For example, Table 15 reprints row 8 from Chapter 9's Table 3 and then presents the results using CK's re-ratings. The conclusions based on the two sets of ratings are identical.

Table 15*Comparing Original and Re-Rated EMB Ratings for Kayla*

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Average EMB Original Rating ^a	.52 (<i>SD</i> = .42)	6.31 (<i>SD</i> = 1.82)	.88	31	< .001	10.80	31	< .001	3.91
Average EMB Re-Rated ^b	.29 (<i>SD</i> = .41)	6.46 (<i>SD</i> = 1.98)	.91	31	< .001	10.58	31	< .001	3.83

Note. EMB = Experience at the moment of the beep.

^a Average EMB ratings for all turns of the interview using CK and RTH's original ratings.

^b Average EMB ratings for all turns of the interview using CK's re-ratings and RTH's original ratings.

Similarly, rater RTH returned to Macy's videotaped interviews and re-rated nine of the 29 conversational turns of the very-first-sample interview. All of his re-rated turns were *higher* than his original set of EMB ratings. That is, his new ratings showed *less* improvement for Macy.

As before, the results we have presented were from his original ratings. Table 16 reprints row 8 from Chapter 11's Table 5 and then presents the results using RTH's re-ratings. The conclusions based on the two sets of ratings are identical.

Table 16

Comparing Original and Re-Rated EMB Ratings for Macy

	Descriptive Statistics		Rater Reliability			Comparing Last vs. First			
	Very-first-sample	Very-last-sample	<i>r</i>	<i>df</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Average EMB Rating Original ^a	5.18 (<i>SD</i> = 2.14)	8.00 (<i>SD</i> = 1.31)	.73	35	< .001	4.92	35	< .001	1.62
Average EMB Rating Re-Rated ^b	6.09 (<i>SD</i> = 1.66)	8.00 (<i>SD</i> = 1.31)	.65	35	< .001	3.92	35	< .001	1.29

Note. EMB = Experience at the moment of the beep.

^a Average EMB ratings for all turns of the interview using CK and RTH's original ratings.

^b Average EMB ratings for all turns of the interview using CK's original ratings and RTH's re-ratings.

The Limitations of Total Subjunctification Density as a Metric of Fidelity

The lower total subjunctification density on very-last-sample interviews may be one sign of improved descriptive fidelity on those interviews—this is consistent with Hurlburt's (2011) claim that subjunctification density may serve as a reasonable indicator of a description's fidelity (in that the lower the subjunctification density, the better the description). However, there are three important limitations on the straightforward analysis of subjunctification density alone as a measure of fidelity.

First, whether a description is of lower or higher fidelity is in and of itself a conjecture; in reality, we do not and cannot know the accuracy of participant's descriptions. Although a lower total subjunctification density implies a more straightforward description of experience (because it means the ratio of seconds spoken to subjunctifier is large: participants speak for longer periods of time with minimal subjunctification), there may be other possible explanations. For example, a participant's utterances may feature lower total subjunctification density simply

because they are lying to investigators, or because they did not apprehend anything in their experience at the moment of the beep. The most we can definitively conclude is that the total subjunctification density was lower at the end of DES sampling than at the beginning; explaining *why* this change occurred involves speculation.

Second, considering only group-level analyses obscures (potentially important) trends of individual participant's subjunctification density. For example, some participants (such as Emma) actually showed a non-significant *increase* in subjunctification density between interviews. Thus, not all participants demonstrated significant decreases in total subjunctification density. A more accurate conceptualization—and one that is, in fact, more consistent with the idiographic nature of DES—is that individual participants on individual sample interviews will differ in idiosyncratic ways in their subjunctification.

Third, total subjunctification density does not take into account the type of subjunctifier that a participant uses. Because, as this study has demonstrated, the type of subjunctifier dramatically impacts how a particular conversation turn and/or sample interview is understood, this is a significant limitation of the use of subjunctification density alone in assessing the fidelity of description.

Limits of Generalizing from the Very-First-Sample Interview to the First-Day Expositional Interview

We acknowledged that we only considered the very-first-sample interview of participant's first-day interviews as part of this study. This limitation implies that any overarching conclusions about first-day interviews should be interpreted with caution, as we did not assess all first-day sample interviews. However, the very-first-sample interview may be particularly well-suited to define “typical” first-day interview characteristics because the very-

first-sample interview occurs without any prior intervention, training, or other mediation from the investigators. In other words, it captures how a typical, naïve participant responds to the prompt of, “what, if anything, was in your experience at the moment of the beep?” It is possible that participants may improve the fidelity of their descriptions as the first-day sample interview continues; however, we believe that that likelihood is small because the first interview revealed that all participants failed in some fundamental way to apprehend any specific moment of experience during their first-day of natural environment sampling. That is: participant’s very-first-sample interviews were of low fidelity not simply due to low interview skill but because they failed to take notice of experience-at-the-moment-of-the-beep at the time the beep occurred.

Appendix A

Very-First-Sample Annotated Interview Transcript for Participant Amelia

A^{1a}: Actually, my first beep I was like, I dunno, I was thinking of why the beeper didn't go off [laughs]. So the whole time I was just wondering... when it would beep because it took like, maybe about an hour before it beeped? So I thought, like, maybe I should call you... text you... like, there was some kind of problem... and then it just beeped. And I knew it worked. And that was it. [laughs] It was a simple one.

Moment? No. "So the whole time" referred to an interval, rather than a specific moment. Moreover, Amelia described events after the onset of the beep: "I knew it worked" must occur *after* (i.e., in response to) the beep.

Experience? No. "I was thinking of why the beeper didn't go off" and "So I thought... maybe I should call you..." were two completely different reports—they could not have been describing one experience.

Subjunctifiers? High density of PNA subjunctifiers. Because everything Amelia said was not consistent with cleaving to experience-at-a-moment, the subjunctifiers were not tied to any descriptions of phenomena, and thus were understood as an additional sign that Amelia failed to apprehend experience-at-a-moment; for example, "I was like, I dunno" was an explicit acknowledgement that proceeding talk should not be understood straightforwardly.

EMB CK = 0

EMB RTH = 0

RTH^{2a}: So shall I—shall I deal with the questions [incomprehensible, RTH and LLC talk over each other to establish who will ask questions first]

RTH^{3a}: So, so at the moment of the beep, and by this moment, it's like—sometimes we use...[uses clipboard visual aid] this is the deal: so, so this is time going this way and there's no beep, there's no beep—you're doing whatever it is that you're gonna to do—and then the beep happens right here, so it beeps here, and then you push the button, and the time keeps marching on here. The time that we're interested in is right here, just very much just before the beep occurs. And so, is it the case—is what you said that, "I was wondering about the beep, should I call Leiszle," whatever; I'm still wondering about the beep [A: Yeah], I'm still wondering about the beep [A: Yeah, and then it stopped me.], and the beep catches me in flight [A: Yeah], catches my wondering [A: Mhm] in flight.

A^{4a}: Yeah.

RTH^{5a}: Okay. And, so, uh... so what's that wondering like for you? What d...

A^{6a}: I was getting anxious because, I thought, like, maybe I handled the beeper too roughly when I was in my car? And that I broke it.

Moment? Indeterminate; it was possible that Amelia was referring to a discrete moment, but she may have also been reporting on a general period of time or provided a report that was unrelated to any moment.

Experience? Maybe. “I was getting anxious” may have been an initial attempt at describing experience, but it may have been a general comment of context. “I thought... I handled the beeper too roughly” may also have been an initial description of experience, but it could have also been a generality.

Subjunctifiers? All were PNA subjunctifiers. “Because...” was a causal inference, and “I thought, like, maybe...” de-particularized the report away from a specific experience. All of these subjunctifiers led the report *away* from describing a particular experience.

EMB CK = 3

EMB RTH = 1

RTH^{7a}: Okay. And, is that going on right, right at this particular moment right here? That I’m won—I’m worried that I [A: Mhm], that I broke the beeper?

A^{8a}: Yes. ‘Cause this was taking really long. ‘Cause I thought it was just, like, taking half an hour, but that it would go all the way up to, like, an hour. [RTH: Right] Something like that.

Moment? Indeterminate.

Experience? Maybe, but not likely. Only “I thought...” may have possibly described directly apprehended experience; everything else described an indeterminate mix of possible context, content, and causal inferences.

Subjunctifiers? High density, nearly all were PNA subjunctifiers. “‘Cause this was taking really long” and “‘Cause I thought...” were both causal inferences that were not at all descriptive of experience. “Something like that” also implied that all of A^{8a} may have been an approximation of experience (that is: not to be taken as a straightforward description).

EMB CK = 2

EMB RTH = 0

RTH^{9a}: And that can happen. That’s—that’s what—that’s what random means. Sometimes it’s long, sometimes it’s short. But what I’m—what I’m trying to get at is: were you interested, worried about—whatever—worried about... that I handled the beeper too roughly back here? Sort of a 5 minutes before the beep? Or, were you wondering about, “did I handle the beeper too roughly” right here, and the beeper caught that in flight; caught that in the act, so to speak.

A^{10a}: I think right at that moment, I was thinking of whether I should text... Leslie or you guys.

Moment? Possibly; Amelia described experience that was consistent with experience apprehended at-a-moment.

Experience? Possibly. “I was thinking of whether I should text... Leslie or you guys” may have described directly apprehended phenomena (although “thinking” does not describe how “whether I should text... Leslie or you guys” was present).

Subjunctifiers? Indeterminate. “I think” may have implied that what follows was an approximation; however, it may also have merely implied a recollection.

EMB CK = 5

EMB RTH = 2

RTH^{11a}: So the—so the deal is, it seems like “this is taking a long time, I’m wondering whether I handled the beeper too roughly, should I text Leiszle” boom, beep [A: Mmm]. Right then.

A^{12a}: Yeah.

Moment? Maybe; however, note that RTH^{11a} proposed a timeline to which Amelia agreed to—Amelia *herself* did *not* generate a description.

Experience? Maybe, but again note that possible experience was proposed by RTH^{11a}; Amelia herself did *not* explicitly provide this description.

Subjunctifiers? No subjunctification.

RTH^{13a}: So the moment that we’re interested in is the, “should I text Leiszle”... beep [A nods affirmatively]. That that happens right here [A nods affirmatively]. And, so is that... so how does that—so now we’re narrowing down into time, and I would say that this, this conversation that we’re having right now, that narrow down the time? That’s always the conversation that we have on the first sampling day. That’s... that’s—most people think that we’re interested in sort of a long period of time, but we’re actually interested in just what was going on here. So it’s: “should I text Leslie...” right here?

A^{14a}: Yeah.

RTH^{15a}: And how—and, and... how does that thought present itself to you?

A^{16a}: Um... [looks quizzical] I’m not really sure.

Moment? Possibly. A^{14a} appeared to refer to the same moment as in A^{10a}.

Experience? No. Amelia explicitly stated she was unsure about what was directly present to her at the moment of the beep.

Subjunctifiers? PNA subjunctification; Amelia explicitly expressed her failure to have apprehended the phenomenon at the moment of the beep.

EMB CK = 1

EMB RTH = 0

RTH^{17a}: So, lemme give you some possibilities, and I've never met you, so I don't actually know what's—what your experience is actually like. But it could be that you were saying to yourself, quote “should I text Leslie,” unquote.

A^{18a}: Yeah.

RTH^{19a}: Or, it could be I see a picture of Leslie's face and that somehow conveys, “should I text her?” Or I see a picture of my phone, in my head; or I'm seeing my actual phone. There's, there's lots of different things that could be construed as saying, well... this is... should I text Leslie, which is really Leiszle, by the way.

LLC^{20a}: [Laughs] Yeah. My name's pronounced Leiszle, but it sounds like you thought I was Leslie at the moment, so that's why he keeps repeating it.

A^{21a}: Hmm... I think it was more like the first one where it was just, like, repeating it in my head, it's like in the form of words.

Moment? Maybe. Amelia appeared to refer to the same moment as in previous turns.

Experience? Maybe, but not likely. “It was just, like, repeating it in my head, it's like in the form of words” may have described directly apprehended experience; however, this description was proposed by RTH in RTH^{17a}, *not* by Amelia.

Subjunctifiers? High density, all were PNA subjunctifiers. The opening “hmm... I think it was more like” qualified all that followed and led the report away from a high-fidelity description of experience (in that “it was more like” implies a comparison, *not* a description). Similarly, “it's like in the form of” also implied a comparison; it was not in and of itself a description of experience.

EMB CK = 1

EMB RTH = 1

RTH^{22a}: And what exactly were those words?

A^{23a}: “Should I text Leslie?” “Leiszle”? “Leizle”? [laughs]

Moment? Maybe. Amelia appeared to refer to the same moment as in previous turns.

Experience? Maybe, but not likely. Although it was possible that “Should I text Leslie?” was descriptive of experience, this turn was very likely (if not entirely) influenced by RTH's suggestion of words present in RTH^{17a} (and Amelia's subsequent agreement in A^{21a}).

Subjunctifiers? No subjunctification.

RTH^{24a}: Except the words at the moment of the beep would've been “Leslie,” right?

A^{25a}: [laughs] Yeah, yeah.

RTH^{26a}: So, so... and, and—this illustrates that we're, we're not so much interested in whether something was correct or whatever. We're interested in what your experience was, and if your experience was, “should I text Leslie” even though she happens to be Leiszle, then that's what

we're... that, that, that's the way experience is. And so you think it was actually in words? [A: Mhm] In those exact words, "Should I text Leslie?"

A^{27a}: 'Cause I was thinking... just like, how to text it on my phone. Just like, how I should word it out.

Moment? Indeterminate. It was possible that Amelia was describing the same moment as in previous turns; however, note that the experience-at-a-moment described in this turn ("I was thinking... how to text it on my phone") differed from her previous descriptions of the moment (e.g., "Should I text Leslie?" in A^{23a}). This may have implied that Amelia was not cleaving to the *same* moment.

Experience? Maybe. "I was thinking... how to text it on my phone" described the possible content of a first-draft description of possible experience, but it did not describe how the phenomenon was present. Moreover, Amelia's conflicting description of her experience-at-a-moment may have implied that she was not describing directly apprehended phenomena.

Subjunctifiers? Moderate density, all were PNA subjunctifiers. "'Cause I was thinking" was an inference, which may or may not be related to what was directly apprehended. "Just like...", which Amelia uses twice, also implied what was stated in this turn should not be understood straightforwardly.

EMB CK = 1

EMB RTH = 1

RTH^{28a}: So *that* seems like sort of two different things... when I'm interested in which, or maybe both, so—should I text Leslie would be one thing, and the other thing is what I would say [LLC: What words should I use...]....

A^{29a}: I think I thought of it at the same time. It usually just, like, pops up at the same time if I wanna like text someone. I usually just think of what I'm gonna write.

Moment? No. The turn began with a description of a possible moment, but then included a temporally indeterminate description ("It usually") unbound to any consideration of time.

Experience? No. The start of the turn ("I think I thought of it at the same time") may have been referring to two simultaneous phenomena that had been directly apprehended; however, the rest of the turn was a generalization (likely faux) of Amelia's experience.

Subjunctifiers? High density, all were PNA subjunctifiers. Amelia's faux generalization of her "typical" texting behavior destroys any possibility of describing experience-at-a-moment.

EMB CK = 0

EMB RTH = 0

RTH^{30a}: Okay. And so... is it the case that what gets caught in flight then by the beep—the beep catches, the beep interrupts this, “what should I write,” “how should I text,” “how should I word this,” “what should...” ?

A^{31a}: No, I think it was, like, already formed, by that time.

Moment? Maybe, but not likely. It was possible that Amelia was referring to the same moment she described in previous turns throughout the interview, but her imprecision about the moment in A^{29a} and her changing description of her experience-at-a-moment in A^{27a} may imply that she was not consistently cleaving her report to a discrete, known moment.

Experience? Maybe, but not likely. It was possible that Amelia was describing her directly apprehended experience, but her inconsistency about describing the same experience-at-a-moment across later conversational turns of the interview and her agreement with RTH’s proposals of plausible experiences suggest she was not describing directly apprehended phenomena.

Subjunctifiers? “I think it was, like” was an entirely subjunctified statement that undermined all that followed.

EMB CK = 3

EMB RTH = 1

RTH^{32a}: And what was it? What...?

A^{33a}: I’m sorry, [Laughs] I don’t think the beep works.

RTH^{34a}: Okay. And, so, so—so the, the message that you might text to Leslie slash Leiszle is... “I’m sorry, I don’t think the beeper works.” Something like that.

A^{35a}: Mhm.

RTH^{36a}: And so, is that present to you at the moment of the beep?

A^{37a}: Mhm.

RTH^{38a}: In what way?

A^{39a}: In what way? [pause] Mmm... I don’t know, it just comes.

Moment? Indeterminate.

Experience? No. Amelia explicitly stated she was unsure about how her thinking had been directly present to her.

Subjunctifiers? All were PNA subjunctifiers. Amelia’s behavioral (e.g., her pause, “mmm...”) and verbal (e.g., “I don’t know”) responses implied that her report should not be understood straightforwardly.

EMB CK = 1

EMB RTH = 0

RTH^{40a}: Okay. So, so... lemme back up a sec. Now I'm, I'm guessing that these questions are more specific than you thought they were going to be.

A^{41a}: Yeah. Way more. [Laughs]

RTH^{42a}: And that's the way [LLC: That's fair] it is for everybody. And it, and it's not your fault, and it's not my fault, and it's not Leiszle's fault, and it's not Cody's fault. This is just the way the first, the first sampling day always is. But we're interested in those details, and so we ask specific kinds of questions. So—and, I'm guessing that Leis`le said to you that we don't expect you to be very good at it on the first day, that we expected you to say, "well, if I had known that that's what you were going to ask, then I would've paid attention to that." That's...

A^{43a}: Yup. [nods and smiles] Exactly.

RTH^{44a}: ... that's, that's what happens on the first day, that is just the way this process works. And there's no... there's no shortcut to it. We just have to—we have to go through this, basically. But let me give you some possibilities. So the, so there is... this notion of, "Hey Leslie, the beeper doesn't work," or, I forget exactly what those words were; what that phrase was. "I don't think the beeper works," or something like that.

LLC^{45a}: I'm sorry, [A: Yeah, I'm sorry, I don't think the beeper works] I don't think the beeper works.

RTH^{46a}: "I'm sorry, I don't think the beeper works." So it could be that I was saying to myself, quote "I'm sorry, I don't think the beeper works," unquote. Or it could be: I see on my imaginary phone the words, "I'm sorry, I don't think the beeper works." Or I somehow feel it in my thumbs as if I might have been about to text that. Or I just have that notion that that's the concept and there aren't really any words there, but if I have to tell these guys about what's going on with me then that's how I would put it into words.

A^{47a}: I think it was more like the second one, where I feel like, I can kinda see my phone, but I'm not actually holding it.

EMB CK = 0

EMB RTH = 3

RTH^{48a}: Okay. And, and what do you see?

A^{49a}: My keyboard [laughs].

RTH^{50a}: The keyboard and the—the whole, the whole... does the phone have a keyboard? Do you see the keyboard of the phone?

A^{51a}: Um, yeah? Like, when you... text someone usually the keyboard comes up.

EMB CK = 0

EMB RTH = 3

RTH^{52a}: Okay. So, so, so at the moment of the beep, I'm seeing in my imagination, not in my real phone? Or, am I seeing the real phone?

A^{53a}: My real phone.

RTH^{54a}: So at the moment of the beep, I'm seeing the real phone and I'm about to make this text... about to send this text?

A^{55a}: Well like, I could see, like, the keyboard? But like, the words are in my head; there's nothing, like, actually on the phone.

EMB CK = 1

EMB RTH = 5

RTH^{56a}: Okay. And, and—in what way are the words in your head?

A^{57a}: Mmm... you mean like...?

RTH^{58a}: Well, I see them in my imagination? [A: Yeah! I see my—] Or I hear myself say them? Or I'm saying them? Or...

A^{59a}: --in my imagination.

RTH^{60a}: You see them in your imagination? What do they look like?

A^{61a}: Letters [laughs]. Like the alphabet.

EMB CK = 1

EMB RTH = 3

RTH^{62a}: But like, you know, black on white or...

A^{63a}: Yeah, black on white.

RTH^{64a}: And, and... script or, um... Times New Roman? Or...

A^{65a}: Um—

LLC^{66a}: The font that your phone uses?

A^{67a}: Yeah, just the basic—

RTH^{68a}: --phone font?

A^{69a}: Mhm [Laughs] I didn't know you can change it.

RTH^{70a}: I'm guessing you can. I don't know—[LLC: I don't either]

LLC^{71a}: But, you know, I think the point is, like, if you're seeing it in your imagination, it could have been any of those things. And so, we're interested in which of those it was.

A^{72a}: No, I just saw, like, whatever usual happens on my keyboard. Just like the basic... cuz that's the only thing I'm texting.

EMB CK = 0

EMB RTH = 5

LLC^{73a}: And are you seeing the—the words, like, all written out? Like, already, like, as if you had texted—you had already typed out the entire sentence? Or...

A^{74a}: No, just like the portion. The first, the most important portion of it. “I’m sorry I broke the beeper.” But then I usually, like, add on after... [LLC: Oh, okay.] Like I think I need to make it polite or something [laughs].

EMB CK = 0

EMB RTH = 8

CK^{75a}: And you were saying earlier—'cause your first description of it you were saying you kind of... you heard in your mind, “should I text Leslie?” And sort of—how, how should I text it? Like it was—like you were describing it as all coming at once, and now you’re saying it’s... you, you were seeing it. Were you both seeing and hearing? Like, would you say that was like a one...?

A^{76a}: Not hearing, just, like, imagining in the... seeing I guess.

EMB CK = 1

EMB RTH = 3

CK^{77a}: So it was mostly a visual sort of...

A^{78a}: Yeah.

RTH^{79a}: So I think we’ve probably probed enough about this particular sample. And, and, and what I’m guessing that you’ve gotten now is a... sort of a view of the kind of [A: Yeah] specificity that we’ve got, which is different from what you have before. [A: Mhm.] And that’s fine. That’s—that’s perfect. That’s exactly what we’re here for. We are...we came in—all of us came in—expecting that you would be doing whatever it is that you’re doing right now, which is wondering what... [A laughs] didn’t get that, didn’t get that. But, but that’s why we have to do it more than once, because that’s... and, *and* I would say, it looks like you’re taking this seriously, you’re trying to get this—you’re trying to get the right answer, you didn’t get the task laid out right, but you’re trying to get the right answer. And that’s—that is 100 percent of what we’re looking for today. This is perfect. We’re doing exactly what it is that we want to do.

Appendix B

Very-Last-Sample Annotated Interview Transcript for Participant Amelia

A^{1b}: The next one... I was looking at the emails on my phone; I could feel the phone in my left hand, but I could also feel, like, the dryness of my eyes. No thoughts or feelings. But I could see the border around my phone, and the different emails I received, but no... actual words. Just, like, colors.

Moment? Likely. “I was looking at emails on my phone” may have described context, but the rest of the turn from “I could feel the phone” onward were all descriptions consistent with experience apprehended at a specific moment.

Experience? Likely. Amelia led every description of directly apprehended experience (“I... feel the phone in my left hand”, “I... feel... the dryness of my eyes”, “I... see the border around my phone”) with the subjunctifier “could.” “Could” implied only that what followed was *possible*; it may or may not mean that experience had been directly present.

Subjunctifiers? Low density of indeterminate and DFS subjunctifiers. The three uses of “could” suggested whatever followed was merely possible, but not necessarily apprehended (however, Amelia always followed “could” with descriptions of experience, which suggested she may have been adjusting her description of apprehended phenomena). Amelia also clearly followed other subjunctifiers with descriptions of possible phenomena: “But no...” was immediately followed by phenomenon (words) that were explicitly not present, and “just, like...” was followed by a description of “colors.”

EMB CK = 6

EMB RTH = 10

RTH^{2b}: So that seems like there’s sort of three things in your experience: I feel the phone [A nods affirmatively], I feel my eyes [A nods affirmatively], and I see the messages.

A^{3b}: Well, I could see colors, but not actually any words formed on... the messages.

Moment? Increasingly likely. Amelia appeared consistent in describing the same phenomena that was directly present to her at the same moment as in A¹.

Experience? Yes. Although Amelia continued to use the word “could” before describing her experience, it was now clear that Amelia’s use of “could” *did* imply that she had apprehended the phenomena: that she “could see colors” was directly contrasted with the fact that she was *not* seeing “any words formed on... the messages.” As such, the entire turn appeared to be aimed at a description of directly apprehended experience (notably, she directly altered RTH²’s description that she was seeing the messages).

Subjunctifiers? Very low density, and all were DFS subjunctifiers. “Formed on...” was followed by “the messages”: the vocal pause may have mirrored Amelia’s report in A^{1b} that she was seeing the different colors (of her emails), but *not* the actual content/words of the emails themselves (as one might expect).

EMB CK = 7

EMB RTH = 10

RTH^{4b}: Okay. And of those—of those three things, is one of them more prominent than the other?

A^{5b}: No, I think maybe like dry, forty percent, and then the rest were like thirty.

Moment? Very likely. Amelia appeared to consistently constrain her report to the same experience-at-a-moment as A¹ and A³.

Experience? Yes. She continued to describe the same three experiential phenomena, and Amelia endorsed the relative saliency of the apprehended phenomena.

Subjunctifiers? Low density, all were DFS subjunctifiers. “I think maybe like dry, forty percent” involved three subjunctifiers (“I think,” “maybe,” “like”) that modified a description of the estimated saliency of directly apprehended phenomena.

EMB CK = 7

EMB RTH = 10

RTH^{6b}: Forty, thirty, thirty? Well let’s start with the eyes: so I feel—my eyes feel dry? Both eyes?

A^{7b}: Both, both.

RTH^{8b}: Both dry? And in my eyeballs?

A^{9b}: Yeah, my eyeballs [laughs].

RTH^{10b}: My eyeballs feel dry [laughs]. All right. And... and is there more to be said about that? Does it feel, like, my eyeballs are moving in there? Or is there—

A^{11b}: No, they’re just dry. Like they need eye drops.

Moment? Yes. Amelia consistently appeared to constrain her report to the same known moment.

Experience? Yes. “No, they’re just dry” was consonant with Amelia’s previous report of the dryness of her eyes. Although “like they need eye drops” was not a description of experience, it may be understood as Amelia’s attempt of trying to answer the question posed in RTH¹⁰ (“is there more to be said about that?”).

Subjunctifiers? DFS subjunctifiers. “Like they need eye drops” was a simile, but it was used as a modification of a description of phenomena (dryness of eyes).

EMB CK = 7

EMB RTH = 10

RTH^{12b}: Okay. All right. And then, “I feel the phone in my left hand.” And that’s the weight of the phone or the texture of the phone, or the...?

A^{13b}: Just the feeling of—I guess it is the texture on my fingertips.

Moment? Yes. She continued to consistently describe at-a-moment experience that occurred in the same known moment as in previous turns.

Experience? Maybe. “I guess it is...” was a subjunctifier that was immediately followed by a description of sensory awareness, but it weakened the description of possible experience, especially because it endorsed (that is: was potentially influenced by) a suggestion made by RTH¹².

Subjunctifiers? Indeterminate. “I guess it is...” may have been an attempt at refining what was directly apprehended, or it may have been signaling that the phenomena had not been adequately apprehended at the moment of the beep.

EMB CK = 5

EMB = 10

RTH^{14b}: And, and—I’m not sure if this is a possible... so does it feel like you’re feeling the phone or does it feel like something on your fingertips? Obviously it’s your fingertips that are doing this, but does it feel like I’m feeling my phone? Or does it feel like I’m feeling pressure or something on my fingertips.

A^{15b}: [Smiling] I think it must be the pressure. ‘Cause it didn’t feel like I was massaging my phone or, like, actually feeling the texture.

Moment? Yes. She continued to be focused on the same fingertip/phone moment.

Experience? Difficult to determine. Amelia’s report of “the pressure”, “massaging [her] phone”, and “feeling the texture” closely matched suggestions made by RTH¹⁴: as such, it is impossible to determine whether A¹⁵ was an attempt at describing experience-at-a-moment with high fidelity, or was created from RTH¹⁴, or was a mixture of phenomena and RTH¹⁴.

Subjunctifiers? Moderate density of indeterminate subjunctifiers. “I think it must be” were two subjunctifiers followed by a possible description of experience; “‘Cause it didn’t feel like” was a causal inference and comparison that undermined Amelia’s description of phone-massaging. It was possible these subjunctifiers signaled Amelia’s surprise at her experience, or it may have signaled her failure to have adequately apprehended the phenomena at the moment of the beep.

EMB CK = 4

EMB RTH = 8

RTH^{15b}: Mky. And then, “I’m seeing colors.” Patches of colors.

A^{16b}: Yeah, like [gestures with her hand in front of her face, indicating rectangles stacked on top of each other] rectangle strips of colors.

Moment? Yes. She continued to be focused on the same moment from all pervious turns.

Experience? Yes. Amelia described phenomena, and did so in a way that provided greater fidelity than what was proposed by RTH¹⁵.

Subjunctifiers? “Like” refined the description that followed (“rectangle strips of colors”).

EMB CK = 8

EMB RTH = 10

RTH^{17b}: And are they all the same color?

A^{18b}: [Shakes head] No. I only remember seeing orange and blue and that’s it.

Moment? Yes.

Experience? Yes. The entire turn was focused on describing experience.

Subjunctifiers? “I only remember” was Amelia’s explicit acknowledgement of the limits of her memory—that she “only remembered” seeing orange and blue and no other colors suggest that she was describing a known, specific experience-at-a-moment.

EMB CK = 9

EMB RTH = 10

RTH^{19b}: And does that seem like one message is orange and another message is blue?

A^{20b}: [Gestures with her hands as she had done previously, in which one message is first and other messages are arranged below each other] Orange orange and then blue and then I don’t remember the rest.

Moment? Yes. Amelia constrained her report to the same known moment.

Experience? Yes. Amelia provided a detailed description of directly apprehended experience.

Subjunctifiers? No subjunctification. The fact that Amelia explicitly stated what she could not remember implied she *was* describing only what *was* remembered and directly apprehended (and not relying on heuristics, inferences, or hedges).

EMB CK = 10

EMB RTH = 10

RTH^{21b}: So one message is orange, another message is orange, another message is blue but I don't really see the messages, I just know that this is a—this is—

A^{22b}: Yeah, color and then the border. [A draws a rectangular border in the air]

Moment? Yes.

Experience? Yes; note that Amelia described her experience with unique details (“the border”) that emerged from Amelia herself—that is, A²² described phenomena that was in no way suggested or recommended by RTH²¹.

Subjunctifiers? No subjunctification.

EMB CK = 10

EMB RTH = 10

RTH^{23b}: Like a rectangle around the orange?

A^{24b}: Yeah, like, a little black border around each message.

Moment? Yes.

Experience? Yes; Amelia provided further elaboration about her experience (“a little black border around each message”) that appeared to reflect phenomena that genuinely occurred at some moment (rather than reflect a leading question or suggestion made by RTH in RTH²³).

Subjunctifiers? “Like” was followed by a description of experience and can be understood as modifying that description.

EMB CK = 10

EMB RTH = 10

RTH^{25b}: Okay. And, is that the way your phone actually works? So if we looked at your actual phone would we see orange message followed by orange message followed by blue message?

A^{26b}: Mmm... [laughs] I don't know. [A looks at her phone] Well, it looks different. My phone is just like a little square of color, and then it's just white. But I imagined it just like the whole thing just being orange.

Moment? Yes. “But I imagined it just like the whole thing being orange” was a description of Amelia's experience-at-a-moment—in other words, it demonstrated Amelia's constraint to a discrete moment. The fact that Amelia noticed (with surprise) how her email inbox looked at this very turn does not change the fact that Amelia appeared to consistently separate what occurred at the moment of the beep and all other moments: she used how her email inbox looked within the interview as a means to contrast it with the experience that was caught in flight at the moment of the beep.

Experience? Yes. “But I imagined... the whole thing being orange” was a description of experience that Amelia reliably stated even though, only a few seconds before, she observed how her inbox actually appeared in reality. The fact that she chose a

description that intentionally contradicted how her inbox appeared suggests she was describing directly apprehended experience.

Subjunctifiers? Only one subjunctifier was relevant to Amelia's description of her experience at-a-moment: the "like" in the final sentence of the turn. However, this subjunctifier was followed by and refined her description of experience.

EMB CK = 9

EMB RTH = 10

RTH^{27b}: And, and is this sort of the same color as the rectangles that are off to the side there? So, so you were seeing the same color as your phone would have—

A^{28b}: Like this? [A shows phone to interviewers] It's very different [laughs] from how I imagined it.

Moment? Yes.

Experience? Yes. Amelia continued to describe her experience (by calling into contrast her experience with the actual inbox) that she explicitly acknowledges was "very different" from what she experienced.

Subjunctifiers? No subjunctification.

EMB CK = 10

EMB RTH = 10

RTH^{29b}: Okay.

A^{30b}: I thought it would be like, this one was just all orange, all orange [A gestures across the width of her phone screen with her finger]—

Moment? Yes; she was constraining her report to the same discrete eye-dryness/phone-feeling/seeing-color moment as previous urns.

Experience? Likely. "I thought it would be like" set up a comparison between her real phone inbox (a square of color on the left side of her phone) with her directly apprehended experience (rectangles of "all orange").

EMB CK = 9

EMB RTH = 10

RTH^{31b}: Same color, same color orange?

A^{32b}: Mhm. [nods] But then, I imagined blue. I didn't remember seeing a red. Like a pinkish color.

Moment? Yes; Amelia continued to constrain to the same moment as before.

Experience? Yes. Although "imagined" did not straightforwardly communicate how experience was directly present, it appeared that Amelia's use of "imagine" implied

that phenomena was directly present: she “imagined blue”, which is by distinct contrast to the fact that she was *not* “seeing a red”. As such, the entire turn was a description of what Amelia was seeing. Notably, the colors Amelia described seeing contradicted how her actual inbox appeared in real life, which further suggests she was describing directly apprehended experience that genuinely occurred.

EMB CK = 10

EMB RTH = 10

RTH^{33b}: And... and, I understand that you were looking at your actual phone. This is—so this is another one of those sort of creative seeings [A laughs]; what I’m seeing is not exactly what’s there [A: Mhm]. I’m, I’m seeing a, an orange rectangle that goes all the way across my phone, even though what’s actually on my phone is an orange square off to the left-hand side [A laughs]. Is that right?

A^{34b}: Yeah.

RTH^{35b}: Okay, I think I’m good.

Appendix C

Very-First-Sample Annotated Interview Transcript for Participant Shirley

LLC^{1a}: All right, so... what, if anything, was in your experience at the moment of the first beep?

S^{2a}: Um, I was scared. [Laughs]

LLC^{3a}: Okay.

S^{4a}: I didn't know what was—I forgot that, um, I put the beeper on, so I was really startled. Um...

Moment? No. A startle must occur *after* the moment of the beep.

Experience? Not likely. “Startled” may describe experience, but it may also describe behavior or context (that may or may not be directly apprehended). All else in the turn did not describe directly apprehended experience.

Subjunctifiers? Moderate subjunctification density, all of which were PNA subjunctifiers. Of particular note, “so I was really startled” was an inference of causation, which inherently was not a description of directly apprehended experience.

CK EMB = 0

RTH EMB = 0

LLC^{5a}: Okay, so... before we go too far down that—so what we're interested in—so, I understand you're, you know... [LLC uses visual timeline example] so this is a little timeline kind of visual aid type thing. So you're going along, you're doing whatever it is you're doing, you're hanging out. The beep goes off, and at some point you turn the beep off. So, your reaction to the beep—being startled and being scared—that's happening after the beep goes off. So what we're interested in is the moment right before the beep goes off? What was in your experience when the beep actually interrupted you—like, what the beep interrupted in the middle of?

S^{6a}: Oh! Um... I was taking my psychology test online.

Moment? Nonspecific. Taking a test may have a duration of several or many minutes.

Experience? No. Shirley was describing only what she was doing.

CK EMB = .5

RTH EMB = 0

LLC^{7a}: Okay.

S^{8a}: So I was really, like, um... focused into that [LLC: Ok]. And... trying to find the answers. [Laughs]. In the book.

Moment? Nonspecific. “Trying to find answers” may have a duration of several or many minutes.

Experience? Nonspecific. “Focused into” may be descriptive of experience or of behavior, but “trying to find the answers” described only what she was doing and was not descriptive of directly apprehended experience.

Subjunctifiers? Moderate density, and all subjunctifiers were PNA.

Given the lack of constraint to a particular moment and to experience, subjunctifiers such as “like,” “um,” and “...” communicate that the description was not straightforwardly descriptive of at-a-moment experience.

CK EMB = 2

RTH EMB = 2

LLC^{9a}: Okay. So, you’re taking your psychology test online [S: Mhm]. Um, so, you know, there’s a whole bunch of different ways that that might be, kinda, present to you in your experience. So, you know, maybe you’re looking at the computer screen? Maybe you’re focused on a certain question and wondering what the answer is? Maybe you’re feeling anxious about getting the right answers? You know, a whole bunch of different things. Do you have any sense about what might’ve been present to you at that moment?

S^{10a}: Uh, the anxious—the anxious part, most of me. ‘Cause I really need that good grade. [Laughs] Um... I remember right before I was, I was—we were doing the independent and dependent variables, and I wasn’t, um... I wasn’t sure what was the answer for what was the dependent variable [LLC: Mmm]. But like, it was interesting cuz, like, right after, like, the beep and I wrote and then I looked back at the question, I kinda, like, I don’t know, cleared my mind for a second and then got the answer.

Moment? No. Shirley described things that occurred before the moment of the beep (“I remember right before I was...”), things that (perhaps occurred) at the moment of the beep, and things that occurred after the moment of the beep (“right after,... I looked back...”).

Experience? Nonspecific. Except for Shirley’s description of “the anxious part of me” (which may have described possible experience), everything else described was about historical facts-of-reality (“we were doing the independent and dependent variable and I wasn’t... sure what was the answer for what was the dependent variable”) and presuppositions (the anxious part, most of me. ‘Cause I really need that good grade”).

Subjunctifiers? High density; all subjunctifiers were PNA. Every subjunctifier signaled a departure from describing specific, directly apprehended experience; specifically, these subjunctifiers signaled Shirley’s unfamiliarity with whatever experience had been interrupted by the moment of the first beep.

CK EMB = 0.5

RTH EMB = 0

LLC^{11a}: Oh, that's cool! Have a little break and—

S^{12a}: [Laughs] Yeah.

LLC^{13a}:—was able to get back to it.

RTH^{14a}: So at the moment—at the moment... that the—just one microsecond before the beep occurred, you were trying to figure out the answer to this independent, dependent variable problem. Is that right?

S^{15a}: Mhm.

RTH^{16a}: And how is that trying to figure out... work? Or, what do you mean? What's in your experience about that?

S^{17a}: I'm sorry, um, how does figuring... the...

Notes: This was a clarification question; as such, no annotation nor EMB ratings were provided.

RTH^{18a}: So I can imagine I was—I was googling “independent variables,” or I was... trying to think what I remember about independent variables [S: Oh!], or I have a picture of my textbook in my head, or... [S: Oh! Um—] there's lots of different ways that that can happen.

S^{19a}: I was trying to remember from lecture classes. Um, what was the dependent-independent variable because we did an activity on, um, on what it was and how, like, to differentiate between the two. And I was trying to take that example and apply it to this problem.

Moment? Nonspecific. “Trying to remember from lecture classes” described an apparent process that likely took several seconds or minutes (and was further corroborated by Shirley's multi-part description of the lecture's topic, the activity they had performed in class, and that she was trying to apply that memory to her current homework problem; this implies a several-moments-long operation).

Experience? Not likely. Although this turn may have described some inchoate aspect of directly apprehended experience, there was no straightforward description of how any phenomena had been directly present.

Subjunctifiers? All were PNA subjunctifiers. Shirley described two intentional expressions that signaled she was not aimed at apprehending or describing at-a-moment experience. “Trying to remember” and “trying to take that example and apply it to this problem” described what Shirley was *attempting* to do, and what one was trying to do is not a description of what was directly apprehended.

CK EMB = 1

RTH EMB = 0

RTH^{20a}: Okay. And so is that example present to you right at the moment of the beep?

S^{21a}: Yes.

RTH^{22a}: In what way?

S^{23a}: Um... I was still kinda thinking about the, well, writing in, like, jotting it down. Tryna to like, clear my thoughts on, like, this, like—a dependent variable is this and independent variable was this. Yeah. [Laughs]

Moment? Nonspecific. What was described in S^{23a} might describe a discrete moment, or it may describe a process that occurred over several seconds or minutes.

Experience? Nonspecific. The gist of this turn was that Shirley described a (possible) thinking/analytical-type experience; however, this description is dubious for two reasons. First, Shirley did not describe how any phenomenon/phenomena had been present to her. Second, it is possible (and, given Shirley's lack of apparent constraint to a known moment of experience, likely) that what Shirley described was her presuppositions about experience rather than about directly known and apprehended experience.

Subjunctifiers? High density; all were PNA subjunctifiers. Every one of Shirley's subjunctifiers undermine any commitment to a particularized moment of directly apprehended experience.

CK EMB = 1

RTH EMB = 0

LLC^{24a}: Okay.

RTH^{25a}: So I'm not—I'm not sure that I quite understand what the—what was going on at the moment of the beep. So are you... at the moment of the beep, remembering what took place in class?

S^{26a}: Yes.

RTH^{27a}: And is that remembering—the, sort of, the memory of that present to you right at the moment of the beep?

S^{28a}: Yeah, I was... yeah.

RTH^{29a}: In... and so, do you remember that by... by seeing it again? Or hearing it? Or, by just knowing that the... this is what the instructor said? Or...

S^{30a}: Um... this is hard to explain. Um... [Laughs]

Moment? Unknown.

Experience? No. Shirley explicitly stated she was unsure about how to describe what she had directly experienced.

Subjunctifiers? Very likely PNA subjunctification. Shirley had demonstrated a lack of constraint to both a specific moment and to directly apprehended experience throughout all turns of her very-first-sample-interview; as such, it is likely that the subjunctifiers in this turn signal her unfamiliarity with what her ongoing experience had been at the moment of the beep.

RTH^{31a}: And, it—so you’re doing great, this is... [LLC: Yes, you’re doing great.] So everything that you’ve done so far is perfect. So when you came into it and the first thing you said was, “I wasn’t sure what I was supposed to do”? That’s great as far as we’re concerned because we want you to—we want you to get a feeling for what to do as a result of this conversation. The first conversation is always about... trying to [S Laughs] get *you* a notion of, of the kind of questions we’re asking. And it’s not a failure of yours that you didn’t know that in the first place—this is what this conversation, this day, is designed to do.

S^{32a}: Yeah, a new experience. [Laughs]

Notes: Shirley agreed with RTH^{31a}’s characterization that she was not yet engaging in the DES task (i.e., that she did not cleave to experience-at-a-moment while she was wearing the beeper). As such, the intention of the interview shifted from trying to describe Sharleen’s experience at the moment of the first beep with fidelity to iterative training for Shirley’s next round of sampling-and-interviewing.

LLC^{33a}: Yes.

RTH^{34a}: So, about this particular beep—so we got this timeline going on here... time is marching on and the beep happens, and right here, I understand you to be saying, “I’m trying to figure out whether this is an independent variable or a dependent variable.” [S nods; S: Yes.] And, so, at this moment right here, are you more focused on the problem that’s being presented to you today, or on the recollection of the... what took place in class? Or both?

S^{35a}: The—I was... I was at the moment I was more focused on trying to... yeah, the recollection—the memory—on, um... what, what she said [RTH: Okay]. What my instructor said.

CK EMB = 1.5

RTH EMB = 3

RTH^{36a}: Okay. And, and—so, is your instructor... what your instructor said somehow present to you, at this particular moment?

S^{37a}: Yes.

RTH^{38a}: In what way? So I can imagine that I hear my instructor's voice, or I see my instructor, or—in my imagination, or...

S^{39a}: Um... like, a little short memory clip, I guess you could say? Um, I remember her, um... the, the examples were on the slide and she was just going through them on what's an independent variable and what's a dependent variable, and she had, um, the class, um... like, she asked the class what, like, what they thought on what it was. And if it was right, we would move onto the next one, and if not then she would, like, elaborate on it more.

CK EMB = 0

RTH EMB = 2

RTH^{40a}: And so that—that's what happened in the class a couple of days ago [S: Yeah]. And it's somehow present to you at this moment.

S^{41a}: Yeah. [Laughs]

RTH^{42a}: And is that present to you in a visual kind of way? Or a hearing kind of way? Or just a remembering that's not visual or not...

S^{43a}: Um, it was definitely visual. Cause I remember, like, I know that memory, like, seeing her there.

CK EMB = 0.5

RTH EMB = 3

RTH^{44a}: And what do you see?

S^{45a}: I see... her, um, standing in front of the board. Um, the slide that she had with all the examples. And then, I remember, um, people saying... at this particular one, she got it wrong [Laughs] so that's how I remember, like, oh so it's, like, the dependent variable is on this side and the independent variable is this side.

CK EMB = 1

RTH EMB = 3

RTH^{46a}: And, and so you're remembering an incorrect—a student in the class [S: Being incorrect] being incorrect [S: Yeah.]. And so do you see the student? Or hear the student? Or are you just seeing the teacher?

S^{47a}: Um, I don't remember the student, but I do s—see the teacher, um... explaining, like, why it wasn't this.

CK EMB = 1

RTH EMB = 4

RTH^{48a}: Okay. And do you see the teacher explaining it? Or do you see and hear the teacher saying this?

S^{49a}: That's a good question. [Pause] I don't really see her, like, talking? But it was—it's kinda like she, like, um... like, it was kinda like a picture of her, I guess? Like—

CK EMB = 1

RTH EMB = 4

RTH^{50a}: Like a still picture?

S^{51a}: Kinda. But, like, but like—one moment it would just be, like, a picture of her, and then it would move to, like, her walking. But... I don't... remember what her directly—like—her mouth moving. So I guess it's, like, her voice. And then like what she's saying about independent and dependent variable.

CK EMB = 0

RTH EMB = 4

RTH^{52a}: So visually it's a seeing and then another seeing rather than a video that—

S^{53a}: That plays, no.

RTH^{54a}: So, so I see her standing here and then I see her over there, or something like that.

S^{55a}: Yeah, it's like, um... like, first I remembered her, like, standing in front of the board [RTH: mhm], and then I remember, um, what she was saying. And then so I remember her just walking *to* the board. And then I was focused on the, the screen with the examples. And I would... uh, and that's when I remember, like, the incorrect things.

CK EMB = 0

RTH EMB = 3

RTH^{56a}: Okay. And, so—and, in this process, do you hear your teacher's voice? Or do you just know what she's saying?

S^{57a}: It was, like, I, I know what she was trying to say, so I took it into my own interpretation of what she was saying?

RTH^{58a}: And so do you hear your own voice?

S^{59a}: Yes. Of me trying to work it out.

RTH^{60a}: So this—this is the kinda thing that we’re interested in, which is a difficult thing for your—for the... for the TA to have explained to you, which is why you didn’t know what was gonna happen. So we have to go through this—this exercise of, of—so... I understand you to be saying that you have somehow taken this explanation *in*, somehow.

S^{61a}: Yeah, like, um... like, she taught it and then I know what she was saying. And then, I guess you could say, like, I heard her voice? But it was more, like, it was more predominantly, like, me, trying to, like... like think it out. And, like, “oh, I remember her saying... this.” But it was in my own voice saying that?

CK EMB = 1

RTH EMB = 4

LLC^{62a}: Mhm.

RTH^{63a}: So your voice or her voice?

S^{64a}: My voice.

RTH^{65a}: And so—at the moment... what we’re calling the moment of the beep, which is actually one microsecond just before the beep occurs—

S^{66a}: [Nods] That would be my voice.

RTH^{67a}: It’s in your voice. And so are you saying something at that particular moment?

S^{68a}: Um... like, I can’t quite remember.

RTH^{69a}: Okay.

LLC^{70a}: And that’s perfect. If there’s something that you’re not sure about or don’t quite remember, like, an, “I don’t know” or an, “I don’t remember” is exactly what we want, rather than trying to guess about it.

RTH^{71a}: So what I’ve got out of this experience is that there are two... or maybe three sort of parallel strands of experience going on. One is I see... my teacher in front of a blackboard and I see her walking towards the blackboard [S: Yes], or a whiteboard or whatever. And then I also experience myself sort of somehow reframing or restating or... something—

S^{72a}: What she said.

RTH^{73a}:—what she has said. And then, maybe the, the current problem is somehow present to me as well.

S^{74a}: Uh, uh like the problem that I was, like trying to get at. [Laughs]

LLC^{75a}: Yeah.

RTH^{76a}: So th—these are the details that we find interesting, that we're trying to sort out. So for example, it's quite possible for your real eyes to be aimed at the problem that you're trying to solve today—the one that's on the quiz you're trying to take, or whatever. But I'm not really paying attention to that, because I'm thinking back to what happened in class and so... my experience is entirely back to yesterday's class period, or something.

S^{77a}: Yeah... oh! Oh, this, this—oh, I get it now! The—okay. I see.

RTH^{78a}: So that's the—that is what we find interesting, is what happens to your experience. So, is the, is the quiz—is what you're really eyeballs are looking at—present to you at this particular moment, or not?

S^{79a}: No. I think I was more, like... in my brain.

RTH^{80a}: In your memory [S: Yeah.]—in the memory. Okay. I think that's great.

LLC^{81a}: Yeah.

Appendix D

Very-Last-Sample Annotated Interview Transcript for Participant Shirley

RTH^{1b}: Number six.

S^{2b}: Number six... um... So, right before the beep, I was think—I was mentally doing math. Of... a hundred times... [laughs] a hundred times one, in my head. Which is one hundred. But [laughs], at that beep, um, it was... a mental thing of... multiplying that hundred times one. And... that feeling of, like, I know the answer *is* a hundred. Is there.

Moment? Likely. Shirley explicitly differentiated between context that occurred prior to the beep (“So, right before the beep...” to “Which is one hundred”) and what had occurred at the moment of the beep (“But, at that beep, um it was...” to “I know the answer is a hundred is there”).

Experience? Yes; Shirley described directly apprehendable phenomena: mental multiplication and the feeling of knowing.

Subjunctifiers? Moderate subjunctification density; all were DFS subjunctifiers. When describing experience (i.e., the final two sentences of the turn), all subjunctifications were followed by descriptions of at-the-moment experience. Even when describing context (i.e., the first two sentences of the turn), the context aided in understanding the experience.

CK EMB = 8

RTH EMB = 7

RTH^{3b}: So does that mean that I’m multiplying a hundred times one? And, sort of separately, I know the answer is a hundred? Or that I’m sort of at the end of the multiplication and the answer is gonna be a hundred?

S^{4b}: At that beep, it was... a hundred times one, but, the feeling of knowing the answer is a hundred.

Moment? Likely. Shirley appeared to describe the same moment as in S² (that is: she does *not* talk about doing mental math in general; rather, she constrained her report to the mental math ongoing at the moment of beep 6).

Experience? Yes. This turn was almost (if not entirely) about experience: the mental math and the feeling of knowing the answer.

Subjunctification? Almost no subjunctification. She gave a straightforward, non-ambiguated description of her experience.

CK EMB = 8.5

RTH EMB = 8

RTH^{5b}: Okay. And, and... does this feeling of knowing have to do with the fact that the—when I multiply one hundred times one, I’m gonna get a hundred? Or does the feeling of

knowing a more general thing that's... whenever I multiply anything times one I get, I get that same thing.

S^{6b}: It was, if I multiply anything by one I'm gonna get the same thing.

RTH^{7b}: So I've got sort of two separate things going on. I have a multiplication in process—one hundred times one, which is gonna be a hundred. And I have a general recognition that anything times one is equal to anything.

S^{8b}: Yes.

RTH⁹: Is that right?

S^{10b}: Yes.

RTH^{11b}: Both of those things are sort of going on simultaneously?

S^{12b}: Yes, and they're both present.

S⁶, S⁸, S¹⁰, and S¹²:

Moment? Yes; Shirley appeared to consistently constrain her reports to the same known moment.

Experience? Yes; all descriptions were entirely of directly apprehended experience and nothing else.

Subjunctifiers? No subjunctification.

CK EMB = 8

RTH EMB = 8

RTH^{13b}: Mhm.

LLC^{14b}: Is... is the, the multiplying a hundred times one... is it just that? Or is it also that it is a hundred. Is it just that you're multiplying a hundred times one at the moment, and you're recognizing that anything times it--anything times one is that anything? Or is the answer present to you also.

S^{15b}: The... so, in my head, the, the problem was a hundred times one.

LLC^{16b}: Okay.

S^{17b}: And then the equal sign.

LLC^{18b}: Okay.

S^{19b}: But it was the feeling of... the feeling and knowing that... the answer is a hundred.

S¹⁵, S¹⁷, and S¹⁹:

Moment? Yes.

Experience? Yes.

Subjunctifiers? Moderate density but pauses only; subjunctifications were followed by descriptions of experience at the moment of the beep.

CK EMB = 9

RTH EMB = 9

LLC^{20b}: Okay. And... when you say that... in your head, it's a hundred times one and the equal sign, do you mean that, like, literally? Like you're seeing that?

S^{21b}: Yeah, it was, it was... like, literally a hundred and then x one equals [draws out the equation in front of her with her right index finger]. And it was... it was white in bold. And the background was... [quizzically grimaces] it wasn't black, but it was... black. [Laughs]

Moment? Yes.

Experience? Yes. Note that Shirley *independently* provided a description of a highly detailed and nuanced inner seeing.

Subjunctifiers? Moderate density; all subjunctifiers were DFS. Shirley notably qualified her descriptions to indicate that her words should not be understood straightforwardly—for instance, that the background of her inner seeing was *something like* a black, but not actually black (“And the background was... it wasn't black, but it was... black.”). Her subjunctifiers all apparently acted in the service of better honing the fidelity of her descriptions of experience.

CK EMB = 10

RTH EMB = 10

RTH^{22b}: A different kind of black.

S^{23b}: Yes, it was... there was... it wasn't a very strong or intense black. But the white was... the white of the numbers were intense and it was clear. But the background was... like, yeah, a different type of black.

Moment? Yes.

Experience? Yes.

Subjunctifiers? Moderate density; all subjunctifiers were DFS subjunctifiers. “... like, yeah, a different type of black” involved three subjunctifiers (“...”, “like”, “yeah”) that qualify a distinction about the type of black that Shirley had seen; that subjunctifiers were used did not undermine the fact that Shirley was describing seeing some type of black.

CK EMB = 10

RTH EMB = 10

LLC^{24b}: Yeah, like, before you talked about sort of like an off-white, like, a not intense white. Is this the same kind of thing, like, an off-black, like, a not intense black, kind of?

S^{25b}: [Laughs] Yeah.

LLC^{26b}: Okay.

RTH^{27b}: So tell me exactly again what you see.

S^{28b}: Um... a hundred. And then x for times and then one and then equal sign. And it's white and... it was, it was clear.

Moment? Yes.

Experience? Yes.

Subjunctifiers? All subjunctifiers were DFS subjunctifiers. Shirley used subjunctifiers while providing nuanced descriptions of directly apprehended experience (but the subjunctifiers did not in any way undermine the fact that she was making distinctions about phenomena). Thus, her subjunctifiers were in the spirit of improving the fidelity of her descriptions.

CK EMB = 10

RTH = 9

RTH^{29b}: Handwritten? Typewritten?

S^{30b}: Um... like, typed.

Moment? Yes; Shirley appeared to describe the same moment as in all previous turns.

Experience? Yes. She described a part of her inner seeing.

Subjunctifiers? Indeterminate. Because RTH²⁴ presented Shirley with two options, it is possible her subjunctification was intended to imply that her description should not be believed at face value (thus making it a PNA subjunctifier). However, it is also possible that her subjunctification was an attempt to adjust her description of her inner experience (thus making it a DFS subjunctifier).

EMB = 8.5

RTH EMB = 10

RTH^{31b}: Okay. And so the problem that you're working... are you writing this problem down?

S^{32b}: Um, the problem was on a piece of paper. Like, in front of me. But... I was at that beep I was not...

Moment? Yes; Shirley appeared consistent in describing the same moment.

Experience? Yes. Shirley clearly contrasted the context of the situation (that the problem was on paper she was reading) from what had been directly present to her ("But... at that beep I was not..." implies that the description of context that came before was not directly present to her).

Subjunctifiers? All subjunctifiers were DFS subjunctifiers. Shirley did not conflate facts and context about the situation with what was in her direct experience.

CK EMB = 9.5

RTH EMB = 10

RTH^{33b}: So your real eyeballs are aimed at the paper, but your visual experience is in your mental seeing of a hundred times one equals.

S^{34b}: Yes.

RTH^{35b}: And the... and at the same time as that seeing, you know that the answer is gonna be one hundred. And this—and I wanna make sure that I understand—do you also know in your experience the general principle—that whatever times one is equal to that same whatever?

S^{36b}: Yes. In my—in my... yeah, it's like...

Moment? Yes.

Experience? Possibly. RTH³¹ provided Shirley with a possible description of her experience based upon her reports in previous turns; however, Shirley did not quite get to describing how that phenomena had been present to her.

Subjunctifiers? Indeterminate. It was possible that she was simply assenting to RTH³¹'s suggestion (i.e., PNA subjunctification). However, it was also possible that her subjunctification was in the service of faithfully describing her experience (i.e., DFS subjunctification).

CK EMB = 7

RTH EMB = 10

RTH^{37b}: And that's, that's as much in your experience as the other stuff?

S^{38b}: Yes.

RTH^{39b}: Okay. So it's not just that a hundred times one equals one hundred, it's that a hundred times one equals, and, whatever times one is whatever, and that's gonna make this come out to be a hundred.

S^{40b}: Yes.

RTH^{41b}: Okay.

S^{42b}: And, like, it was happening, like, at the same time.

Moment? Yes; Shirley appeared to be describing the same known moment.

Experience? Yes. This turn was entirely descriptive of directly apprehended experience.

Subjunctifiers? DFS subjunctification. Although heavily subjunctified, S³⁸ was consistent with RTH¹¹ and S¹² where Shirley described two simultaneous phenomena occurring at the moment of the beep.

CK EMB = 10

RTH EMB = 10

RTH^{43b}: Okay. I'm good.

LLC^{44b}: I guess... and this might not make sense with this experience—is the... is what you're seeing and kind of this... more, like, recognition kind of feeling / knowing kind of a process... are, is one of those more present to you than the other?

S^{45b}: [inhales] The... the recognition and, like, understanding part was more present than... [gestures with her hand and cringes]

Moment? Yes.

Experience? Yes. Although heavily subjunctified, Shirley's description is exclusively descriptive of directly apprehended experience.

Subjunctifiers? DFS subjunctification; Shirley subjunctified a statement contrasting the relative saliency of different aspects of her at-the-moment experience. The fact that she used subjunctifiers did not change the fact that she is aimed at describing experience.

CK EMB = 10

RTH EMB = 10

LLC^{46b}: The inner—what you were seeing? What you were imagining? Sorry, finish your sentence.

S^{47b}: No, I'm trying to think. Um... [looks down at notes] No, I take that back. The recognition and, like, seeing this problem in my head was together.

Moment? Yes; Shirley appeared to cleave to the same moment as previous turns.

Experience? Yes; Shirley actively resisted both her own description (S⁴⁵) and was not led by LLC⁴⁴'s question.

Subjunctification? DFS subjunctifiers. "Um..." was followed by a description of her at-the-moment experience ("No, I take that back. The recognition and... seeing this problem [were] in my head together"), and thus acted in service of Shirley refining her description.

CK EMB = 9

RTH EMB = 9

LLC^{48b}: Okay. So it's not like—it doesn't make sense to say one was more present than the other?

S^{49b}: No.

LLC^{50b}: Okay.

RTH^{51b}: I think I'm good.

LLC^{52b}: Yup.

Appendix E

Very-First-Sample Annotated Interview Transcript for Participant Kayla

LLC^{1a}: Just kinda tell me what if anything was in your experience when the beep went off?

K^{2a}: All right. Uh, so... I was, like, I wasn't really feeling anything too much... like, you know. Um... like... when it went off, uh, my mom and I were making, like, uh, tuna sandwiches, so I really just put the toast—the bread to toast and then she did everything else. [Laughs] But um... yeah... uh... I was, I was, like, I guess I felt—like, physically I felt tired. Like, uh... I've been up since like 5:30 in the morning, um... and I did some exercises in the, in the gym that morning as well... and I had a long day. [Laughs] So I have three classes... um, and... my... I had a midterm in one of the classes, so that didn't help. [LLC: Yeah] So yeah.

Moment? No. “Making... tuna sandwiches” described a period (not a moment) of several minutes. Moreover, Kayla’s “long day” described events (not a moment) that were completely irrelevant to the moment of interest.

Experience? No. “Physically I felt tired” may have described at-the-moment experience or general context, but the remainder of the turn only described context or speculation of causation: “Making... tuna sandwiches” described only actions being performed, and “I’ve been up since like 5:30... I did some exercises... I had a midterm...” merely described a timeline of events.

Subjunctifiers? High density, all were PNA subjunctifiers. For example: “uh, so... I was, like, I wasn't really feeling anything too much” involved five subjunctifiers (“uh”, “...”, “like”, “wasn't really”, “too much”) that all qualified Kayla’s report of “making tuna sandwiches” (which itself was about actions, *not* experience). An additional example occurred when Andrea subjunctified her talk about her day’s activities. “But um... yeah... uh... I was, I was like, I guess I felt—like, physically I felt tired” was an entirely subjunctified sentence that included both multiple starts and stops, groans, and an explicit acknowledgement of ignorance (“I guess” literally implied that what followed may or may not have been true). Although “physically I felt tired” may seem like a description of experience, Kayla’s listing of her day highlights her misunderstanding of the DES task: she was talking—with great subjunctification—about her day’s schedule, and *not* about experience.

EMB CK = 2

EMB RTH = 0

LLC^{3a}: So, okay, so... you know, you’ve talked about a few different things: you’re making sand—tuna sandwiches with your mom [K nods; K: Mhm], and you’re—you’ve had a really long day, you’re tired from working out and getting up early and all this stuff [K nods]. And so... I’m going to use a little visual aid demonstration here. So... you know, all of that is something that’s kind of going on around you, maybe in your experience or not, and then at some point [uses the visual aid] the beep goes off and then you shut it off. And so what we’re interested in is what was directly present to you the moment before the beep interrupted you.

K^{4a}: Um... the main thing was just, like, we were, like, we were, like, actually in the middle of making them when they went off. So then, um, that was just like, uh... that was the thing that, that, that, uh, we were doing at that moment, so—

Moment? No. “We were, like, actually in the middle of making them when [the beep] went off” is a reference to a timeless fact of an ongoing activity. Being “in the middle of” making sandwiches is not specific to any moment, let alone the moment of the beep.

Experience? No. “We were, like, actually in the middle of making [sandwiches] when they went off” described actions performed; it did not describe directly apprehended experience. This continued throughout the second half of her turn: “that was the thing we were doing at that moment” was an explicit report of only the activity that Kayla had been engaged in at the moment. It did *not* provide any description of what was directly apprehended.

Subjunctifiers? Many PNA subjunctifiers, none of which improved the fidelity of describing experience-at-a-moment.

EMB CK = 1

EMB RTH = 0

LLC^{5a}: Okay. And so... is some... is some particular aspect of making the tuna sandwiches present? Like, you said you were, like, making the bread to toast or something like that?

K^{6a}: Yeah. I think I had put in—I think I had put in the second, uh, set of, like, uh, bread, ‘cause like, you know, two tuna sandwiches. I think I put the second one in like uh right before the beep went off. [Quizzically casts eyes upwards; pauses] Yeah, I did. And then, um... yeah. Yeah, that’s what I did. [Laughs] I had to think about that.

Moment? No. Although “I think I had put in the second... set of... bread” may have been somewhat more temporally precise than what was stated in previous turns, it did not describe a moment. “Putting in” bread to toast refers to a period with an indeterminate start and end point and has an unclear duration, lasting possibly several seconds or minutes.

Experience? No. Kayla merely talked about the actions she had been performing: “I had put in the second... set of... bread” was a statement of behavior and did not describe directly apprehended experience. Kayla’s utterance where she reassured herself that “that’s what I did” further demonstrated that this turn was about what she had done and *not* about what she had directly apprehended. [We acknowledge that that the interviewer’s turn (LLC^{5a}) may have may have been understood as a question about actions rather than about experience.

Subjunctifiers? High density; all were PNA subjunctifiers. No subjunctifiers improved the fidelity of describing at-the-moment experience.

EMB CK = 1.5

EMB RTH = 0

LLC^{7a}: And is that directly in your experience? So... you know, it's kind of a fact of the world that you had just put the bread in the toaster [K nods and smiles; K: Yes!] or something like that. Um... and, another—so, so a way that we like to, um, describe this would be, like, so... right now, your arms are resting on the table [K: Mhm], but until I kinda called your attention to it, you might not have been feeling your arms [K laughs] resting on the table. Uh... and so, you know, it's very possible for lots of things to be going on in the world around us with our body... without it being directly in our experience. So, I guess the thing that we're most interested in is what's directly—like, what's really present to you, what's in your experience right when the beep interrupts you.

K^{8a}: Hm... I have to think. Ooh... hm...

Moment? No.

Experience? No.

Subjunctifiers? This turn was comprised entirely of PNA subjunctifiers.

EMB CK = 0

EMB RTH = 0

RTH^{9a}: So let me observe that your inability to answer this question is *great* from our point of view. [K laughs and smiles with relief; K: OK!] This is exactly what we want to see on the in our first interview. [K laughs with relief; K: OK!] Because what that means is that you're trying but you're not sure that you know. And what we're trying to build on—what *we're* trying to build on in the first interview or two is the skill of being able to do something that you haven't, you didn't have before, and the best way we can do that is to get you in a position where you can say, "Well, jeez, if I knew you were going to ask that question, I would've paid more attention to it." [K laughs; K: Yeah] And, and, and that's perfect. That's exactly what we're trying to do. So what this, *this* spiel is trying to do is to try to say... it's not a failing of yours not to be able to answer this question; this is... *nobody* can answer these questions on the first day. We need, we need—you need to hear the specificity of our questions before you can believe it, basically. [K nods affirmatively] So can I ask about the, the timing... let's start with the, the timing. So, when exactly did the beep occur?

K^{10a}: Um... like, is it, like, the exact time? Or...?

Moment? No. RTH's question was ambiguous between an "exact time" of day and the moment of interest in DES (the moment at the leading edge of the beep).

Experience? No.

Subjunctifiers? High density; all were PNA subjunctifiers. Kayla's confusion about what constituted the moment of interest [exacerbated by RTH's ambiguity] illustrated that Kayla was not yet understanding the DES procedure, and therefore was not describing at-the-moment experience.

EMB RTH = 0

EMB CK = 0

RTH^{11a}: I don't want to know time of day, I want to know, as far as your activity was concerned. So, I'm understanding that it has to do with the second toasting [K: Mhm]. But is

this—have I put it in? Am I in the process of putting it in? Have I finished putting it in and now I've turned my attention to the buttering of the first toasting, or...?

K^{12a}: Um... I think it was just, we, like, I put—I had just put it *in* the toaster.

Moment? Ambiguous. “I had just put it *in* the toaster” referred to a relatively short interval of time that lacked a discrete beginning and end, but the subjunctification undermines confidence in it.

Experience? No. Kayla talked only about what she had been doing. She in no way described any aspect of her directly apprehended experience. [Note that RTH was asking just about time, not experience. His strategy was apparently to focus on the temporal aspect, believing that the experiential aspect was not possible on this sample.]

Subjunctifiers? High density; all were PNA subjunctifiers. It began with three subjunctifiers (“Um”, “...”, “I think”), all of which undermined commitment to describing any particularized moment.

EMB CK = 1

EMB RTH = 1

RTH^{13a}: And, pushed down on the toaster?

K^{14a}: Yes [nods].

RTH^{15a}: And, and are still in contact with the toaster? Or have turned away from the toaster, or...?

K^{16a}: I would say that I had turned away from the toaster by that point.

Moment? No. “I had turned away from the toaster by that point” was a vague comparison about a series of events: that she, at some point in the past, turned away from the toaster when the beep sounded (and is notably not descriptive of a discrete moment). Any specificity was undermined by the subjunctification.

Experience? No. This turn only described things Kayla had been doing.

Subjunctifiers? “I would say” implied that what followed was not a description of facts.

EMB CK = 1.5

EMB RTH = 0

RTH^{17a}: Okay.

K^{18a}: And, oh! Actually, I just remembered, I think I had also gotten a plate for that, for that toast so that, like, whenever, whenever it was ready I could just put it on the plate.

Moment? No. “I had also gotten a plate” was a timeless statement-of-fact that was not specific to any moment.

Experience? No. This turn only involved a report of the actions Kayla had performed and her best inferences behind her actions. Nothing about this turn described directly apprehended experience.

Subjunctifiers High density; all were PNA subjunctifiers. None improved the fidelity of describing at-the-moment experience.

EMB CK = 0

EMB RTH = 1

RTH^{19a}: So on our timeline here, basically, I've put in the first toast out here [uses the visual aid] and now I'm putting the second toast and now I'm getting the plate for the second toast and I'm turning away to wherever and it beeps somewhere in there. Is that right?

K^{20a}: Yes.

RTH^{21a}: Okay. So, one of the things that you're in the process of learning from us is that we want to be very precise about when the time concern. Because we think that experience can be quite a bit different—your experience when you put the first toast... the first toast in might be very different from when you put the second toast in, might be different from when you go to get the plate, which might be very different from what happens when you, when you turn away from getting the plate [K: Mhm]. So we want to be precise about when—about when the beep occurs.

K^{22a}: Um, well, fff... so if we want to be precise, the toaster was warm from like the first, like, uh, toasting, so that was different.

Moment? No. This turn involved a temporally indeterminate report that has nothing to do with time; that the toaster was warm is a general statement that does not refer to any specific moment.

Experience? Ambiguous. This turn may have described a fact about reality (the toaster was warm) or a fact about experience (I felt the warmth of the toaster).

Subjunctifiers? The (PNA) subjunctifiers did not improve the fidelity of describing experience-at-a-moment.

EMB CK = 1.5

EMB RTH = 0

RTH^{23a}: And is that warmth in your experience at the moment of the beep?

K^{24a}: Yes. Or, not at the moment of the beep, but, uh, it was like when I was putting the toast in before the beep.

Moment? No. Although Kayla differentiated what had occurred before the moment of the beep, simply ruling-out events that occurred before the beep does not imply Kayla was describing a specific moment.

Experience? No. This turn only described facts about reality.

Subjunctifiers? No subjunctifiers improved the fidelity of describing experience-at-a-moment.

EMB CK = 0

EMB RTH = 0

RTH^{25a}: Okay. So, as far as your *experience* is concerned, I experience some warmth from the toaster, but then I—that's gone, and now I've turned my attention to get a plate and the warmth is gone [K: mhm], so the question is what is in your experience right at the moment when the beep goes off?

K^{26a}: [Pauses] I wanna say I was turning away from the thing? I'm not sure on that.

Moment? No.

Experience? No. "I was turning away" was talk about actions. There was nothing in this turn that described directly apprehended experience.

Subjunctifiers? High density; all were PNA subjunctifiers. "I wanna say" implied that all that followed was hedge about a hypothetical situation, and "I'm not sure on that" was Kayla's explicit acknowledgement that her turn should not be understood straightforwardly.

EMB RTH = 0

EMB CK = 0

RTH^{27a}: Okay. And do you know what was in your experience as you were turning away?

K^{28a}: Hm...

RTH^{29a}: So, what if, so, in this training mode here, there's what you're *doing*, which is turning away, and, and what you're doing may or may not be related to what you're experiencing. When you're turning, you could feel yourself turning, or you could be thinking about a castle in Spain, you know? [K laughs] Your experience doesn't have to be at all tied to what you're doing—*might* be, it might not be. What we want to know about is your experience at the moment of whenever, whenever the random beep happens to sound, we want to know what your experience is.

K^{30a}: All right. Um... [looks up and to the left and right, thinking] I feel like if I remember about what when I turned away from the toaster was, um, I was trying to be careful to like not bump into my mom, because she was behind me, so, I had to be careful about that.

Moment? No. Kayla described an ambiguously-long period of time (i.e., while turning away from the toaster, which could take several or many seconds).

Experience? Probably not. This entire turn involved Kayla talking about the actions she had been performing ("when I turned away from the toaster"), inferences of her intention ("I was trying to be careful to like not bump into my mom") and facts of reality ("because [my mom] was behind me"). None of these utterances describe directly apprehended experience. However, being careful about her mother might have been related to experience at the moment of the beep.

Subjunctifiers? High density; all were PNA subjunctifiers. "Um... I feel like if I remember" was an explicit statement in the subjunctive mood. Kayla's use of this conditional phrasing signaled that all that followed is contrary to fact and should not be understood straightforwardly.

EMB CK = 0

EMB RTH = 2

RTH^{31a}: Okay.

K^{32a}: Uh, other than that I'm not sure. [smiles and laughs]

RTH^{33a}: Okay. Well, I would say we should go on to beep number two here. I think you're getting—you're getting a flavor of the kinds of... the kinds of specific questions that we're... that we're trying to ask. Let's go to beep number two and see what we get there. *And* I'd say you're doing a great job, again. I think I said that before but if I didn't say that before, I'm saying that now. You're doing... This is exactly what we want to be doing. [K: OK] Number two.

Appendix F

Very-Last-Sample Annotated Interview Transcript for Participant Kayla

LLC^{1b}: Um, number six?

K^{2b}: So six, um... I, I decided to do neither of those things and, um, uh—I decided to, like, uh, um... ‘cause I, I play piano, like, sometimes. So, I, I have a keyboard in my room and, um... so, I was reading the sheet music on that. Uh, I, I think I printed it out, like, a few days ago, and I was reading, uh... um... I think it was the third or fourth measure. Um... and I was specifically focused on, like, the left hand, like, trying to figure out, like, how it should sound and like, how to play, how to exactly play it. ‘Cause, like, in that specific measure the right hand and the left hand kind of... kind of are jumbled together. [Laughs] So I was trying to figure out how I would exactly play that.

Moment? Maybe. Although beginning with context, Kayla eventually trended closer to describing a discrete moment: “I was reading... the third or fourth measure.”

Experience? Maybe. Although beginning with context, Kayla eventually described directly apprehended experience by the end of the turn: “I was specifically focused on... the left hand... trying to figure out... how it should sound and... how to exactly play it”.

Subjunctifiers? High density, both PNA and DFS subjunctifiers present. The beginning was highly subjunctified and many subjunctifiers were of the PNA-type (for example, Kayla describes her experience in general: “‘cause I play piano, like, sometimes”). What eventually emerged, however, involved DFS subjunctifiers and approached describing experience-at-a-moment: “I was specifically focused on, like, the left hand, like, trying to figure out, like, how it should sound and like, how to play, how to exactly play it.”

EMB CK = 6.5

EMB RTH = 6

LLC^{3b}: And... um, how, how was that present to you?

K^{4b}: Um... it’s... so, I’m seeing..., so I see the notes, like, on the, on the thing, and I’m trying to... um, visualize how it, how it should sound. So, I guess, in a way, I’m hearing the, um... I’m hearing—I’m trying to like hear it in my mind and at the same time also trying to like, uh, uh... like, play it out on the piano itself.

Moment? Maybe. Kayla did not talk about her music learning experience in general or about processes that are not related to a specific moment—she appeared to constrain her report to the same “third or fourth measure” as in K^{2b}.

Experience? Likely but ambiguous. “I see the notes” is ambiguous, either descriptive of directly apprehended phenomena or is context. Furthermore, she may or may not have been “hearing” (her description of hearing is highly subjunctified, and “I’m trying to hear” *does not* necessarily imply “I’m hearing,” and instead of experience might be conveying something about her theory of sightreading.)

Subjunctifiers? Moderate density of indeterminate subjunctifiers. The subjunctifiers are followed by a range of possibilities (trying to hear vs. hearing, for example). But that range is fairly small—it’s all in the ballpark of trying to imagine the right sound.

EMB CK = 6

EMB RTH = 6

LLC^{5b}: Okay. So, let me see if I—so it sounds like you’re, you’re looking at the sheet music...

K^{6b}: Mhm!

LLC^{7b}: ... and the notes in this measure for your left hand.

K^{8b}: Yes. [nods affirmatively]

LLC^{9b}: And, somehow, hearing what the notes should sound like in your mind?

K^{10b}: Mhm. [nods affirmatively]

LLC^{11b}: And... and you’re also playing it on the piano [K: Yes!]. Like, with your left hand—all of that is going on at the same time?

K^{12b}: Yes.

K^{6b}, K^{8b}, K^{10b}, and K^{12b}:

Moment? Likely. Kayla appeared confidently definitive.

Experience? Yes. Kayla constrained her report only to directly apprehended experience.

Subjunctifiers? No subjunctification.

EMB CK = 7

EMB RTH = 6

LLC^{13b}: Is all of that in your experience at the moment?

K^{14b}: [Nods affirmatively] Yes. I'd say that, um... the main thing was, uh... like, playing it was, like, not as present as, um, as like, hearing it in, like—hearing it and then, read, like, reading it as well.

Moment? Yes. Kayla appeared to constrain her report to the same known moment as in previous turns.

Experience? Yes. Not only did Kayla agree that two processes were occurring simultaneously, but she clarified the relative present-ness of each part of her experience (that hearing and reading the music were more present than playing the piano).

Subjunctifiers? Moderate density; all were PNA subjunctifiers. All of Kayla's subjunctifiers are followed by descriptions of experience-at-a-moment: "the main thing was, uh... like" involves three subjunctifiers ("uh", "...", "like") that modify "playing [the music]", which is a description of phenomena.

EMB CK = 8

EMB RTH = 8

LLC^{15b}: Okay. Um... so it's mostly about reading it and hearing it...

K^{16b}: Yes.

LLC^{17b}: ... but you're also playing it and kinda, doing that with some attention.

K^{18b}: Mhm.

K¹⁶ and K¹⁸:

Moment? Yes. Appears to be constrained to the same moment throughout.

Experience? Yes. All of Kayla's responses were related to experience. [Note that LLC^{17b} gives more experiential presence to the playing than Kayla might have meant in K^{14b} "playing it was, like, not as present as, um, as like, hearing it." Kayla assents, but that is weak evidence.]

Subjunctifiers? No subjunctification.

EMB CK = 7

EMB RTH = 8

RTH^{19b}: So I'm—I'd like to give you some space to... you, you sort of hedged your bets a little bit on the hearing. Said it was sorta like hearing, maybe it's like hearing... something like that. Do you mean to say, in my imagination, I hear it? Or do you mean to say... there's something that's sort of hearing-y about it?

K^{20b}: Um, in my imagination I hear it.

RTH^{21b}: Okay. And what do you hear?

K^{22b}: Um, like... uh... it'd be how, um, how I've heard it, like, played—um, and how, um... like, trying to... hmm. I have a process about, like, uh, about like, uh, going about, like, learning notes, like, uh, um... uh... I'm not sure how, how exactly to describe it like I know like what notes should, like, with what a note should sound like. Um, so... in my mind I'm trying to, like, hear it, like, and then put it together based on, like, what I've heard before. And, what, um... um... what I've—what I know that these notes, like, sound like and how long I should hold them for. Which isn't that long [laughs] 'cause they're like sixteenth and eighth notes, so...

K^{20b} and K^{22b}:

Moment? Probably. K^{20b} was a very straightforward description of experience at a moment. K^{22b} (“I have a process about... learning notes”) was a contextual statement of temporal indeterminacy: it was an in-general characterization that has no relevancy towards time. However, Kayla then appeared to constrain her report back to the moment of the beep: “in my mind I'm trying to... hear it,” and noting that the notes she was attempting to hear were sixteenth and eighth notes may have been a description of at-the-moment experience.

Experience? Probably. K^{20b} was a very straightforward description of experience at a moment. However, like Kayla's nonspecific constraint to the moment, she simultaneously discussed both her general experience (her process of learning notes) and potential at-the-moment experience (hearing music) in this turn. The inclusion of “trying to” adds some ambiguity to the experiential descriptiveness: trying to hear and hearing are two different things. But with that exception, she seemed to be struggling to describe a difficult-to-describe experience.

Subjunctifiers? With the exception of the introductory “Um,” K^{20b} has no subjunctifiers at all. However, K^{22b} was inconsistent; both PNA and DFS subjunctifiers appeared present. “I have a process about, like, uh, about... learning notes” was an example of Kayla's subjunctifying a description of her general experience, whereas “um, so... in my mind I'm trying to... hear it” may have been an example of Kayla subjunctifying a description of directly apprehended inner hearing. Notably, Kayla's observed difficulty in K^{22b} was correlated with her describing her “trying to figure out how the music should sound” experience that she also subjunctified in K^{2b}, K^{4b}, and K^{14b}. That is: she consistently appeared to have difficulty describing her “trying to figure out how the music should sound” experience.

EMB CK = 4

EMB RTH = 8

RTH^{23b}: And so do you hear the notes that you see?

K^{24b}: Mhm. [nods affirmatively]

Moment? Yes. Kayla is asked a question about a specific moment, and she appears to respond based on what was present in her at-the-moment experience.

Experience? Yes. Kayla provides a straightforward answer about experience.

Subjunctifiers? No subjunctification.

EMB CK = 6

EMB RTH = 8

RTH^{25b}: And... as opposed to: do you hear the notes that you have heard when somebody else has played this?

K^{26b}: I'd say it's both, in a way. 'Cause, um... in terms of like how I've heard it, like, I was trying to figure out how, how um... uh... how I should play it? I guess? [makes a confused grimace] Um... and then, um... I hear the notes, like, actually there [makes a gesture with her fingers, as if holding a note between her index finger and thumb]. I'm [makes a confused face]—I'm trying to figure out the best way I can describe this because, I, I, I don't know... I don't know, like, the—how to put it into words, like, how I usually learn music.

Moment? Likely; then ambiguous. "I was trying to figure out how... I should play it" and "I hear the notes, like, actually there" both suggested that Kayla was constraining her report to a specific moment. However, "I don't know... how to put into words, like, how I usually learn music" was a temporally indeterminate statement about a nonspecific process.

Experience? Yes; then ambiguous. Similar to her moment ambiguity, Kayla began with describing directly apprehended experience (figuring out how to play the music; hearing the notes), but ended the turn with describing her general experience (how she usually learns music).

Subjunctifiers? Inconsistent; included PNA and DFS subjunctifiers. Kayla's subjunctification again appeared in conjunction with her "trying to figure out how the music should sound" descriptions as in previous turns. "I was trying to figure out how, how um... uh... how I should play it?" and "Um... and then, um... I hear the notes" are both examples of DFS subjunctification that adjust descriptions of experience. However, "I don't know, like, the—how to put it into words, like, how I usually learn music" involved PNA subjunctifiers that led towards generalities and away from experience.

EMB CK = 8

EMB RTH = 8

RTH^{27b}: So... first off, it would be interesting enough to know how you usually learn music, but that's—that's beyond what we're going to do here. So we're, we're only interested in what

happens in this experience [K: Mhm]. And it seems to me that there's sort of three things that are going on here that are maybe hard to inter—hard to separate. There's the hearing of the notes that you're seeing [K: Mhm], there's the hearing of the notes that you're actually playing on the piano [K nods], and there's the hearing of the... notes that somebody else has played and recorded or whatever and you're [K nods], you're hearing that played back. Is that true, that there are three hearings going on?

K^{28b}: Yes. [nods affirmatively]

Moment? Yes. Kayla was responding to and successfully constraining her answer to a specific moment.

Experience? Yes. Her answer was aimed purely at describing directly apprehended experience

Subjunctifiers? No subjunctification. Note that Kayla was markedly *unsubjunctified* in this turn; there was no confusion, conflation, or generalization within Kayla's response.

EMB CK = 6.5

EMB RTH = 8

RTH^{29b}: Simultaneously?

K^{30b}: Mmm... a little bit less from what I'm hearing from, like, the actual, like, piano, but yeah.

Moment? Yes. Kayla appeared to be constraining her report to the same moment.

Experience? Yes. This entire turn described experience: the directly present hearing-of-the-notes.

Subjunctifiers? All DFS subjunctifiers. Kayla merely subjunctified around the degree to which the real-life piano hearing was present to her.

EMB CK = 7

EMB RTH = 10

RTH^{31b}: And... and by a little less so you mean that's there, the piano—the real piano, or the real keyboard is making noise, but I'm just not much paying attention to it? Is that right?

K^{32b}: Yeah.

RTH^{33b}: So it's not like you've turned the volume off of that.

K^{34b}: [Nods slightly] Yeah.

K³² and K³⁴:

Moment? Yes. She appeared to constrain her report to the same specific moment as in previous turns

Experience? Yes. Kayla responded to questions that pertain only to directly apprehended experience.

Subjunctifiers? No subjunctification.

EMB CK = 6

EMB RTH = 8

RTH^{35b}: Okay.

LLC^{36b}: Do you hear just the notes for the left hand? Or do you hear the entire—like, both the left and the right hand together?

K^{37b}: Both the left and right hand, um, for... for when, like, just to—just to kind of get a sense of like how it should sound like together.

Moment? Yes. Kayla appeared to constrain her report to the specific moment that she had been describing throughout the interview.

Experience? Yes, with difficulty. The turn began with a response to what Kayla was hearing: the notes from the “left and right hand.” However, the turn ended with Kayla providing speculation of causation (specifically, an explanation of *why* she had heard the notes from her left and right hands: that is, to “get a sense of how it should sound like together”), which did *not* contribute to any higher-fidelity description of experience.

Subjunctifiers? Ambiguous. Kayla’s heavily subjunctified turn again appeared in tandem with her “trying to figure out how the music should sound” description. It was difficult to determine whether Kayla was subjunctifying to signal her description-falling-short, or whether her subjunctification signaled that the phenomenon-was-not-apprehended.

EMB CK = 7

EMB RTH = 6

LLC^{38b}: Okay.

RTH^{39b}: You’re not playing with your right hand; or are you?

K^{40b}: No. [shakes head]

Moment? Yes. Kayla was able to unambiguously differentiate between what she had and had not been doing at a discrete and specific moment. That is, she was able to straightforwardly report that her right hand was not playing the piano at the moment of the beep.

Subjunctifiers? No subjunctification.

RTH^{41b}: So when you look... so we gotta, we gotta know what we're talking about here. The, the—what you hear that comes from what you see: does that involve a left hand and a right hand both?

K^{42b}: Mhm [nods]. 'Cause, the reason why is 'cause, like, there're, there's like—the way it's written on the sheet music, um, the left hand kinda jumps up into the, into the, um... into the right hand's part. So, that's why, that's why I need to, like, hear, like, how it should sound together.

Moment? Yes. Kayla appeared to refer to a very specific musical passage—she was not talking about her general music learning process, or about any other moment.

Experience? Likely. Kayla's "mhm" at the start of the turn was her assent to RTH's question about directly apprehended experience (that is: that she heard musical notes that involved both her left and right hands). However, all that followed "mhm" were speculations about her motivation/causations of behavior, which are not descriptive of directly apprehended experience.

Subjunctifiers? Ambiguous. Kayla appeared motivated to provide a high-fidelity description of her experience, and she did so in a way that appeared constrained to a discrete moment; however, she provided explanation ("'Cause, the reason why...") and speculations of causation ("So, that's why... I need to, like, hear...") about her experience, which do not contribute to the fidelity of her description.

EMB CK = 4

EMB RTH = 8

RTH^{43b}: Okay. And so... I hear the left hand and the right hand both from what I see and from what I remember from what somebody else has played.

K^{44b}: Mhm.

RTH^{45b}: And so do those things sound the same?

K⁴⁶: Um... *that* I'm not sure. [Laughs and smiles] Uh...

Subjunctifiers? This turn was made up entirely of subjunctifiers; however, her subjunctified reply came only after being asked a very specific question about the characteristics of her hearing (whether the hearing-of-the-keys-being-played sounded

the same as hearing another musician playing the song). That is: she was *not* subjunctifying about “basic” aspects of her experience at the moment of the beep, such as whether or not she was hearing something at the moment of the beep; instead, the possible content that Kayla qualified her report about was very small, such as the way Kayla apprehended any differences between two types of hearing.

RTH^{47b}: Well let me ask an easier question, then. Are you sure that there are two different hearings going on here? [pause] One that comes from what you see and one that comes from what you hear?

K^{48b}: [Grimaces; pause] I’d say yes.

Subjunctifiers? “I’d say” characterizes the verb “say” in the subjunctive mood; “I’d say yes” may likely mean “I have no memory of directly apprehending two distinct hearings.”

RTH^{49b}: Okay. And... can you, do you know the difference that... in what I’m hearing? I’m hearing this coming from my, my eyeball-mediated stuff [K chuckles] and this from my recollection-mediated stuff?

K^{50b}: Hm...

RTH^{51b}: And I’m, I’m asking because we’re interested in this kind of stuff; I don’t—we don’t have any rules that say you should be able to do that or you shouldn’t [K laughs]... just trying to figure it out.

K^{52b}: Yeah, I’m trying to figure out cause, um... hmm. This is—this is a usually, this usually is an easier thing to describe, like, if like I’m learning, like, the music without, like, having heard, like, uh, um... like a previous recording. ‘Cause then, then I know, like, then I know the difference. If I’m basing it, like, uh, off of a recording that I’ve heard, it’s a little harder to tell the difference?

Moment? Ambiguous. “This usually is an easier thing to describe” was an explicit comparison to other instances, *not* to the moment of interest. Additionally, “If I’m basing it...” set up a hypothetical scenario and does not constrain the report to a specific moment.

Experience? No. There was no description of inner experience.

Subjunctifiers? High density, and many were PNA subjunctifiers. Most if not all of Kayla’s turn involved talk of generalities and hypothetical situations.

EMB CK = 0

EMB RTH = 4

RTH^{53b}: And so, at this particular moment...

K^{54b}: Yes.

RTH^{55b}: ...was it harder to tell?

K^{56b}: It's a bit harder to tell. [nods]

K^{54b} and K^{56b}:

Moment? Yes. RTH^{53b} corralled Kayla's report back to the moment of the beep in K^{54b}, and she appeared to remain constrained to the moment of the beep in K^{56b}.

Experience? Yes. Kayla only described directly apprehended experience.

Subjunctifiers? No subjunctification.

EMB CK = 4

EMB RTH = 5

RTH^{57b}: So there's two of them.

K^{58b}: Mhm. [nods]

RTH^{59b}: But it's hard to tell which is which.

K^{60b}: Mhm. [nods]

K⁵⁸ and K⁶⁰:

Moment? Yes. Kayla appeared to continually constrain her description to the same known moment as she had throughout the interview.

Experience? Yes. These turns were exclusively about clarifying description of directly apprehended phenomena.

Subjunctifiers? No subjunctification.

EMB CK = 6

EMB RTH = 5

LLC^{61b}: Okay.

RTH^{62b}: And there's one more real sound, but you've turned that down in your imagination, or whatever. [K nods] [pause] And, given that you're learning this song, is, is what you're hearing what is intended to be heard? I mean, does—does it convey what the music is actually written? You're hearing—you're hearing the right, the right notes?

K^{63b}: Y—Huh. Like, the right notes as in, like...?

Subjunctifiers? Completely subjunctified; however, this subjunctification came from Kayla not understanding the question presented in RTH⁶² rather than from difficulties describing experience.

RTH^{64b}: As in the way the composer had in mind, or...

K^{65b}: Uh... that's, that's a tricky thing about this particular piece 'cause, like, it was written in, like, uh, a period where like, um... uh... like, there's just—there's not really like a specific way that the composer had, like, had in mind for it? So, I've, I've heard a lot of different recordings, like, uh, just like, with like different tempos and all that, so... there's no *right* way specifically to play it? But, um... I, I have, like, I have a personal, like, thing that like, that it shouldn't be played, like, too fast—like it sounds it sounds weird playing it kinda fast.
[Laughs]

Moment? No. Kayla discussed context about the musical piece in general and not about a specific moment. [It should be noted that Kayla interpreted RTH^{62b} and RTH^{64b} in a deeper sense than RTH had intended. Her interpretation was reasonable given what RTH had said. Kayla's interpretation of RTH's question led her away from experience at the moment of the beep.]

Experience? No. Kayla (likely in response to RTH⁶⁴) talked only about context and speculations of causation.

Subjunctifiers? High density; nearly all were PNA subjunctifiers. Kayla provided explanations about the piece, generalities about previous times she had heard the piece, and her reasoning about how she should play the music—all of which led away from achieving a high-fidelity description of experience.

EMB CK = 0

EMB RTH = 3

RTH^{66b}: Well, I can accept all of that, but I was, I was asking a more basic question, like, I'm guessing since you're reading the music, if it says b-flat you're supposed to be playing this... you're supposed to be playing a note that's a b-flat [K: Yeah] and if you miss the flat sign you'd play a b-natural and that would be wrong.

K^{67b}: Yes.

RTH^{68b}: So is the music that you're hearing *right* in that respect? That it's the proper notes...?

K^{69b}: Mhm. [nods affirmatively]

RTH^{70b}: ... the notes as indicated?

K^{71b}: Yes.

K^{67b}, K^{69b}, and K^{71b}:

Moment? Yes; RTH^{66b} clarified DES' interest in only Kayla's at-the-moment experience, and Kayla successfully constrained her report to the moment.

Experience? Yes; K^{67b} indicated Kayla's understanding of RTH^{66b}'s question, and K^{69b} and K^{71b} was Kayla's agreement about RTH⁶⁸'s proposed description of what Kayla had been hearing at the moment of the beep.

Subjunctifiers? No subjunctification. [Note that RTH's clarification of his ambiguity at RTH^{62b} and RTH^{64b} leads to a marked reduction in subjunctification.]

EMB CK = 7

EMB RTH = 8

RTH^{72b}: And are you playing the right notes as well?

K^{73b}: Mmm... yes. [Laughs] It's more so just, I was trying to figure out how to, um, how to, uh... how to work with the, uh, with the way that it was with like the eighth notes and the sixteenth notes. It was more so just, like, the timing that they should be. Um—

Moment? Yes. Kayla appeared to constrain her report to a specific moment.

Experience? Yes. This turn only described directly apprehended experience.

Subjunctifiers? All were DFS subjunctifiers. Kayla's difficulty in describing her "trying to figure out how the music should sound" description was again heavily subjunctified. However, her subjunctification was now more tied to phenomena: "It was more so just, like, the timing that they should be" described the (potential) centrality on *timing* within her experience.

EMB CK = 6

EMB RTH = 5

RTH^{74b}: So the problem isn't so much in the notes themselves but what to do with them, or...

K^{75b}: Yes.

LLC^{76b}: And is that, like, what to do with them, like, the eighth versus sixteenth and that sort of stuff—is that directly present in your experience?

K^{77b}: Mhm. [nods]

K^{75b} and K^{77b}:

Moment? Yes; Kayla appeared to constrain her report to a specific moment.

Experience? Yes; these turns were aimed at only describing directly apprehended experience.

Subjunctifiers? No subjunctification. Note that while Kayla was still discussing the same “trying to figure out how the music should sound” experience, she was now *unsubjunctified* in her report.

EMB CK = 8

EMB RTH = 8

LLC^{78b}: And is that, is that part of the hearing or part of the playing or... something—all of those things?

K^{79b}: All of those things. [smiles]

LLC^{80b}: Okay. So this whole thing is trying—is the trying to figure out what this is, like, how to play this.

K^{81b}: Mhm. [nods]

K^{79b} and K^{81b}:

Moment? Yes; Kayla appeared to discuss only her at-the-moment experience.

Experience? Yes; these turns were answers to questions (LLC^{79b} and LLC^{81b}) aimed at creating a high-fidelity description of phenomena.

Subjunctifiers? No subjunctification. Note that although LLC^{81b} explicitly asked about Kayla’s “trying to figure out what the music should sound” experience that she had previously struggled with, Kayla did not subjunctify her response.

EMB CK = 7

EMB RTH = 8

LLC^{82b}: And these different pieces kind of go into that?

RTH^{83b}: And what are we playing? What piece is this?

K^{84b}: Uh, Raindrop Prelude. By Chopin.

LLC^{85b}: All right, I think I’m good.

RTH^{86b}: I’m good.

K^{87b}: All right.

Appendix G

Very-First-Sample Annotated Interview Transcript for Participant Jake

SAM^{1a}: Okay, what was in your experience for beep number one, Jake?

J^{2a}: So, I had it [looks at his notes]—uh, 12:57, I don't know if the time matters too much. Um... so the the first time, uh, it beeped, I was actually driving—the person, a friend of mine, said, “okay, I need to... I need to park the car to get my experiences.” Um... I was actually thinking, like, immediately, “what is it that I am—that I just experienced?” Um, I was listening to... a song... um, just before. And, in my head, um... the chorus was playing. Um, I was thinking about, uh... I was trying to, like, process the fact that, um... what was that beep for again? It was for the study. So, I was thinking about—so um, when I, when I describe my inner experiences, am I supposed to describe like, what happens during the beep, or occurring right before or is there like a certain time frame that I should focus on? Because that, that was the thing that actually was coming to mind like, it's like wait, I actually didn't clarify that this beep occurred, was, was I supposed to like—okay, that's what I just, like, was my inner experience, or, is it what I'm doing, like, right now or should I start, like, monitoring that? So, actually, that's kind of an actual question, too, so...

Moment? No. Jake talked about a period of time, ranging from before the beep (“I was listening to a song just before”), during the beep (“in my head... the chorus was playing.”), and after the moment of the beep (“okay, I need to... park the car to get my experiences.”); “I was actually thinking... “what is it... that I just experienced?”). Jake also explicitly stated a lack of understanding about what should constitute the moment of interest: he asked the interviewers about whether he should describe “what happens during the beep, or occurring right before or is there like a certain time frame I should focus on?”

Experience? Ambiguous. Jake described an undifferentiated mixture of context (“I was actually driving”; “I was listening to... a song”) and potential experience (“in my head... the chorus was playing”).

Subjunctifiers? High density, nearly were PNA subjunctifiers. The only exception subjunctifier that *might* have been a DFS subjunctifier was the “um” and the question mark within the only possible description of experience-at-a-moment: “in my head, um... the chorus was playing.”

CK EMB = 0

RTH EMB = 0

SAM^{3a}: Yeah! So, the moment that we're really looking for. So, say that this here is when the beep goes off [J: mhm] right when the pen hits the, uh, legal pad [J: mhm], right? [J: mhm] And then, the beep sounds and then the beep continues to sound, right? [J: mhm] We are

looking for the moment, like, even the millisecond right before the beep interrupts your experience.

J^{4a}: [nods] Cool, okay.

SAM^{5a}: And so that's, that's the moment that we're focusing on as to what was ongoing in your experience [J: mhm] right before it's interrupted. So, our aim, really, is to... is, is to get your experience even if you had—if you had no beeper, and we could get inside you and see how you experience the world [J: Mhm.], that would be ideal, right [J: Ideal? Gotcha.]? So that's where—we don't want to know, we don't really care about what is going on [J: Gotcha.] after the beep is sounding.

J^{6a}: Okay, okay. Perfect. Then, that—what was going on was just like the, the chorus of a song that I was listening to on the, um, on the, uh... um, Bluetooth speakers I was using. [clears throat]

Moment? Ambiguous. It was unclear whether Jake was describing a single, specific moment or a period of time (listening to the chorus of any song must take several seconds).

Experience? Ambiguous. It was unclear whether “what was going on was... the chorus of the song” described directly apprehended experience or simply described situational context.

Subjunctifiers? All subjunctifiers were PNA subjunctifiers. “Then, that—what was going on was just like” included two subjunctifiers (“—“, “like”) that were followed by a nonspecific description of context or possible experience (“the chorus of the song that I was listening to”).

CK EMB = 3

RTH EMB = 5

SAM^{7a}: Okay. So right at the moment of the beep, you were listening to a song on Bluetooth.

J^{8a}: Mhm.

SAM^{10a}: Like, playing out of your, like, car stereo?

J^{11a}: [nods] Mhm.

SAM^{12a}: And, it was the chorus that you were listening to?

J^{13a}: Mhm. Or had just listened to, actually. There was nothing—I was not listening to anything, but it was just playing, kinda, in my head.

Moment? Ambiguous, but growing in specificity. Although Jake did not straightforwardly cleave to a single, discrete moment, he made a greater differentiation between what had occurred far before the onset of the beep (i.e., playing the song through his speakers) and what may have been closer to the moment of the beep (i.e., sitting in silence, playing the chorus in his imagination).

Experience? Ambiguous, but growing in specificity. Jake distinguished that he was *not* externally listening to music; however, it remained unclear as to what (if anything) was directly present to him.

Subjunctifiers? The “kinda” that Jake inserted into his apparent description of innerly hearing music (“it was just playing, kinda, in my head”) implied that the description of “playing” should not be understood straightforwardly.

CK EMB = 5

RTH EMB = 5

SAM^{14a}: So this is an inner... inner experience? Like, an inner hearing experience [J: mhm] where you’re repeating—

J^{15a} (speaking over SAM): I could hear the—yeah, yeah.

SAM¹⁶: the chorus in your head?

J^{17a}: Yeah.

J^{15a} and J^{17a}:

Moment? Nonspecific. Although Jake’s description was trending closer to describing a specific moment, he was merely trending. Listening to the chorus of a song refers to a span of several to many seconds and is not constrained to a specific moment.

Experience? Impossible to determine. SAM (*not* Jake) offers the description of innerly hearing the chorus, which Jake merely agreed to.

Subjunctifiers? “Could hear” implied that the hearing may or may not have been directly apprehended; thus, these turns were not a straightforward description of directly apprehended experience.

SAM^{18a}: And how was that—how was that present to you, that chorus?

J^{19a}: I could, like, I had just heard the song and it was a new song, um, from an artist that... I... have like a, taken a liking to. So, um, so it was pretty, like, clear. Like, auditorily clear. Um, what I was hearing.

Moment? Nonspecific. Jake appeared to describe a somewhat specific period of time (e.g., the listening to a song: “I just heard the song”), but did not describe an unambiguously clear moment.

Experience? Nonspecific. Jake’s description that the hearing was “pretty... auditorily clear” may describe directly apprehended experience, but much of what he described was context (“it was a new song, um, from an artist that... [I have] taken a liking to”).

Subjunctifiers? High density, with many PNA subjunctifiers. “I could” was a subjunctifier that indicated that what followed was merely possible, and ambiguated whether what followed was or was not directly apprehended. Jake also theorized causation from context: “I had just heard the song... so, um, so it was pretty, like, clear”

implied that clear inner hearing *must* have been present (additionally, it is worth noting that the auditorily-clear description of the inner hearing “so, um, so it was pretty, like, clear” was also highly subjunctified, in that it comprised entirely of subjunctifiers save for the words “it was” and “clear”).

CK EMB = 4

RTH EMB = 6

SAM^{20a}: And—

RTH^{21a}: So, so could I make sure I get the time frame down? [SAM: Sure, yeah] So, in our—in this time, now this is time going this way [J: mhm] and the beep happens here [J: mhm], and so what I understand is you’re driving and the song has been playing on the Bluetooth out here somewhere.

J^{22a}: Mhm. And then I’m not listening to anything, it’s just kind of like, I don’t know, just me driving. And, um, I’m just listening to the song—well yeah, I’m just... the song is still fresh in my mind I guess, and so—

Moment? Nonspecific. Although Jake continued to cleave to a relatively (by comparison to his initial turn) specific period, he did *not* describe a specific moment.

Experience? Unclear. “I’m just listening to the song” may have described directly apprehended experience, but all else described context (“I’m not listening to anything it’s just... me driving”) or was an explanation of experience (“the song is still fresh in my mind”).

Subjunctifiers? High density, most subjunctifiers were PNA subjunctifiers. Save for the “um” before Jake’s description of possible inner hearing, all other subjunctifiers signaled Jake’s imprecision with cleaving to experience-at-a-moment. “It’s just kind of like, I don’t know, just me driving” was an entirely subjunctified utterance that ambiguated both the timing and characteristics of any possible experience. Moreover, “the song is still fresh in my mind I guess, and so” was a doubly-subjunctified statement, such that “the song is still fresh in my mind... and so—” was a causal inference and “I guess” implied that all that was stated should not be understood straightforwardly.

CK EMB = 3

RTH EMB = 3

RTH^{23a}: And, and but you’re not listening to the real song anymore.

J^{24a}: [shakes head] No, no.

RTH^{25a}: So, you’re driving, you hear the song, the song’s over. [J: mhm] And then you’re driving some more—

J^{26a}: Yeah. [smiles and nods]

RTH²⁷: And then—

J^{28a}: It's silence and—

J^{24a}, J^{26a}, and J^{28a}:

Moment? Maybe. Jake demonstrated some temporal specificity by differentiating what occurred before beep onset versus what was ongoing at the moment of the beep.

RTH^{29a}: The thing beeps, while... [J: While I'm thinking about the song] and you start thinking—rehearing, or hearing the song again, [J: Yeah] and then the thing beeps during that time.

J^{30a}: Yeah, yeah [nods]. And it's gonna be a pretty common thing is, like, the music thing, is, um—

Moment? No. Jake explicitly described his in-general experience, which was not at all tied to a specific moment.

Experience? No, Jake described his experience in-general (which inherently was not a description of a discrete, directly apprehended experience).

Subjunctifiers? None improved fidelity.

CK EMB = 0

RTH EMB = 0

RTH^{31a}: Okay.

J^{32a}: I don't know if, like, prefacing it, like, changes... perception of it but...

RTH^{33a}: Well, that's fine.

SAM^{34a}: Okay. And, so... what, what, what words were present, if there were—I mean, you're saying—

RTH^{35a}: Or what do you hear?

SAM^{36a}: What do you hear, yeah.

J^{37a}: Uh... it was, uh... Beyonce. Um... singing the chorus of a song called *Walk on Water*. So, it was—it was just like, the, um... I forget how the chorus goes, but, um... it was that, it was that chorus section of, like, Beyonce and stuff.

Moment? Maybe. Jake described only that he was (possibly) listening to the chorus of *Walk on Water*, which was descriptive of a many-seconds-long period and not a moment.

Experience? Maybe. Jake's described possible inner experience: an inner hearing of Beyonce singing the chorus of *Walk on Water*.

Subjunctifiers? Moderately subjunctified with indeterminate subjunctifiers. Jake's subjunctifiers may have signaled that Jake's description-was-falling-short; however,

the subjunctifiers may have also signaled that Jake failed to apprehend the phenomenon.

CK EMB = 6

RTH EMB = 3

SAM^{38a}: And was it in Beyonce's voice that you were hearing it?

J^{39a}: Mhm.

SAM^{40a}: With the same kind of, like, inflections that—

J^{41a}: Intonations... mhm.

SAM^{42a}: Okay.

RTH^{43a}: And you hear the band, and the, the drums, and the guitars, and the violins or whatever, and the...?

J^{44a}: It was only, uh, it's a piano background, so it was just piano and her. Yeah.

Moment? Maybe. Jake continued to describe the same, relatively specific period as previous turns, but he did *not* a specific moment.

Experience? Maybe. Jake first appeared to describe the actual characteristics of the song ("it was only, uh, it's a piano background"), and then implied that that was what he had innerly heard. Thus, it was unclear whether this turn described context or directly apprehended experience.

Subjunctifiers? Indeterminate; it was possible that this turn described what Jake innerly heard, or it was possible that Jake was causally inferring his inner experienced based on the "real" characteristics of *Walk on Water*.

CK EMB = 5

RTH EMB = 5

RTH^{45a}: Or you hear piano and her. Just as... she... as you've heard the recording?

J^{46a}: Mhm. [nods] Right.

RTH^{47a}: So, it's exactly like hearing the recording again?

J^{48a}: It's, yeah. It's kind of, um... it's, it's pretty much identical. Yeah.

J^{46a} and J^{48a}:

Moment? Maybe. Jake appeared constrained to the same, relatively specific period as previous turns, but he still did not unambiguously cleave to a specific moment.

Experience? Likely. Everything Jake described appeared to be aimed at describing experience.

Subjunctifiers? High density, but may be comprised of DFS subjunctifiers. RTH^{47a} asked Jake a yes or no question, and Jake's response in J^{48a} signaled that RTH^{47a}'s

question may not have been entirely fair. “It’s kind of, um... it’s, it’s pretty much” was an entirely subjunctified statement, suggesting that what followed should not be understood straightforwardly (that the inner hearing was identical to the actual song). In other words, Jake may have undermined his description that his inner hearing was “identical” so that his description was faithful to his actual experience and *not* simply confined to RTH’s yes or no question.

RTH^{49a}: And... what’s the difference between “pretty much identical” and “identical?”

J^{50a}: Because there could be, like, been details that, that I could’ve missed that, um... I don’t know, like a background synth, or, something. Like, um... yeah, I don’t know if I, like, in my head at the time it captured every detail? But, I, I know that it’s like, if, if I were to, like, like hear the song again, it’s like, okay, I heard—definitely heard most of it.

Moment? Ambiguous. Jake appeared to refer to the same period as in previous turns. However, Jake may have also been referring to a hypothetical scenario that was not constrained to any particular unit of temporal specificity (that is, his description that he “could’ve missed” aspects of the song or his hypothetical scenario of hearing “the song again” may have referred to an abstraction of the period/moment and not the specific period/moment itself).

Experience? Ambiguous. Although “I don’t know if I... captured every detail?” may have described experience, all else described did not refer to directly apprehended experience.

Subjunctifiers? High density, mostly PNA subjunctifiers. The opening statement (“Because there could be, like been details... I could’ve missed”) was problematic as “could” and “could’ve” implied only that what was said was possible; it did not clarify what was or was not directly apprehended. Moreover, “if I were to... hear the song again” described a hypothetical scenario, which is many degrees separated from describing directly apprehended experience.

CK EMB = 4

RTH EMB = 4

RTH^{51a}: So the question is, does it seem like, to you, as far as your experience is concerned, I’m hearing that song the same way as it was before? Maybe it’s not exactly the same way ‘cause I’m overlooking the synth or whatever [J: mhm]. But as far as my experience is concerned, I’m hearing Beyonce and the piano player and... just like I’ve heard it before?

J^{52a}: [Nods] Mhm, correct.

RTH^{53a}: Okay.

SAM^{54a}: And is there, um... anything else in your experience at this moment? Like, you said you were driving—was that in your experience at that moment, too? Or is that just a fact of the universe that... you were driving and?

J^{55a}: Well, when—most of the time when I’m driving—I was pretty close to home, so... it was more, uh... I guess, like, routine—I wasn’t really thinking about where I was going, I already knew where I was going. So... I was just kinda like that—

Moment? No. Jake began the turn describing a timeless generalization (“most of the time when I’m driving”). Even after he constrained his report to a relatively more specific time (i.e., driving in his car while wearing the beeper), he did not clearly cleave to a specific moment.

Experience? Not likely. “Most of the time when I’m driving” was a faux generalization that was *not* a description of a particularized experience. Moreover, the remainder of the turn included an undifferentiated blend of causal inferences (“I was pretty close to home, so...”) and potential descriptions of experience (“I wasn’t really thinking about where I was going”).

Subjunctifiers? High density, all were PNA subjunctifiers. This turn involved multiple instances of causal inferences (“I was pretty close to home, so...” and “I already knew where I was going. So...”) and undermining expressions (“it was *more*,” “*I guess*,” “*like*,” “*I wasn’t really*”) that signaled all that Jake said in this turn was not committed to describing any specific experience.

CK EMB = 1

RTH EMB = 1

RTH^{56a}: Autopilot?

J^{57a}: Autopilot, mhm.

RTH^{58a}: And, and I think you’ve said that you heard this song in your head. Did you mean that to be... was like the sound seem it was in here or did, did you mean that metaphorically, “I’m just hearing it again?” So, does this song have a location?

J^{59a}: That’s a good question. Um, I mean in the same way it’s like—if I were to repeat you asking that question in my head, um... I, I would say it’s, yeah, in my head. Um... like, it’s the same type of, um... I can kinda hear it in the same way as if, uh... like, I were to hear anything else and then have it, like, replay in my head. Uh... it’s kind of—like, if you were talkin’ to me, um, the same way that it’s like I’m kind of processing it as you’re speaking to me is the same way that I’m hearing it in my head as... if I were to replay it.

Moment? No. This turn referred to a hypothetical scenario, *not* a discrete and specific moment.

Experience? Very likely no. This entire turn was a simile about a hypothetical circumstance. Although there may have been some small, latent description of experience, talk about a hypothetical comparison makes any description of experience unclear, as it is ambiguous as to what (if any) part of the hypothetical refers to actual, directly apprehended experience.

Subjunctifiers? The entire turn was essentially a single PNA subjunctifier. “I mean in the same way it’s like...” implied that all that follows was *similar to* (but may or may not be exactly descriptive of) Jake’s directly apprehended experience.

RTH EMB = 0

CK EMB = 0

RTH^{60a}: And I’m with you there, but the question—so, obviously it takes place in your head; you’re neurons are firing in there, [J: mhm] there’s no question about that, that there’s some in-the-headness—

J^{61a}: Yeah. I, I, I don’t know if I could describe if it was, like, like... like another, like... if it was another—like if I could hear it, uh, pinpoint, like, in a specific location or anything? I just kinda...

CK EMB = 0

RTH EMB = 5

RTH^{62a}: I mean you could be hearing it again on the imagining it coming out of the Bluetooth. Coming out of your car speakers again.

J^{63a}: [Nods] Mhm.

RTH^{64a}: And I’m not trying to say that’s what I think it is [J: mhm], I’m just tryin’ to say, I want to know—we want to know—if, if there seems to be a location, if there,... well, first off, does there seem to be a location, and if so, where is it? And, we understand that this is your first sampling day, and [J: mhm]... we, uh... you, uh, you probably didn’t expect us to be asking that question, and, uh...

J^{65a}: Yeah, no, it—it’s an interesting question but, um... I don’t know. The one thing I, I know I *don’t* hear is, like, when I replay something I don’t, like—I don’t see her face singing it to me, I just hear it. Um, I, I don’t, like—when I’m listening to the music, I don’t per se see, see Beyonce in my head? Uh, seeing it, uh... I don’t know if I could pinpoint an exact location [RTH: Okay], like, if I were to say in space, uh... since like, okay, it’s in the backside of my head or it’s, like, in the world that I created in my head. Um...

CK EMB = 0

RTH EMB = 2

RTH^{66a}: So, so let’s have a little conversation about what we’re about here. I don’t particularly care—we don’t particularly care about whether there’s a location or not.

J^{67a}: Okay.

RTH^{68a}: If there is a location, we would like to know about it. [J: Yeah] But, if there’s not a location we don’t care about that. [J: mhm] So, in my question about location was, was to try to sort of open the window of what kinds of things might be experienced, but we—we haven’t learned how to talk about them yet.

J^{69a}: [Nods] Mhm.

RTH^{70a}: And... so you said “in my head” and I wanted to know if whether you meant that literally or metaphorically—

J^{71a}: Yeah, absolutely.

RTH^{72a}: --and, uh... either, either way is totally, totally fine with me.

J^{73a}: Okay [nods]. Um...

RTH^{74a}: And, one more thing I would say [J: I guess...]—the, the general case of how you hear things, how you hear my voice, how you hear whatever—we’re not too much interested in the general case, we’re interested in these specific things, which might be very typical to what you always do [J: Yeah, yeah], or they may be exceptional... we don’t really care about that.

We’re going to let the randomness take care of the, of “this is what I usually do” and then the randomness will, we’ll see this a lot. [J: Uh huh!] And if it’s unusual, then, then well... so we want to zero you in—zero us in—on... the particular—the particulars, which is at this point was, “I was hearing Beyonce and the piano player” and... that’s basically it.

J^{75a}: Yeah, yeah. I, I guess when I say, “in my head,” I mean it... I mean it figuratively. I, I don’t mean it, like, I hear echoing in my head or anything. Um... yeah.

CK EMB = 1

RTH EMB = 3

RTH^{76a}: Yeah, some people do, some people don’t. Some people say, “I hear it in my head” and they will tell you it’s, you know, “it’s right in there, this is where I hear it.” [J: mhm] Other people, you know... “I don’t really know; I don’t care; I’m just hearing it.” And either way is okay with us. [J: mhm] We don’t know whether it’s important to know that, we’re just trying to [J: yeah!]—get a view of what it is.

J^{77a}: [Nods] Okay.

Appendix H

Very-Last-Sample Annotated Interview Transcript for Participant Jake

AK^{1b}: Number five?

J^{2b}: [Looks downward at notes] Okay, number five. Okay, so, we had the food to go and we were walking out of the restaurant. And, um... and—[laughs] this one is, uh, kinda funny, but, uh, I was trying to think of a different topic to distract slash avoid thinking about, um, the idea of, uh... tryphobia, um, which is the, the fear of, of pores. Um, and in the restaurant I was talking about—with my little brother—like, I just have kinda this aversion to, like, like, pores in the skin, right? And we had, um... like, been talking about it and I was just getting kinda like, like iffy about the whole concept and we had looked up a picture and I had the picture etched into my mind and, um... and I was like, “okay, we, we—you know—let’s just think about something else.” And, um... and... I remember trying to think of, like, “what’s, what’s a different topic other than, you know, this one that seems to be, like, forcing itself into my mind?” um, when, when it had beeped. So...

Moment? Nonspecific. Jake appeared to describe a somewhat specific moment (that it had occurred after talking about tryphobia and after seeing a picture); however, it was unclear whether Jake was describing a discrete moment or a period of several moments.

Experience? Nonspecific. “Okay, number five...” to “kinda funny” and “Um, and in the restaurant...” to “we had looked up a picture” all described mostly context. However, parts of the turn included descriptions that may have described experience (“I was trying to think of a different topic to distract slash avoid thinking about, um, the idea of, uh... tryphobia”), although even in these instances, it was unclear how that experience had been present to him (“I was trying to think of a different topic” may have indicated he was *not* thinking.)

Subjunctifiers? Both PNA and DFS subjunctifiers were present. For instance: when Jake described context, PNA subjunctifiers de-particularized his report as they did not improve the fidelity of any description of experience (e.g., “*like*, I just have *kinda this aversion to like, like*, pores in the skin, right?”; “we had, *um... like*, been talking about it and I was just getting *kinda like, like iffy*” where all subjunctifiers are italicized). In contrast, some DFS subjunctifiers may have been improving the fidelity of descriptions (in that they signaled Jake was, with difficulty, putting words to his experience) but it was not immediately clear what was or was not directly present in his experience at the moment of the beep.

CK EMB = 7

RTH EMB = 8

AK^{3b}: So... before the beep, you guys had been talking about this fear of pores [J: Mhm], with you and your brother [J: Mhm]. And you looked up a picture [J: Mhm], and then at this moment you're walking out—are you guys still talking... about it?

J^{4b}: Yeah? Yeah. Not about that [AK: Okay], but, more about... um... I don't even remember what we were talking about, but I remember thinking that I... still have this in my mind—

Moment? Nonspecific. Jake's description appeared consistent with at-a-moment experience, but it was unclear whether he was describing a specific moment or a period of time.

Experience? Nonspecific, but leading towards experience. Jake had been asked by AK^{3b} a question about the behaviors/events that occurred around the moment of the beep. Accordingly, Jake made some differentiation between what was ("I... still have this in my mind") and what was not (that he was not talking about the picture, nor attending to the ongoing conversation) directly present to him, all the while ending the turn by returning to a description of directly apprehended experience ("I remember thinking that I... still have this in my mind—")

Subjunctifiers? The turn began with many subjunctifiers ("but, more about... um... I don't even remember what we were talking about"), but featured minimal subjunctification when his report appeared to get closer to describing experience ("I remember thinking that I... still have this in my mind").

CK EMB = 7.5

RTH EMB = 8

AK^{5b}: So you're still being affected by the—

J^{6b}: Correct.

AK^{7b}: Conversation about—

J^{8b}: So I'm just thinking, like... I wanna—I want to talk about something that will get my mind off of it.

Moment? Nonspecific. It was unclear whether he was describing a specific moment or a period of time.

Experience? Maybe, but very ambiguous. "I'm just thinking, like..." may have been an initial attempt to describe directly apprehended experience or may have been a faux description. Similarly, although "I want to talk about something that will get my mind off of it" was consistent with Jake's initial description of wanting to "distract slash avoid thinking about trypophobia" in J^{2b}, it is possible that this description may have been an explanation of intentionality or simply a report about the content of his thoughts (both of which do not describe directly apprehendable experience).

Subjunctifiers? "Like" was the only subjunctifier in this turn. Likely, it was a PNA-type subjunctifier by implying that what followed should not be understood

straightforwardly. However, it could have also been a DFS subjunctifier by signaling that Jake had difficulty in describing his experience.

CK EMB = 7

RTH EMB = 6

AK^{9b}: And that's like an internal thing with you: you're trying to figure out a different topic.

J^{10b}: [Nods] Correct.

AK^{11b}: Okay. I just want to make sure I wasn't, like, a conversation [J: It wasn't, like, external, yeah, yeah.] the two of you had. Okay. And so... what, how was that present to you? This, trying to come up with a different topic? Trying to distract yourself? [J: Um—]

RTH^{12b}: And, and is the picture still there?

J^{13b}: Um... I... think the picture... was not there. I, I think it was, um... it was more, I had this kind of disgust that, uh... I don't even know if that's the right word, but just this sense of disgust? Um, from that conversation. And, um... I remember—you know, just thinking about what is it that I can... change the topic to, to kind of, get rid of this disgust or avoid or, you know, like, refocus.

Moment? Nonspecific, but his description was consistent with at-a-moment experience and appeared constrained to the same moment as in previous turns.

Experience? Likely. This turn was centered on Jake trying to describe his directly apprehended experience: “I... think the picture... was not there” and “I had this... sense of disgust” described what was and was not present to him.

Subjunctifiers? High density; most were DFS subjunctifiers. For instance, Jake explicitly stated his difficulty in describing his experience, saying “I don't even know if that's the right word, but just this sense of disgust?” That Jake's description of “disgust” was subjunctified does not negate the fact that he was constraining to his experience. His subjunctification also mirrored subjunctification used in previous turns—in J^{2b} and J^{8b}, Jake described “trying to think of a different topic to distract slash avoid thinking about... tryphobia” and “I want to talk about something that will get my mind off of [tryphobia]”, respectively, and in J^{13b}, Jake continued to describe this desire with similar difficulty (“I remember... just thinking about what is it that I can.. change the topic to, to kind of, get rid of this disgust”).

CK EMB = 9

RTH EMB = 8

RTH^{14b}: Okay.

AK^{15b}: So... [sighs]

J^{16b}: Like, there was no topic that, like, my mind had settled on. It was more of a, I was considering possibilities of... considering the notion of, of, maybe, maybe I should change the subject. Or, let's change the subject.

Moment? Likely. "There was no topic that... my mind had settled on" appeared to signal Jake's familiarity with a known moment of experience (specifically, that Jake cleaved to a specific moment amongst a several-moments-long process of trying-to-figure-out-a-new-conversation-topic).

Experience? Unclear, but growing in specificity. "I was considering possibilities of... considering the notion of... I should change the subject" may have described an aspect of directly apprehended experience; however, this report did not explicitly describe how such phenomena had been directly present.

Subjunctifiers? All appear to be DFS subjunctifiers. Similar to J^{2b}, J^{8b}, and J^{13b}, Jake subjunctified his wanting-to-change-the-subject experience description: "considering the notion of, of, maybe, maybe I should change the subject" involved three subjunctifiers ("of," "maybe," "maybe"). The fact that Jake subjunctified this turn did not diminish the fact that Jake had consistently described the same wanting-to-change-the-subject phenomena over multiple turns. In other words, the subjunctification did not diminish the fact that he was seemingly describing something that was directly apprehended, but the description-was-falling-short

CK EMB = 9

RTH EMB = 8

AK^{17b}: So is this a, a thought process? The, the thinking-type experience?

J^{18b}: Um, yeah.

AK^{19b}: And are there words? Specific words present?

J^{20b}: Um... I don't think so. I—I think it's... yeah, [shakes head] I don't think so. I think it's more of just um... just... the idea of it.

Moment? Nonspecific, although Jake appeared to describe the same known moment that he has been described in all previous turns.

Experience? Likely. Jake denied words being present and instead independently described that it was "more of just... the idea of it."

Subjunctifiers? Likely DFS subjunctification. Because AK^{19b} presented Jake with a yes/no question, it is possible the subjunctification in the first two sentences signaled Jake's recognition that AK^{19b}'s question was discrepant from his directly apprehended experience. Moreover, AK^{19b}'s question may have pressured Jake into providing some sort of answer about words-being-present. Thus, although this turn was heavily subjunctified, this did not diminish the fact that Jake (a) declined to go along with AK^{19b}'s suggestion of words and (b) provided his own description of how his experience had been present to him that differed from DES investigators. Taken

together, it was likely Jake's subjunctification in this turn was more in the services of signaling his difficulty in describing experience rather than to signal his failure to have apprehended experience in the first place.

CK EMB = 8.5

RTH EMB = 8

AK^{21b}: And is the idea... is it about changing the topic? Is it about distracting myself? Is it about getting rid of the disgust?

J^{22b}: I think it's a little bit of everything.

Moment? Unclear.

Experience? Impossible to determine. AK^{21b} presented Jake with several possible ideas, and Jake responded in a way that left all proposed options open. It is possible Jake did so because none of AK^{21b}'s ideas were consistent with his experience, or because Jake did not apprehend his experience at the moment of the beep, or something else entirely.

Subjunctifiers? "I think it's a little bit" was an entirely subjunctified statement of PNA subjunctifiers; the turn was essentially one single subjunctifier that de-particularized any commitment to describing a specific experience.

CK EMB = 4

RTH EMB = 6

AK^{23b}: Little bit of all of that?

J^{24b}: Yeah.

AK^{25b}: Changing the topic to distract myself from the disgust.

J^{26b}: Correct.

AK^{27b}: That all those things are present and part of this.

J^{28b}: [Nods] Correct, correct.

J^{24b}, J^{26b}, and J^{28b}:

Moment? Unclear. Jake may have been referring to the same moment as in previous turns, or he may have been describing a period of time.

Experience? Impossible to determine. It was possible that AK²¹'s suggestion accurately captured Jake's experience; it was also possible that the waters have become too muddled and that gaining a high-fidelity description of Jake's beeped experience had become subject to too much interference to do so.

Subjunctifiers? No subjunctification.

RTH^{29b}: And new possibilities? Are they—

J^{30b}: No, I didn't get that far.

Moment? Likely. This turn was consistent with the same apparent moment that Jake described in previous turns, and in particular, this moment described in this turn was consistent with J^{16b}, in which Jake said that "there was no topic that, like, my mind had settled on." Thus, it appeared that Jake was constraining his description to that same moment.

Experience? Yes.

Subjunctifiers? No subjunctification.

CK EMB = 9.5

RTH EMB = 9

RTH^{31b}: Haven't gotten there yet. Okay.

J^{32b}: I remember thinking even like the beep itself was kind of [smiling], uh, a relief because it was like, "okay, I don't even have to think about this beep as much as I had to write it down." So...

Moment? If J^{32b} described a moment at all, the moment occurred after the beep. However, it appeared that Jake presented what occurred after the beep as a way of further clarifying when the beep had occurred (that he felt "relief" because he did not have to think about what he should change the topic of conversation to was consistent with his at-the-moment experience of not yet deciding on a topic). Moreover, Jake did not appear to conflate his experience at the moment of the beep with his reaction following the beep: recall that he spent the first turns of the interview describing his at the moment of the beep experience (i.e., his desire to think of a different subject to talk about), and did not appear to mistake the moment before the beep with the moment described in J^{32b}.

Experience? Possibly. Jake described thinking that the beep was a relief, which may or may not have been directly apprehended.

Subjunctifiers? J^{32b} is presented as an alternative data point to better support his description made from J^{2b} through J^{30b}; as such, J^{32b} is an explanation of experience.

AK^{33b}: So, then also I'm wondering, do you feel... this sense of disgust... in your experience at this moment as well? I understand you are, like, in a state of—I'm, [J: yeah, yeah] I'm bothered by this.

J^{34b}: Yeah. Um, that's a good question. I, I think, um... I, I know earlier, I was, like, kinda feeling like itchy or uncomfortable. Um, like, even kind of, like, skin crawling sensation, but... when I was walking out the restaurant, I don't think so [shakes head]. I think it was... almost exclusively, if not exclusively, like, a thinking process.

Moment? Maybe. Jake appeared to describe the same moment as in previous turns.

Experience? Indeterminate, then likely. Jake began the turn with talking about an indeterminate mixture of context and descriptions of possible experience. However, the last two sentences of the turn appeared to describe directly apprehended experience. First, Jake declined AK^{33b}'s suggestion of feeling disgust, and second, Jake clarified that this was "almost exclusively, if not exclusively, like, a thinking process."

Subjunctifiers? PNA subjunctifiers at first, then possibly DFS subjunctifiers. Anything described in the first half of the turn from "Yeah. Um, that's a good question" to "skin crawling sensation" was undermined by PNA subjunctifiers. Moreover, this section of J^{34b} featured a relatively high density of subjunctifiers. In contrast, subjunctifiers within the second half of the turn (from "when I was walking" onwards) were much less dense and were DFS subjunctifiers as the subjunctifiers did not detract from the fact that Jake was describing a thinking process.

CK EMB = 8

RTH EMB = 7

AK^{35b}: Thinking about what new topic could I... think about—

J^{36b}: [Smiles and nods] Correct, yeah.

AK^{37b}: To distract myself from this feeling, okay. And no new possibilities had arrived yet?

J^{38b}: Yeah.

AK^{39b}: Okay. And is anything else in your experience at this moment?

J^{40b}: Um... the only other thing, and it was more automatic because I knew where I was going, was heading to the car.

Moment? Maybe. Jake appeared to describe the same moment as in previous turns.

Experience? Jake did not describe directly apprehend experience. He appeared to describe a walking-to-the-car action that he had been doing at the moment of the beep but had not been directly apprehended (Jake's use of "more automatic" to describe his walking-to-the-car indicated that he appeared at least somewhat skillful of distinguishing directly apprehended experience from all else).

Subjunctifiers? "it was more automatic because" was an entirely subjunctified statement, but it was likely refining in nature as it communicated what Jake had *not* directly apprehended.

CK EMB = 7

RTH EMB = 9

AK^{41b}: And so automatic that it's not even really in my experience? I'm, I'm heading there, I'm mostly on autopilot?

J^{42b}: Correct. [nods]

AK^{43b}: I'm really into this?

J^{44b}: Correct.

RTH^{45b}: So, what's the word that means fear of pores?

J^{46b}: It's, uh, trypophobia?

RTH^{47b}: T-R...

J^{48b}: T-R-Y-P-O?

RTH^{49b}: And, and is that something that you've characterized yourself? That I have trypophobia?

J^{50b}: No [shakes head], no. I, I know that that fear exists, and I was talking about, with my little brother, about how our conversation was like I could never become a dermatologist because I can't, I can't deal with, like, lesions on the skin that are, like, that look like pores. Um, and, I was telling him about, um, you know that there's the fear of pores and, and we looked that up and there was a picture of a person with their skin—and their skin was exactly what I was telling him about and I can't—I have a hard time dealing with. And then, that's how that came about.

RTH^{51b}: Okay. Alright.

AK^{52b}: Okay.

Appendix I

Very-First-Sample Annotated Interview Transcript for Participant Macy

Note: Prior to the start of the very-first-sample interview, Macy stated that she forgot to bring her notes.

SAM^{1a}: All right, so what was in your experience for beep number one?

M^{2a}: Um, I was really worried that I did it wrong, [laughs] [SAM: Okay] um, just because I hadn't—I had turned it on, and hadn't received a beep yet. Um... so, that's actually when I had texted you, saying, "I haven't gotten it," something like that. Um... and I was just—I was worried, um... that I was doing it wrong.

Moment? No. Macy demonstrated little temporal specificity: "I had turned it on, and hadn't received a beep yet" referred to a period of time. Additionally, "that's actually when I texted you" may or may not have referred to a specific moment, and instead likely referred to a period of several seconds or minutes.

Experience? Possibly. "I was really worried" may have been an initial attempt at describing experience, but it also may have been a report of context. All else that she talked about were either statements of facts ("I had turned [the beeper] on") or context ("that's actually when I had texted you").

Subjunctifiers? Moderate subjunctification density; most were PNA subjunctifiers. Everything Macy uttered from "just because" to "something like that" was either context or causal inferences of experience—none of what she said improved the fidelity of describing her at-the-moment experience.

EMB CK = 2

EMB RTH = 1

SAM^{3a}: Okay. Okay! So, um... I'm gonna use a kind of a little visual for us to, um, explain really what the moment of the beep is. Like the precise moment. So, it sounds like before the beep went off, you had turned on the beeper—obviously—and, as time is kind of marching along like this [S: Mhm], um, you're worried that the beeper isn't going off [S: Working, yeah], working, um... and then, at some point, you text me [S: Mhm], um, and then... and then the beep went off [S: The beep went off]. And so, what we're looking for is the moment, like the millisecond right before [S: Mhm] that beep goes off [S: Mhm], what was in your experience.

M^{4a}: Um, it was just... the worry.

Moment? Possibly. Macy appeared to refer to the same instance as in M^{2a}, but it was unclear whether Macy was describing a specific moment.

Experience? Possibly. "The worry" may have been descriptive of directly apprehended experience, but it could have also been a report of context.

Subjunctifiers? Indeterminate. Macy's subjunctifiers ("Um," "...") did not unambiguously undermine her report, but they also did not unambiguously signal an effort to improve her description of experience.

EMB CK = 5

EMB RTH = 2

SAM^{5a}: The worry?

M^{6a}: Yeah, yeah. It was just the... "oh no, I did this wrong!" kind of thing.

Moment? Possibly. Macy appeared to refer to the same instance as in previous turns, but it was unclear whether Macy was describing a moment.

Experience? No. "Oh no, I did this wrong!" referred to the content of experience; Macy did not explicitly describe how any phenomena had been directly apprehended.

Subjunctifiers? This turn ended with a PNA subjunctifier ("kind of thing") that approximated all that came before it. Thus, this subjunctification decreased the fidelity of her description of any at-a-moment experience.

EMB CK = 4

EMB RTH = 3

SAM^{7a}: Okay. [Pause] And how would you say that worry was present to you? Was it...

M^{8a}: Whaddaya mean?

Notes: This was a clarification question; as such, no annotation nor EMB ratings were provided.

SAM^{9a}: Like, you say, um... "Oh no, I did this wrong!" [S: Mhm] Would you say that that was present to you in words? Or was this worry more of a thought kind of thing?

M^{10a}: It was more of like a, a pressure.

Moment? Likely. Macy appeared to constrain her report to the same moment as in previous turns.

Experience? Likely. "A pressure" is phenomena that can be directly apprehended.

Subjunctifiers? "It was more of like..." implied a comparison—that what follows may be more similar to a pressure (but did *not* straightforwardly imply that a pressure was directly apprehended).

EMB CK = 7

EMB RTH = 4

SAM^{11a}: A pressure?

M^{12a}: More of like a pressure, like, of...Uunhh! [grimaces and gestures with her hands].

Moment? Likely. Macy appeared to constrain her report to the same, known moment as in previous turns.

Experience? Likely; Macy was consistent about describing directly apprehended pressure.

Subjunctifiers? Similar to her previous turn in M^{10a}, Macy subjunctified her description of “pressure” by stating it was “more of like” a pressure; note that *more of like* a pressure may or may not actually describe a directly apprehended experience.

EMB CK = 6

EMB RTH = 4

SAM^{13a}: Okay. And how would you say that pressure felt?

M^{14a}: Like how it manifested?

Notes: This was a clarification question; as such, no annotation nor EMB ratings were provided.

SAM^{15a}: Or, how—what it felt like in that moment. For you.

M^{16a}: Um... it was just very, um... like, it just made me worry that I wasn’t doing it correctly, I guess. It was the... like—I don’t know—pressure on my chest kind of...

Moment? Indeterminate. Due to the high subjunctification density, it was difficult to establish what moment (if any) Macy may have been describing.

Experience? Not likely. Everything except for “pressure on my chest” (which may describe experience) were subjunctifiers or causal inferences.

Subjunctifiers? High subjunctification density; all were PNA subjunctifiers. Nearly every word spoken in this turn was a subjunctifier. In particular, “it just made me worry that I wasn’t doing it correctly” was a causal inference, and “I don’t know” was an explicit statement that what followed should not be understood straightforwardly.

EMB CK = 5

EMB RTH = 5

RTH^{17a}: So you mean a bodily pressure?

M^{18a}: Yeah.

RTH^{19a}: You mean [S: Like a physical—] a physical, physical [S: Yeah] pressure? Kay.

CK^{20a}: And is that on, like, in the middle of your chest? [S: Yeah, more of like, a, a—] Trunk area?

M^{21a}: --the chest area. Right in the sternum, kind of.

M^{18a} and M^{21a}:

Moment? Likely. Macy appeared to describe the same moment as in previous turns.

Experience? Likely. Macy described a relatively specific location of the bodily pressure (“right in the sternum”). Note that Macy’s description was different than the location proposed by CK^{20a} (“is that on... the middle of your chest? Trunk area?”), which suggests Macy was describing a directly apprehended experience.

Subjunctifiers? Indeterminate. “Kind of” may suggest that the description of “in the sternum” should not be understood straightforwardly, or it may be modifying the description.

EMB CK = 7

EMB RTH = 9

SAM^{22a}: And how would you—would you say this pressure is something that’s, like, almost going inward?

M^{23a}: Yeah.

SAM^{24a}: Or is it—

M^{25a}: Yeah, it’s, it’s more of an inward, like, an elephant on your chest.

M^{23a} and M^{25a}:

Moment? Likely.

Experience? Maybe. Macy was consistent in describing a physical chest pressure; however, note that SAM^{22a} was first to suggest an inward pressure, *not* Macy.

Subjunctifiers? All subjunctifiers were PNA subjunctifiers. “It’s more of” was an approximation, not a straightforward description; similarly, “inward, like, and elephant on your chest” was a simile that lowered the possibility of describing phenomena with high-fidelity.

EMB CK = 6

EMB RTH = 9

SAM^{26a}: Okay.

CK^{27a}: And does the pressure feel like, like a ton—like, a lot of pressure? Like something [S: Yeah!?] really heavy—

M^{28a}: I mean, it’s not like a ton of pressure, it’s more of like the, the... like, the... [smiles] I don’t really know how to describe it, it’s like a, um ... not a seizure [S makes hand gestures to her mouth], but like a—

Moment? Likely.

Experience? Maybe. Macy explicitly struggled with describing her experience (“I don’t really know how to describe it”). Although it was possible that Macy was simply struggling in describing a known and directly apprehended experience, it was also

possible that she did not actually apprehend her experience and so was unable to describe it (or something else).

Subjunctifiers? Indeterminate subjunctification throughout; it was unclear whether Macy was undermining her report or whether she was attempting to improve the fidelity of her report.

EMB CK = 8

EMB RTH = 8

SAM^{29a}: Restriction?

M^{30a}: Restriction, yeah.

SAM^{31a}: Okay.

CK^{32a}: So is pressure and restriction, like—

M^{33a}: They're—

CK^{34a}: --two ways of saying the same thing? [S: Yeah, yeah]

RTH^{35a}: And... pressure sounds sort of like a flat surface going in [S: Mhm] and restriction sounds like a clenching up [S: Yeah, it's like a (compresses her hands together and clicks her tongue)]. So it is both a—

M^{36a}: Yeah.

RTH^{37a}: --both a crunching up and a pushing in?

M^{38a}: Yes.

M^{30a}, M^{33a}, M^{36a}, and M^{38a}:

Moment? Likely. Macy appeared to refer to the same moment that she has been describing throughout the majority of her entire interview.

Experience? Maybe; Macy merely assented to queries made by DES interviewers. That assent may have indicated (but did not confirm) that what was being described was descriptive of experience.

Subjunctifiers? No subjunctification.

EMB CK = 6

EMB RTH = 7

RTH^{39a}: And in the same, in the same area?

M^{40a}: About the same area, yeah.

Moment? Likely.

Experience? Maybe; like previous turns, Macy merely agreed with a description proposed by RTH^{39a}. Macy did not independently describe the chest pressure as being in the same area.

Subjunctifiers? This turn was entirely subjunctified: “About the same” ambiguated any straightforward description of experience.

EMB CK = 7

EMB RTH = 8

RTH^{41a}: And, would—and so is that two sort of separate aspects of the same thing? [S: Um...] I feel a pressure inward and a crunching up?

M^{42a}: I, I would say that they’re about the... same. Like, they’re... parts of the same thing.

Moment? Likely.

Experience? Maybe. Macy again assented to an original suggestion first made by RTH^{41a}.

Subjunctifiers? Indeterminate. “I would say” involved a subjunctified verb form that implies all that follows may or may not be contrary to fact.

EMB CK = 6

EMB RTH = 9

RTH^{43a}: Okay. But so it’s not—it’s not just two different words for the same thing, it’s two different aspects—it’s two *different* aspects of the same thing.

M^{44a}: Uh... yeah? I think I would say that.

Moment? Likely.

Experience? Very unlikely. Only Macy’s concurrence has any possibility of being an attempt at describing experience. The rest of the turn was subjunctified.

Subjunctifiers? This turn was entirely comprised of subjunctifiers, all of which were PNA subjunctifiers.

EMB CK = 3

EMB RTH = 7

RTH^{45a}: And both are physical.

M^{46a}: Mhm.

RTH^{47a}: And somehow you know that this about whether you did it right?

M^{48a}: Yes, yes.

RTH^{49a}: How do you know that? Is there something about this experiment/about this experience that is... a doing it right, not doing it right?

M^{50a}: Um, I think it was just like more of a worry of, like, “oh my god, I’m gonna mess up their experiment.” [laughs]

M^{46a}, M^{48a}, and M^{50a}:

Moment? Likely.

Experience? Maybe. Macy in previous turns described worry as potentially being present, and her description in M^{50a} may have been a first attempt at describing the worry.

Subjunctifiers? Highly subjunctified, nearly all were PNA subjunctifiers. “Um, I think...” implied that all that followed should not be understood straightforwardly; “it was just like more of [a worry]” was an ambiguated comparison and not a straightforward description; the “like” that preceded “oh my god...” suggested that all that followed may be similar to (but not exactly) like what was described.

EMB CK = 1

EMB RTH = 3

RTH^{51a}: And is that worry present to you right at the moment of the beep, or is that sort of the ongoing thing and what’s—

M^{52a}: It was like present at the moment of the beep and ongoing.

Moment? Indeterminate. It is possible that Macy was constraining her report to the same moment as in previous turns, but it is also possible that Macy’s report was in reference to talking about an approximate period of time and not a moment.

Subjunctifiers? Very little subjunctification, except for “like” which may have undermined a commitment to a particularized moment.

EMB CK = 3

EMB RTH = 3

RTH^{53a}: And in what way is it present at the moment of the beep?

M^{54a}: Um, what do you mean?

Notes: This was a clarification question; as such, no annotation nor EMB ratings were provided.

RTH^{55a}: Well, I could be saying to myself, “geez, I’m worried that I didn’t do it wrong” or, I just *know* that I maybe I didn’t do wrong, but there’s no words involved... or, I could see a picture of disappointed people. I mean I guess there’s a lot of different ways that that could present itself.

M^{56a}: Um, I mean, like, I was just worried because I—I hadn’t received one yet and so I was kind of just like the... the anxiety of it. That I wasn’t... it wasn’t, like, beeping correctly.

Moment? Not likely. Aside the description of “I was just worried”, M^{56a} was primarily a report of the period leading up to the moment when the beep occurred; Macy described nearly everything other than the leading edge of the beep.

Experience? Not likely. Although “I was just worried” and “the anxiety of it” may have been descriptions of experience, these descriptions were indeterminately mixed with inferences about experience (i.e., that she was worried *because* something may have been wrong with her beeper).

Subjunctifiers? Highly subjunctified, nearly all were PNA subjunctifiers. Macy began the turn with three subjunctifiers preceding her description of (possible) experience: “*Um, I mean, like*, I was just worried). The description of “I was just worried” was then followed by two speculations of causation (“because I—I hadn’t received on yet...” and “That it wasn’t... beeped correctly”), which both undermined a commitment to a straightforward description of experience-at-a-moment.

EMB CK = 3

EMB RTH = 3

RTH^{57a}: So that makes it seem like the “not being done correctly” is sort of the context to this whole—the whole time up until the beep and at the beep, what I *feel* is the pressure in my chest—which I know comes from all this stuff.

M^{58a}: Right, right.

Moment? Not likely. Macy did not make any differentiation between the moment of the beep and all else that came before; that specificity came from RTH^{57a}’s suggestion, *not* Macy.

Experience? Not likely. RTH^{57a} presented Macy with a potential summary of her experience; Macy herself simply assented.

Subjunctifiers? None.

[RTH sneezes twice]

RTH^{59a}: Excuse me. So the—so, so the question is, is there some thinking involved right here when the beep goes off? Or is that—at the moment of the beep, I just feel it in my chest?

M^{60a}: It was more of that I feel it in my chest—like the [groans] okay.

Moment? Maybe; Macy appeared to be referring to the same known moment as in previous turns.

Experience? Maybe. It was possible that Macy was describing directly apprehended experience; it was also possible that the accumulation of suggestions, summaries, and presuppositions expressed throughout the interview soiled the possibility of a high-fidelity description of experience.

Subjunctifiers? “It was more of” implied that what followed may or may not have been directly present. Macy further ambiguated her description using a metaphor (“like the [groans] okay”).

EMB CK = 5

EMB RTH = 7

RTH^{61a}: Okay. I think we’re good.

Appendix J

Very-Last-Sample Annotated Interview Transcript for Participant Macy

SAM^{1b}: Okay, so what was in your experience for the last one, beep three?

M^{2b}: Um, the last one—I was, um, laying down and, uh... cat had come and laid down with me, and my thought at the moment of the beep was, um, there was: “My cat is so cute!” [M laughs] And, um... seeing her mental image of, like, her... smiling? Like, closed eyes, smiling. Um, in my head. At the same time.

Moment? Yes. Macy explicitly stated, “my thought at the moment of the beep was...” and went on to describe two simultaneous experiences that were consistent with experience apprehended at-a-moment (that is: she did *not* describe phenomena that took place over a period of time).

Experience? Yes. “My cat is so cute” and “seeing her mental image of, like, her... smiling” are descriptions of directly apprehended phenomena.

Subjunctifiers? High density, all were DFS subjunctifiers. Where Macy described experience (e.g., everything after “my thought at the moment of the beep...”), subjunctifiers were immediately followed by a description of directly apprehended experience. In other words, the subjunctifiers in M^{2b} always led *towards* improving the fidelity of describing the phenomena.

EMB CK = 9

EMB RTH = 8

SAM^{3b}: Um... so, it sounds like there are two experience that were going on. You have, “my cat is so cute” and then, also, [M: The visual.] the visual of your, um, cat smiling. Which would you say is more prevalent, are they 50/50?

M^{4b}: Um, I would say the image is more prevalent.

Moment? Likely; Macy appeared to be describing the same moment as in M^{2b}.

Experience? Yes; this turn was entirely about directly apprehended experience.

Subjunctifiers? Indeterminate. “Um, I would say” was a subjunctified phrase that may be undermining the description that followed or may have been an attempt to refine a difficult-to-describe aspect of experience.

EMB CK = 6

EMB RTH = 8

SAM^{5b}: Okay. By how much, would you say? [M grimaces] 60/40 or 70/30, or?

M^{6b}: Mmm... 60/40's a little too high.

SAM^{7b}: Okay.

M^{8b}: Um... probably like 55/45. [Laughs]

M^{6b} and M^{8b}:

Moment? Yes; Macy appeared to consistently describe the same known moment as in previous turns.

Experience? Yes; everything Macy described was about directly apprehended experience. Of note, Macy in M^{6b} disagreed with SAM^{5b}'s suggestions of relative experience strength, and instead independently offered her own relative ratio in M^{8b}.

Subjunctifiers? All were DFS subjunctifiers. Macy was observed to consistently subjunctify her description of the relative strength of her experiences across multiple turns: in M^{4b}, she subjunctified ("Um, I would say...") when stating which phenomena was more present. In M^{6b}, she subjunctified again ("Mmm...") before *disagreeing* with suggestions offered in SAM^{5b}. This likely signaled that Macy was attempting to refine the relative strength of the two directly experienced phenomena with fidelity. This struggle persisted in M^{8b}, which provides further evidence that Macy was trying with difficulty to describe her experience.

EMB CK = 8

EMB RTH = 8

SAM^{9b}: Okay.

M^{10b}: Like just a smidgen more.

Moment? Yes.

Experience? Yes. Macy made highly-detailed distinctions in the relative strength of her directly apprehended experiences.

Subjunctifiers? "Like" was a DFS subjunctifier. It was used entirely in the service of improving the fidelity of her description of experience.

EMB CK = 8

EMB RTH = 9

SAM^{11b}: Okay. Um, and so, um—what do you see?

M^{12b}: Um... so, I'm looking at her—she's on my arm. Um... and, there's the background of my room, my walls are green and, um... I have my drapes down, and then there's my cat laying on my arm. Um... looking not at me, but looking... out. Um... and, just, her eyes are closed. And... she's smiling.

Moment? Yes; M^{12b} appeared to describe the same moment as previous turns.

Experience? Yes; everything Macy described was about directly apprehended experience—specifically, what she had innerly seen.

Subjunctifiers? All were DFS subjunctifiers; every subjunctifier was followed by a description of inner experience, and no subjunctifier ambiguated what was being described.

EMB CK = 8

EMB RTH = 9

SAM^{13b}: Kay. And this is—this is something you’re actually seeing?

M^{14b}: Yeah. It was something I had seen just a second ago.

Moment? Yes. Macy appeared to make a skilled distinction between the inner seeing that she described in M^{12b} (i.e., the “it” in M^{14b}) and a separate, external seeing that she experienced just before the onset of the beep (i.e., “something I had seen just a second ago”).

Experience? Yes. Although SAM^{13b}’s question was vague (it was unclear whether “actually seeing” refers only to external seeing or *any* seeing/visual experience), Macy explicitly noted that what she had been innerly seeing was also something she had externally seen “just a second ago.”

Subjunctifiers? No subjunctifiers.

EMB CK = 8

EMB RTH = 9

SAM^{15b}: So— [pause]

M^{16b}: It was something I had seen just a second ago, and then I had thought about it at the beep. Yes.

Moment? Yes.

Experience? Yes; Macy strengthened the explicit differentiation between what occurred just before the beep (i.e., externally seeing her cat and room) versus what she directly apprehended at the moment of the beep (“then I had thought about [what I had just seen] at the beep”).

Subjunctifiers? No subjunctification.

EMB CK = 10

EMB RTH = 9

SAM^{17b}: Okay, so... at the beep, this is actually something that you’re... [M: Replaying.] replaying or you’re innerly seeing. [M: Yeah] Of something you had just seen.

M^{18b}: Yes.

SAM^{19b}: Okay.

RTH^{20b}: And just exactly like you were just seeing, as far as you know?

M^{21b}: Yes. [Nods]

M^{18b} and M^{21b}:

Moment? Yes.

Experience? Yes.

Subjunctifiers? No subjunctification.

EMB CK = 10

EMB RTH = 8

SAM^{22b}: So you said she was looking—she wasn't looking at you.

M^{23b}: No.

SAM^{24b}: She was—okay. So it was exactly like what you saw.

M^{25b}: So. [She adjusts her left arm, then her right, then twists her body. She laughs at herself and her movements.] Sorry, I'm like, I'm trying to recreate it. Um... I was looking at her like this [M is pretending to look directly at her cat, which was positioned to M's right side] and she was looking towards that [straight ahead] way.

M^{23b} and M^{25b}:

Moment? Yes.

Experience? Yes. Macy not only described what she saw, but worked hard reposition her body to recreate the scene.

Subjunctifiers? Low subjunctification density, all of which were DFS subjunctifiers. In repositioning her body and making comparisons between her recreation and her experience, Macy was trying to act out a known scene that had occurred at some specific moment.

EMB CK = 9

EMB RTH = 9

RTH^{26b}: And she had been looking that way while you actually saw her [M: Yes; M nods], and now you closed your eyes and—does it seem like you continue to see her? Or does it seem like you're now seeing an image of her.

M^{27b}: Um, I, I... I continue to see her.

Moment? Yes. Macy consistently appeared to describe the same moment throughout the interview.

Experience? Maybe. Macy parroted and assented to descriptions proposed originally by RTH^{26b}, *not* herself.

Subjunctifiers? Indeterminate. "Um, I, I... I" could portend a refining clarification, or could be an attempt to undermine what follows.

EMB CK = 9

EMB RTH = 7

RTH^{28b}: Okay.

SAM^{29b}: Okay. I'm gonna go on to the other portion. [RTH: Okay] So, um... the other portion is, "my cat is so cute." How is that present to you?

M^{30b}: Um, it was, um, it wasn't talking. It wasn't really hearing, it was just like thinking. The words were present. They're, um... it was, uh... I don't think there was much emotion attached to it. Um, it was just a recognition of "my cat's so cute."

Moment? Yes. Macy's description in M^{30b} was consistent with the same moment she described in all previous turns.

Experience? Yes. The entire turn was aimed at describing how "my cat is so cute" was present.

Subjunctifiers? High density, all subjunctifiers were DFS subjunctifiers. Macy's main quibble was in describing a seemingly speech-less, soundless, emotionless recognition-with-words-present phenomena—her subjunctification appeared to stem from the difficulty in describing this experience in high fidelity and *not* from an unfamiliarity with the phenomena.

EMB CK = 8

EMB RTH = 5

SAM^{31b}: So the words are present—are these specific words present? "My cat is so cute"? [M: Mhm] Versus "My cat is so..." [M: Yeah] something else [M: Yeah].

M^{32b}: Okay, so cute. And, um—

Notes: Macy was cut-off from completing her turn by RTH^{33b}; because her turn was incomplete, no annotation nor EMB ratings were provided.

RTH^{33b}: And can I—can I make sure that [SAM: Yeah, go ahead]—so I think it's possible to have a thought that would be rendered in words, "my cat is so cute," without those words being present or any words being present. So I wanna make sure that I understand: is it the *idea*—"my cat is so cute"—that is present to me even without any words at all, spoken or otherwise? Or, is it that these particular exact words are somehow present, even though they're not spoken.

M^{34b}: [definitively] The words were present themselves.

Moment? Yes.

Experience? Yes. Both in M^{34b} and in previous turns (e.g., M^{30b}, M^{2b}), Macy consistently described directly apprehending words.

Subjunctifiers? No subjunctification.

EMB CK = 10

EMB RTH = 9

RTH^{35b}: Okay. [Pause] And is there any way to say how these words were present?

M^{36b}: Um... they were, they were just kinda there. Um... like, I know... let me think. 'Cause I know, I, like, didn't hear them, but I didn't, like, speak them either. I just know that they were there. Um... [looks quizzical]

Moment? Yes.

Experience? Yes, but with difficulty. Although Macy had been consistently describing the words as having been directly apprehended across the entire interview, she struggled in this turn to describe *how* the words had been directly apprehended.

Subjunctifiers? High density, all were DFS. All subjunctifiers were followed by an effort to describe how the words were directly apprehended; that is, her subjunctification was in the difficulty in improving the fidelity of her report. For example: "Um... like, I know... let me think. 'Cause I know, I, didn't hear them, but I didn't, like, speak them either" involved seven subjunctifiers ("Um", "...", "like", "...", "let me think", "'Cause", "like"), all of which are followed by describing characteristics of phenomena ("I know, I... didn't hear them" and "I didn't... speak them either").

EMB CK = 10

EMB RTH = 9

RTH^{37b}: In a voice? In a... seeing them?

M^{38b}: I guess, I mean I guess it would be in a voice—I mean again, it's definitely in my own voice. Um... I—the closest I could think of it being, um, compared to is like talking to myself.

Moment? Yes.

Experience? Maybe. It is possible that Macy was refining her description of her experience, but it is also possible RTH^{37b}'s inquiry may have influenced Macy's report. Prior to RTH^{37b} inquiring about a voice, Macy consistently maintained that the words were *not* innerly heard or spoken: just one turn prior in M^{36b}, Macy stated that she did not hear nor speak the words; in M^{30b}, she stated that it "wasn't talking" and "it wasn't hearing"; in M^{2b}, Macy merely stated that "My cat is so cute" was present without specifying how it was directly apprehended.

Subjunctifiers? High density, many were DFS subjunctifiers. "I guess, I mean I guess it would be" was an entirely subjunctified statement that undermined any commitment to describing a particularized moment of experience. Macy also ended the turn by stating a relative comparison to a generalized situation ("the closest I could think of it... compared to is like talking to myself") rather than providing a straightforward description.

EMB CK = 5

EMB RTH = 6

RTH^{39b}: So you had an example of talking to yourself in the previous beep [M: Right] before “we got it” [M: Right]. This one’s not like that?

M^{40b}: [Shakes head] It’s not like that, no. Because that was more of an active telling myself, “okay, I got it.” This is more of a passive, like, “My cat’s so cute!” Recognition almost.

Moment? Yes.

Experience? Very likely. Macy made nuanced distinctions between a previous inner speaking (“that was more of an active telling myself”) and the current inner speaking (“this is more of a passive... recognition almost”).

Subjunctifiers? Very little subjunctification; only the “like” preceding “my cat’s so cute” is a subjunctifier, and it acts more as a means of refinement.

EMB CK = 9

EMB RTH = 6

RTH^{41b}: So, I—I guess I’m—I’m haven’t figured it out yet; what you’re trying to say. And I recognize that this is a totally difficult, maybe impossible task here but... so I think we’ve established that there are words present [M nods; M: Mhm.], and the words are, “my cat is so cute” unquote, exactly those words [M nods]. I’m still not sure whether I’m—whether I’m to understand that these words are present in your voice or whether that’s sort of a metaphor or sort of like—in my voice.

M^{42b}: Um, it’s in my voice. Um... yeah, I mean, it’s in my voice.

Moment? Yes.

Experience? Maybe. RTH^{41b} continued to express confusion regarding the presence of an inner voice, which forced Macy to answer in M^{42b}. In other words, Macy discussed an inner voice as a response to RTH^{41b}; she did *not* offer this description on her own.

Subjunctifiers? Each sentence in the turn began with the subjunctifier “um,” which may have signaled that what follows should not be understood straightforwardly.

EMB CK = 8

EMB RTH = 9

RTH^{43b}: Okay, so it’s my voice [M: Yup]. These words are in my voice [M nods], but yet I—they’re not spoken in the same way that it’s, or the “got it!” is [M: Correct]. And, but are they spoken as opposed to heard using, into the tape recorder and coming back?

M^{44b}: I mean, I guess so? It’s not in the same manner, but, I mean yeah, I guess.

Moment? Yes.

Experience? Maybe.

Subjunctifiers? High subjunctification density; most subjunctifiers were PNA subjunctifiers. “I mean, I guess so?” is a strained positive acknowledgement (as opposed to an unambiguous “yes”). Moreover, “I guess so” was immediately followed by an explicit *disagreement* (“It’s not in the same manner”) and a repeated “I mean yeah, I guess,” which further implied that what Macy was saying should be not interpreted straightforwardly.

EMB CK = 4

EMB RTH = 5

RTH^{45b}: So somehow it’s spoken.

M^{46b}: Yeah.

RTH^{47b}: But not in the same manner as, “got it” is spoken.

M^{48b}: Correct [nods].

M^{46b} and M^{48b}:

Moment? Yes.

Experience? Likely; Macy assented to descriptions of experience proposed by RTH.

Subjunctifiers? No subjunctification.

EMB CK = 7

EMB RTH = 8

RTH^{49b}: And, what’s, what’s the difference between those two manners?

M^{50b}: Um... the one—so, the “got it” is more of an active I am talking to myself, I am reassuring myself that I got—I’ve taken care of it. Um... this one it’s—the way that I feel it’s more, more passive; it’s not... it’s more fleeting. Um... and it’s not, it’s not really a... hm, I don’t know how, how to explain it. [Pause] It’s—I can only describe it as passive, like, it’s like a pacified... [gestures with her hands, as if something is passing by, or flying out an open window].

Moment? Yes.

Experience? Yes. Although heavily subjunctified, M^{50b} was solely about describing how “my cat is so cute” had been directly apprehended.

Subjunctifiers? High density; all were DFS subjunctifiers. Macy’s ability to consistently draw differences between previous instances of inner speaking and “my cat is so cute” signaled that she likely knew (i.e., directly apprehend) something, but struggled to put it into words. This was bolstered by the fact that she explicitly stated this difficulty: “I don’t know how, how to explain it.” Ultimately, Macy’s subjunctification was a sign of her commitment to describing her experience in high

fidelity (and *not* from her ignorance, reliance on presuppositions, a report of generalized experience, etc.)

EMB CK = 8

EMB RTH = 9

RTH^{51b}: So it's like something you would say but not to yourself. Just saying it.

M^{52b}: Yeah, just saying it.

RTH^{53b}: Whereas in "got it" is saying and receiving it saying it too.

M^{54b}: Yeah.

M^{52b} and M^{54b}:

Moment? Yes.

Experience? Likely; Macy assented to descriptions of experience proposed by RTH.

Subjunctifiers? No subjunctification.

EMB CK = 8

EMB RTH = 8

RTH^{55b}: Okay.

M^{56b}: I hoped that helped. [Laughs]

RTH^{57b}: Well, I'm sure it helped. There's no question about that. We're just trying to make sense of what kind of an experience is about, and...

M^{58b}: Right.

RTH^{59b}: Okay, I'm good.

Appendix K

Very-First-Sample Annotated Interview Transcript for Participant Emma

RTH^{1a}: What's in your experience at the moment of the first beep?

E^{2a}: Um... and the first beep came up very—fairly quickly after I turned, um, turned it on.

RTH^{3a}: And when was that, was that yesterday or this morning?

E^{4a}: Yesterday, I turned it on at about five-ish and it went off at about 5:28. [RTH: Okay] so it hadn't been on that long. Um, I was cooking dinner, um... and then I was thinking—I also notice I have inner conversations with myself. [Chuckles and smiles] Um... sometimes, like, just talking to myself sometimes I'm envision I'm talking to somebody else. And, I envision—'cause I'm probably gonna go get my x-ray done today for my ankle, and I was, like, thinking of what it would be like to talk to the person, like, explaining well, like, why I wear the big brace while I'm here on campus and why I wear a little brace at home. And thinking about that 'cause I'm scared of falling here on campus. [RTH: Okay] When I walk.

Moment? Mostly no. Most of what was described was about ambiguous or non-existent times. Emma started with a specific time of day (5:28) and noted that the beep occurred while she was cooking, but then talked about timeless generalizations (“I notice...”; “sometimes...”), nonspecific futures (“I’m probably gonna...”), and causation speculations (“‘cause I’m scared...”).

Experience? Mostly no. Most of what was described was about context (“I turned it on at about five-ish and it went off at about 5:28.”), generalities (“I also notice I have inner conversations with myself”), and speculations about causation (“And, I envision—cause I’m probably gonna go get my x-ray done”). However, the description from “I was, like, thinking of what it would be like to talk to the person” onward may have been an attempt at describing experience.

Subjunctifiers? High density; nearly all were PNA subjunctifiers. Emma used softening expressions (“Um”, “like”) and causal inferences (“‘cause I’m probably...”) to qualify her description, such that her turn was in no way committed to describing any specific experience-at-a-moment.

CK EMB = 2

RTH EMB = 5

RTH^{5a}: And so at the moment of the beep, are you... are you engaged in an imaginary conversation with somebody?

E^{6a}: Yeah.

RTH^{7a}: And... and so we would like to know the details of that conversation... what, what... who's talking, and to whom? And...

E^{8a}: I, I imagine myself talking to a doctor. I imagine male since most of the sports medicine people I've talked to have been male doctors.

Moment? Ambiguous; then No. The turn started out possibly describing a specific moment ("I imagine myself talking"), but that description may have also described a long-duration event. Then, Emma began to offer a speculative characterization of a lifetime of encounters ("most... people I've talked to"), which was not about any particular moment.

Experience? Ambiguous; then No. The turn started out sounding like a specific experience, but then turned to a speculative hedge.

Subjunctifiers? All were PNA subjunctifiers. The "I imagine" that appeared in the second sentence signaled that what followed was a hedge, and "since..." was a causal inference—inferences are not descriptive of experience.

CK EMB = 2

RTH EMB = 5

RTH^{9a}: And so at the moment of the beep, are you seeing a male doctor?

E^{10a}: Yeah.

RTH^{11a}: In your imagination? [E: Yeah] We understand this is your imagination. [E laughs; E: Yeah] And what exactly do you see?

E^{12a}: Um... I'm in like an x-ray room, or, talking to them explaining why, like, explaining about why... what's going on, like, that I fell, I rolled my ankle, and I—they think it might be fractured, and...

Moment? Possibly. "I'm in like an x-ray room" may have described a possible moment; however, "talking to them explaining... what's going on... I fell... they think it might be fractured" described a process that must have taken place over many seconds.

Experience? Ambiguous. "I'm in an x-ray room" and "talking to them" may have described aspects of experience, but the rest of the turn described content and not how phenomena was directly present.

Subjunctifiers? Moderate density; mostly PNA subjunctifiers. For instance, "talking to them explaining why, like, why..." involved two subjunctifiers ("like", "...") that was followed by an entirely subjunctified list of the contents of a several seconds-long discussion ("what's going on, like, I fell, I rolled my ankle").

CK EMB = 2

RTH EMB = 4

RTH^{13a}: And, and do you... do you see yourself? Or, do you see just the doctor? Or how does that work?

E^{14a}: I, like, see—like, see myself as I’m like sitting there, so I can see, like, my, like, peripheral vision and, like, I can see myself sitting in the room, but like I’m mostly seeing what’s around me, not really me. So it’s like I’m looking through my own eyes.

Moment? Ambiguous. Although Emma appeared to describe a discrete moment of inner seeing, her report included mutually exclusive descriptions of third-person and first-person seeing—as such, it was difficult to determine whether Emma was talking about a general period of time (e.g., her experience across several seconds) or of a single moment.

Experience? Ambiguous. The turn was contradictory: she first stated seeing in the third-person (“I... see myself as I’m like sitting there”), but then later described seeing in the first-person (“it’s like I’m looking through my own eyes”).

Subjunctifiers? Indeterminate. It was possible that Emma used subjunctifiers as a means of signaling her description-falling-short; however, an alternative (and probably more likely) possibility was that Emma used subjunctifiers as a means of signaling the phenomenon-was-not-apprehended (PNA subjunctifiers). Emma did not appear to constrain her report to known experience, as her subjunctification significantly de-particularized any straightforward description of a single experience-at-a-moment. “So I can see, like, my, like, peripheral vision and, like, I can see myself” was a heavily subjunctified description of an apparent third-person seeing that involved four subjunctifiers (“can”, and three “likes”) and was immediately followed by another heavily subjunctified description that described a contradictory first-person seeing (“but like I’m mostly seeing what’s around me, not really me”).

CK EMB = 2

RTH EMB = 4

RTH^{15a}: So it’s as if you were in the room [E: Yeah], but you don’t see yourself, you see what your eyes would see? [E: Yeah] So you don’t see yourself at all, you see the... doctor as if you were there looking at the doctor [E: Yeah], is that right? And... and you describe a conversation where, about, well, I fell down, and whatever [E: mhm], and that would seem to be—that description, I would think in real life would take ten or fifteen or thirty seconds to, to... [E: Yeah] to accomplish. And *we* are *very* interested in what’s going on right at the moment of the beep. So I’m... I’m understanding you to be saying, I’m, I’m imagining seeing the doctor, and I see this room... and then the beep happens [E: mmm], and then you stop the beep [E: mhm]. What—what part of that experience is right here, right here at the leading edge of the beep, so to speak? Just before the beep interrupts you?

E^{16a}: Um... um, right *at* the beep... right when the beep went off, I was like... I, like, had it in my pocket without the headphones in, and I heard something, like, “wait what is that?” And... then I’m like, “wait, is it the beeper?”, and then I pulled the beeper out of my pocket and I heard it beeping and then I turned off the button so, like, the beeping, like, stopped—like it

made me pulled me out of, like, the conversation and maybe—or “what am I—what am I hearing?” [RTH: Okay] And then... I’m like, “oh, it must be the beeper.”

Moment? No. She did not wear an earphone while sampling and was not sure when the beep occurred. For instance, Emma described her reaction to the beep (i.e., *after* the moment of the beep; “right when the beep went off... I heard something”) and a period of a few seconds following the beep sounding (“I pulled the beeper out of my pocket... I turned off the button... the beeping, like, stopped”). However, she then returned to her (potential) experience that occurred at an unknown moment/period before the beep sounded (“it... pulled me out of... the conversation”), which further obscured the timeline surrounding the exact moment of the beep.

Experience? No. Emma described (possible) experience that occurred before, during, and after the beep. Moreover, there was no clear differentiation between directly apprehended experience (such as hearing the beep) from context (such as her description of turning the beeper off) and content (her report of “wait what is that?” did not at all describe how that was present to her).

Subjunctifiers? High subjunctification density; nearly all were PNA subjunctifiers. Subjunctifiers were not reliably followed by descriptions of directly apprehended experience, and as such, the subjunctifiers led to an ambiguous description of indeterminable things (i.e., possible experience, presuppositions, context). For instance, “I was like... I, like, had it in my pocket” involved three subjunctifiers (“like”, the vocal pause (“...”), and the second “like”) that was followed by a description of context.

CK EMB = 0.1

RTH EMB = 2

RTH^{17a}: So what I’m understanding there is that I, I’m seeing an image, the beep occurs, I’m not sure about the beep, the beep occurs somewhere in here [E: Yeah], and then I go back and try to reconstruct?

E^{18a}: Yeah.

Moment? No. Emma (by answering affirmatively to RTH¹⁷’s characterization of her beep one sampling process) acknowledged that she was unsure when the precise moment of the beep occurred.

Experience? No, impossible. Emma agreed with RTH¹⁷’s characterization that she relied on reconstruction *after* the beep had sounded in order to attempt to reconstruct what had been in her ongoing experience.

RTH^{19a}: Okay. So... one of the things you’re gonna find in this conversation is that we are very particular about trying to get the beep—trying to get exactly what was happening at the beep [E: Okay]. And I think that that will be much easier for you if you will wear the b—wear the,

the... [E: The headphones] the headphones. I don't care whether you wear the headphones that we gave you—did we give... did we give you?

SAM^{20a}: I think she—you said that you...

E^{21a}: I have my own.

SAM^{22a}: Right.

RTH^{23a}: Okay. So wearing your own headphones is fine. But, the... but the, the... what you gave is a great example of *why* it is that we think that the headphones is a good idea, because, the—that part of, well, “is that the beep? Is that the beep?” That—you lose what's... what's actually in experience while that's going on [E nods], and we think if you would wear, the, the earphone, that beep will sort of get injected right into your experience and it'll be easier for you to say, “well, right at the moment of the beep [E: Okay], this is what's going on.” [Pause] So, I'm—I'm interested in the... one more aspect of the visual... of the visual experience. So... or, or of this experience. So at the moment of the beep, are *you* talking, or is the doctor talking?

E^{24a}: I was talking.

RTH^{25a}: And is—does the doctor talk in this experience, or is it a you-doing-the-talking?

E^{26a}: Uh, the doctor didn't talk at all.

RTH^{27a}: Okay. And... and you—you're talking... does this appear like, “I am seeing a situation in which I am talking”? Or does it seem like “I'm in my imagination talking at this moment”?

E^{28a}: It feels like... I'm in a situation talking.

RTH^{29a}: Okay. And—and that talking... does that talking seem like, feel like, is apprehended like you're talking out loud?

E^{30a}: It can feel like—[RTH: Like talking—like talking to me?]

E^{31a}: Yeah.

RTH^{32a}: Okay. And, and I guess I want us to make one more distinction, and, actually... I want us to make a lot of distinctions but the one that occurred to me right now is... between what you usually do and what you're doing at the moment of the beep. We would like you to focus on what was happening at the moment of the beep whether or not that is typical of what... of what your experience [E: Okay] usually is. So maybe usually you do, you do it one way—that's fine, we're not disagreeing with that. But, if it's true that that's what you usually do, then our random samples will show that [E: mhm]. And if it's... and, and, *and*, I would say that some people are mistaken about what their usual characteristics are, and so—so we would like... what we call “bracket” or set aside the “usually” part and focus just on the... on what happens at that particular moment [E: Yeah]. Whether it's typical, whether it's atypical [E: mhm], just what's happening at the moment of that the beep... goes. [Pause] So I'm thinking that that's pretty good about beep number one, we ought to go on to talk about beep number 2 unless there's anything else about that that we... that I haven't asked yet.

E^{33a}: No, I think that's good. It's at that point I'm like, "Let's not have it in my pocket" [smiles]; just leave it where it can—where I'll be able to hear it better, so then I set it on the counter while I was cooking, and... then—

RTH^{34a}: Well, that'll be an improvement [E: Yeah], that's good. But putting it actually right in your ear, that will even improve that.

SAM^{35a}: Alright.

Appendix L

Very-Last-Sample Annotated Interview Transcript for Participant Emma

SAM^{1b}: Okay. What was in your experience for beep number 4?

E^{2b}: [looking at notes] I was, uh, feeling chest... chest pain.

Moment? Probably. Emma appeared zeroed-in on one experience. (Said in another way: Emma did *not* report on a process that had to have occurred over a period of time, or on her experience as-a-whole).

Experience? Yes. This was straightforwardly descriptive.

Subjunctifiers? All were DFS subjunctifiers. The two subjunctifiers (“uh”, “...”) were followed by a description of directly apprehended experience—that is, Emma’s subjunctifiers led towards improving the fidelity of experience.

CK EMB = 7

RTH EMB = 8

SAM^{3b}: Okay. And so, at the beep... [E: Um...] how was it... what were you... what was present? Like... [SAM’s voice trails off and E and SAM laugh]

E^{4b}: Um, I was kinda like... feeling that it was there. Not, not like, at the moment of the beep but I was really like thinking about it, I was just kind of... I know it’s there, but I’m not, like, analyzing it at the—like, at the moment of the beep.

Moment? Very likely. Emma made distinctions about what was present to her *in relation to the beep* (“I was kinda like... feeling that it was there. Not, not like, at the moment of the beep”), and reported on a moment that appeared to be clearly known to and apprehended by Emma.

Experience? Yes. Emma’s turn clarified the previous description—that her experience was of a feeling of chest pain, not thinking. There was no reporting of anything that was not immediately present to her at the precise moment of beep six, such as context, generalizations, or presuppositions.

Subjunctifiers? High subjunctification density; all were DFS subjunctifiers. That is, her subjunctifiers were all followed by descriptions of directly apprehended experience—her subjunctification was in the service of honing the fidelity of her report. For example: “Um, I was kinda like... feeling that it was there?” involved four subjunctifiers (“um,” “kinda,” “like,” “...”) that modified her description of feeling chest pain.

CK EMB = 9

RTH EMB = 8

SAM^{5b}: Okay. So, right here... right before the beep, and the beep catches you... what is... what's present?

E^{6b}: I'm, like, aware that, there's... the pain in my chest.

SAM^{7b}: Okay. And... what is "aware?" What do you mean by "aware," I guess is a...

E^{8b}: Yeah... kinda—

SAM^{9b}: Like are you feeling it? And you're not...

E^{10b}: I'm, like, feeling it but I'm not... like, really, that engaged on thinking about it.

E⁶, E⁸, and E¹⁰:

Moment? Yes. Emma seemed to consistently describe the same moment in every turn.

Experience? Yes. Emma seemed to consistently describe the same experience (the sensation of chest pain).

Subjunctifiers? High density, but all subjunctifiers were DFS subjunctifiers; they were tied to phenomena and led towards higher-fidelity descriptions of experience.

CK EMB = 9

RTH EMB = 8

SAM^{11b}: Okay. And then how is the pain present?

E^{12b}: It's a dull, achey.

Moment? Yes. Emma seemed to consistently constrain her report to the same known moment as in all previous turns.

Experience? Yes. This turn entirely described directly apprehended experience.

Subjunctifiers? No subjunctification.

CK EMB = 9

RTH EMB = 8

SAM^{13b}: And.. it's, located... all over your chest?

E^{14b}: Just the center.

Moment? Yes; Emma appeared to continually constrain her report to the same moment as in previous turns.

Experience? Yes; this turn was entirely descriptive of experience.

Subjunctifiers? No subjunctification.

CK EMB = 10

RTH EMB = 9

SAM^{15b}: Center?

E^{16b}: So, like, here. [Points to center of sternum]

Moment? Yes; same moment as in other turns.

Experience? Yes; this turn was entirely descriptive.

Subjunctifiers? Emma used a single subjunctifier (“like”) that acted as a DFS subjunctifier—that is, she uses it to modify her description of the location of her chest pain.

CK EMB = 9

RTH EMB = 9

SAM^{17b}: Okay.

RTH^{18b}: And, is the—so the previous beep, we talked about the hearing of the construction. But not really attending to it.

E^{19b}: Yeah.

RTH^{20b}: Is that the same—more or less the same kind of a deal; a different sensory deal here?

E^{21b}: I think so.

RTH^{22b}: So I’m... I’m hearing construction, or I guess I’m hearing the construction, or I’m feeling my chest... sort of the same deal?

E^{23b}: I think so.

RTH^{24b}: Okay.

E¹⁹, E²⁰, E²¹, and E^{23b}:

Moment? Yes. She seemed to continually talk about the same moment in each turn.

Experience? Yes. Her report at each turn included only descriptions of experience.

Subjunctification? Very little subjunctification. Emma continued to report straightforwardly.

CK EMB = 7.5

RTH EMB = 8

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Curriculum Vitae

Cody Kaneshiro

Email: ckaneshiro13@gmail.com
ORCID ID: 0000-0001-9781-0090

University of Nevada, Las Vegas
Department of Psychology
4505 Maryland Parkway, Box 455030
Las Vegas, NV 89154-5030

Education:

University of Nevada, Las Vegas
M.A. candidate, Clinical Psychology

Las Vegas, NV
2017 – Present

University of Southern California
B.A. Psychology with honors, *summa cum laude*
B.A. Narrative Studies, *summa cum laude*

Los Angeles, CA
2013 – 2017

Clinical Experience:

2021 – Present

Student Clinician
Department of Veterans Affairs Southern Nevada Health Care
System, Primary Care Mental Health Integration (PCMHI)
Las Vegas, NV

- *Site Description:* PCMHI is based upon a co-located, collaborative care model within a VA primary care outpatient clinic. The mission of PCMHI is to assist primary care staff (physicians, nurse practitioners, physician assistants, nurses, pharmacists, nutritionists, social workers, and administrative support assistants) in providing holistic care to Veterans, focusing on both physical and behavioral health.
- *Responsibilities:* Provided same-day and scheduled brief, measurement-based individual psychotherapy (20-30 minutes, 4-6 sessions) for treatment of various mental health (e.g., anxiety, depression, PTSD, stress) and behavioral health (e.g., insomnia, tobacco cessation, diabetes management, chronic pain, postpartum depression) concerns; provided group psychotherapy addressing insomnia, stress management, and grief.
- *Clinical Supervisor:* Elizabeth Briggs, Psy.D.

2020 – Present

Student Clinician
The Private Practice of John Matthias, Ph.D.
Las Vegas, NV

- *Site Description:* Forensic and clinical private practice.
- *Responsibilities:* Assisted in an ongoing psychological evaluation of a murder case, including examining ethical issues, performing

psychological testing and assessments relevant to murder, developing an in-depth case conceptualization, and writing and completing a full psychological report for the court to be utilized towards a plea agreement or in a trial.

- *Clinical Supervisor:* John Matthias, Ph.D.

2020 – 2021

Student Clinician

**Department of Veterans Affairs Southern Nevada Health Care System, Addictive Disorders Treatment Program (ADTP)
North Las Vegas, NV**

- *Site Description:* Hospital-based inpatient, residential, and outpatient addictive disorders treatment program treating a diverse Veteran population with substance use/gambling disorders and other co-occurring problems.
- *Responsibilities:* Provided individual and group psychotherapies (e.g., Cognitive-Behavioral Therapy for Substance Use Disorders, Intensive Outpatient Program, Seeking Safety, Gambling) for outpatient patients, and group psychotherapy within an inpatient psychiatric ward.
- *Clinical Supervisor:* Alexandria Moorer, Psy.D.; Jason Mouritsen, Psy.D., ABPP

2019 – 2020

Student Clinician

**The Evidence Based Practice of Nevada (The EBP)
Henderson, NV**

- *Site Description:* The EBP is a group private practice with a mission to address the behavioral healthcare crisis in Nevada by 1) providing state-of-the-art, evidence-based behavioral healthcare for children, adolescents, adults, and families and 2) providing state-of-the-art training in empirically-supported behavioral health practices to trainees of all levels. All EBP practitioners are highly-specialized, licensed psychologists who are dedicated to improving the face of behavioral healthcare in Nevada through clinical training and community activism.
- *Responsibilities:* Provided individual, couples, and tele-mental health therapy services.
- *Clinical specialization track:* Anxiety, sleep, and trauma-related disorders
- *Clinical Supervisor:* Jordan Soper, Psy.D.

2018 – 2019

Student Clinician

**The Partnership for Research, Assessment, Counseling, Therapy and Innovative Clinical Education (PRACTICE) at UNLV
Las Vegas, NV**

- *Site Description:* Department-sponsored community mental health training clinic. The PRACTICE provides services to all age groups with a diverse set of mental health concerns. The PRACTICE was the 2019 recipient of the Association of Psychology Training Clinic's Clinic Innovation Award – Training; this national award recognizes one training clinic annually for its leadership in innovations that impact student's training.
- *Responsibilities:* Provided individual, group, and tele-mental health therapy services. Co-led Dialectical Behavior Therapy (DBT) adult psychoeducational group and interpersonal process group. Conducted psychological assessments.
- *Clinical Supervisors:* Noelle Lefforge, Ph.D., Amy Black, Ph.D., Michelle Paul, Ph.D.

2015 – 2016

**Behavioral Health Intern
Hawaii Pacific Neuroscience
Honolulu, HI**

- *Site Description:* Interdisciplinary neurological clinic specializing in dementia and related memory disorders, Parkinson's and movement disorders, headache and chronic pain, stroke and neurologic restoration, and sleep disorders.
- *Responsibilities:* Trained to evaluate common neuropsychological assessments for dementia and TBI evaluation. Conducted standardized clinical intake interviews for new patients.
- *Clinical Supervisors:* Katrina Moss, Psy.D., Thomas Harding, Psy.D., & Don "Keith" Pedro, Psy.D.

Clinical Supervision and Mentorship Experience:

2021 – Present

**Graduate Student Mentor
Consolidated Students of UNLV (CSUN) and the Graduate and Professional Student Association of UNLV (GPSA)
Las Vegas, NV**

- Provided formal academic and professional development mentorship to UNLV undergraduate students in Psychology

2020

**Graduate Student Clinical Supervisor
The Partnership for Research, Assessment, Counseling, Therapy and Innovative Clinical Education (PRACTICE) at UNLV
Las Vegas, NV**

- Provided formal clinical supervision to first-year clinical psychology practicum students for the Summer of 2020

Research Experience:

2021 – Present

Project: *Inner Experience in Grapheme-Color Synesthesia*

- Role: Principal Investigator**
- Investigating the inner experience of those with grapheme-color synesthesia using descriptive experience sampling (DES)
 - Advisor: Russell Hurlburt, Ph.D.
- 2018 – Present **Project: *First-Day Expositional Interviews, Iterative Training, and Participant Skill in Descriptive Experience Sampling***
Role: Primary Investigator
- Assessing changes in participant's skill during their participation in DES sampling projects
 - Advisor: Russell Hurlburt, Ph.D.
- 2017 – 2020 **Project: *Validity of First-Person Psychological Methods***
Role: Research Assistant
- A collaborative theoretical project examining the validation of first-person psychological methods, descriptive experience sampling, and psychometrics
 - Advisor: Russell Hurlburt, Ph.D., Kimberly Barchard, Ph.D.
- 2017 – 2018 **Project: *Multimethod Investigation of Pristine Inner Experience***
Role: Research Co-Facilitator
- A comparison of various introspective methods (e.g., descriptive experience sampling [DES], experience sampling, daily questionnaires), and the implications each method offers
 - Advisor: Russell Hurlburt, Ph.D.
- 2017 – 2018 **Project: *Inner Experience of Individuals Receiving Psychotherapy***
Role: Research Co-Facilitator
- Investigating the inner experience of those currently receiving psychotherapy using descriptive experience sampling (DES)
 - Advisor: Russell Hurlburt, Ph.D.
- 2016 - 2017 **Project: *Comparing Measures of Attention from the Mini-Mental State Examination***
Role: Principal Investigator
- Senior Psychology honors thesis investigating equivalency of attention and calculation items for the MMSE by sex and education
 - Advisor: Margaret Gatz, Ph.D., Jo Ann Farver, Ph.D.
- 2015 - 2017 **Project: *California Teacher's Study***
Role: Undergraduate Research Manager, Research Assistant
- Developed criteria to evaluate neuropsychological test results
 - Conducted literature review on neuropsychological scoring methods for Necker Cubes
 - Responsible for scheduling lab meetings, oversee undergraduate

- research assistants, and manage scoring discrepancies
- Advisor: Margaret Gatz, Ph.D., Carol McCleary, Ph.D.

2015 - 2016

Project: *Twin Study of Sex Differences in Dementia and Alzheimer's Disease*

Role: Research Assistant

- Conducted in-depth literature review
- Participated in study development and composition
- Advisors: Christopher Beam, Ph.D., Margaret Gatz, Ph.D.

2015 - 2016

Project: *Tracing a Dementia Kindred*

Role: Principal Investigator

- Developed an independent research project to trace dementia symptoms and etiology in two Japanese-American families with an unusually high prevalence of dementia.
- Conducted interviews with caregivers of affected individuals
- Developed a literature review of familial AD studies
- Advisor: Margaret Gatz, Ph.D.

Peer-Reviewed Publications

Hurlburt, R. T., Heavey, C. L., Lapping-Carr, L., Krumm, A. E., Moynihan, S. A., **Kaneshiro, C.**, Brouwers, V. P., Turner II, D. K., & Kelsey, J. M. (2022). Measuring the frequency of inner-experience characteristics. *Perspectives on Psychological Science*, 17(2), 559–571. <https://doi.org/10.1177/1745691621990379>

Kaneshiro, C., & Hurlburt, R. T. (2020). Cleaving to the moment, cleaving to experience, bracketing presuppositions, and the iterative method in the apprehension of pristine inner experience. *Constructivist Foundations*, 15(3). <https://constructivist.info/15/3/251>

Beam, C. R., **Kaneshiro, C.**, Jang, J. Y., Reynolds, C. A., Pedersen, N. L., & Gatz, M. (2020). A twin study of sex differences in genetic risk for all dementia, Alzheimer's disease, and non-AD dementia. *Journal of Alzheimer's Disease*, 66. doi: 10.3233/JAD-191192

Beam, C. R., **Kaneshiro, C.**, Jang, J. Y., Reynolds, C. A., Pedersen, N. L., & Gatz, M. (2018). Differences between women and men in incidence rates of dementia and Alzheimer's disease. *Journal of Alzheimer's Disease*, 64, 1077-1083. doi: 10.3233/JAD-180141

Manuscripts: Under Review

Lapping-Carr, L., Krumm, A., **Kaneshiro, C.**, & Heavey, C. L. Introspection as a tool in emotion research. (Manuscript submitted to *Emotion Review*).

Research Presentations

Kaneshiro, C., & Hurlburt, R. T. (2022, April). *Evaluating Descriptive Experience Sampling Iterative Training: Do Participants Become More Skilled Over Time?* Poster presentation at The Science of Consciousness Conference, Tucson, AZ.

Krumm, A. E., **Kaneshiro, C., & Hurlburt, R. T. (2021, June).** *A Complete, Unabridged, “Pre-registered” Descriptive Experience Sampling Investigation: The Case of Lena.* Invited Participation at the 24th annual meeting of the Association of the Scientific Study of Consciousness, Tel Aviv, Israel.

Barchard, K. A., **Kaneshiro, C., Krumm, A. E. (2020, February).** *Evaluating Validity is Harmful.* Poster presentation at the American Association of Behavioral and Social Sciences, Las Vegas, NV.

Kaneshiro, C., Lapping-Carr, L., Krumm, A. E., Moynihan, S. A., Hurlburt, R. T., & Heavey, C. L. (2018, May). Can First-Person Methods Reliably Apprehend Inner Experience? Lessons from Eyewitness Testimony. Poster presentation at the UNLV 21st Annual Graduate & Professional Student Research Forum, Las Vegas, NV.

- 1st place winner for Outstanding Presentation in Social Sciences Poster Sessions

Kaneshiro, C., Lapping-Carr, L., Krumm, A. E., Moynihan, S. A., Hurlburt, R. T., & Heavey, C. L. (2018, May). *Can First-Person Methods Reliably Apprehend Inner Experience? Lessons from Eyewitness Testimony.* Poster presentation at the Association for Psychological Science 30th Annual Convention, San Francisco, CA.

Krumm, A.E., Lapping-Carr, L., **Kaneshiro, C., Moynihan, S.A., Heavey, C.L., & Hurlburt, R.T. (2018, May).** *Subjective Experience is Not All the Same: Private Phenomena vs. Inferred States.* Poster presentation at the Association for Psychological Science 30th Annual Convention, San Francisco, CA.

Kaneshiro, C. (2017, April). *Comparing Measures of Attention from the Mini-Mental State Examination.* Poster presentation at the University of Southern California Undergraduate Research Symposium, Los Angeles, CA.

Kaneshiro, C. (2016, April). *Tracing a Dementia Kindred.* Poster presentation at the University of Southern California Undergraduate Research Symposium, Los Angeles, CA

Teaching Experience:

2019 – Present

Graduate Student Instructor

PSY 101: General Psychology

University of Nevada, Las Vegas

Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022

- Independently taught two sections of PSY 101 to undergraduate UNLV students; developed curriculum, lectures, exams, and homework assignments

- 2020 **Assistant Question Bank Author, *Psychology: Themes and Variations***
- Created questions for complex learning activities on Weiten's *Psychology: Themes and Variations*, 11th edition
- 2017 – Present **Graduate Teaching Assistant**
 PSY 210: Introductory Statistics
 University of Nevada, Las Vegas
 Fall 2017, Spring 2018, Summer 2018, 2019, 2020, 2021
 Supervisor: Russell Hurlburt, Ph.D.
- Assisted in various class operations, such as proctoring exams, grading assignments, hosting weekly office hours
- Professional Service*
- 2022 – Present **Subcommittee Member, American Psychological Association of Graduate Students (APAGS) Advocacy Coordinating Team (ACT)**
- Served on the APAGS ACT Subcommittee tasked with engaging in Federal legislative advocacy and raising awareness on behalf of the science and profession of psychology; in the interest of individuals studying, researching, and practicing psychology; and on behalf of individuals who are recipients of psychological services.
- 2020 – Present **State Advocacy Coordinator, Nevada Psychological Association (NPA)**
- Served on the NPA Executive Board as a student liaison representing all psychology students in Southern Nevada
 - Participated as the student representative of NPA at the 2021 Practice Leadership Conference
- 2019 – 2020 **UNLV Campus Representative, Nevada Psychological Association (NPA)**
- Served on Southern NPA Region Board as a liaison between the NPA and the graduate and undergraduate students of UNLV
- 2015 - 2017 **President, Psi Chi International Honors Society in Psychology, USC Chapter**
- 2014 - 2015 **Founder/Executive Director, USC Ink**
- Instituted service-learning organization that paired student volunteers with residents at a local nursing home to provide social interactions and produce creative pieces representing personally significant narratives of senior residents.

Awards and Honors:

- 2022 **Outstanding Contribution to the Nevada Psychological Association**
- This award honors a psychologist whose work in the association has been of benefit to the organization.
- 2022 **Asian American Psychological Association (AAPA) Graduate Student Leadership Institute 2022**
- Award granted to Asian American and Pacific Islander psychology graduate students interested in leadership and advocacy and who demonstrate strong leadership potential.
- 2013 - 2017 **USC Associates Trustee Scholarship**
- 4-year, full tuition academic scholarship awarded to the highest ranked incoming freshman each fall based on exemplary leadership, community service, and academic excellence.
- 2017 **Jimmy Gauntt Memorial Award**
- Awarded to five graduating students majoring in English or Narrative Studies annually as nominated by faculty in the Department of English for outstanding scholastic and academic achievement in literature and the arts.
- 2017 **University of Southern California Renaissance Scholar**
- Designation awarded to students who have excelled academically while pursuing at least two widely separated fields of study with at least a 3.5 GPA in each of the certified programs.
- 2016 **Phi Beta Kappa**
- 2015 **Psi Chi International Honors Society in Psychology**

Professional Affiliations

- | | |
|----------------|---|
| 2021 – Present | Association for the Scientific Study of Consciousness |
| 2020 – Present | American Psychological Association of Graduate Students |
| 2020 – Present | Society of Clinical Psychology |
| 2020 – Present | Society of Clinical Geropsychology, Division 12 |
| 2019 – Present | Nevada Psychological Association |
| 2019 – Present | American Group Psychotherapy Association |
| 2017 – Present | Hawaii Psychological Association |
| 2015 – Present | American Psychological Association |

Notable Trainings and Experiences

Spring 2022
(1 hour)

E Kilohi Mai (Look in This Direction): A Brief Survey of a Hawaiian Healing Paradigm

Keoko Kikaha Pai Baclayon, University of Hawaii at Manoa

- Workshop aimed to help providers understand critical foundations of traditional Native Hawaiian beliefs through discussion of Hawaiian healing paradigms.

Spring 2022
(1 hour)

Evaluating and Treating Nightmares

Ami Student, Psy.D., VA VISN 20 Mental Illness Research, Education, and Clinical Centers (MIRECC)

- Knowledge-based training on the etiology, assessment, and treatment of nightmares in clinical settings, with an emphasis on PTSD and nightmares.

Spring 2022
(2 hours; Event Moderator)

Suicide Prevention and Awareness in the Time of COVID-19: Caring for Our Patients and Ourselves

Megan Freeman, Ph.D., Nevada Psychological Association

- Workshop addressed evidence-based updates on current trends in suicide in Nevada and across the US, evidence-based information about changes in national and international prevalence of behavioral health concerns, and actionable steps to better manage suicidality within the context of the COVID-19 pandemic.

Winter 2021
(1 hour)

Addressing Race-Based Stress and Racial Trauma in Veterans of Color: A Group Intervention

VA Office of Mental Health and Suicide Prevention

Winter 2021
(2 hours)

High Risk Medications and Polypharmacy for Non-Prescribers

Alexander Sasha Rackman, M.D., Rush University Medical Center
E4 Center of Excellence for Behavioral Health Disparities in Aging

- Discussed understanding principles of safe medication use, identification of high-risk medication use, and a review of interdisciplinary strategies that can be used to promote medication safety in older adults.

Fall 2021
(1 Hour)

Suicide Risk Assessment: What Psychologists Want to Know

William T. Tsushima, Ph.D., Hawaii Psychological Association

- Presentation outlining suicide in Hawaii and the US, best practices of suicide screening tools, and a discussion of best-practices in discussing suicide with patients.

Fall 2021
(2 hours)

Cannabis Use and Misuse Among Older Adults: Emerging Trends and Implications for Healthy Aging

Fred Blow, Ph.D., Rush University Medical Center E4 Center of Excellence for Behavioral Health Disparities in Aging

- In response to rapidly changing cannabis legalization across the US, this presentation examined trends in cannabis use nationally and reviewed the emerging evidence regarding cannabis use and misuse among individuals as they age.

Fall 2021
(10 hours)

Culturally-Responsive Cognitive Behavioral Therapy (CBT) with Older Adults

Ann Steffen, Ph.D., Dolores Gallagher-Thompson, Ph.D., Rush University Medical Center E4 Center of Excellence for Behavioral Health Disparities in Aging

- 5-part series reviewing beginning treatment with older adults; emotion-, behavior-, and cognitive-focused CBT strategies; and termination processes for CBT within diverse, older adult populations.

Fall 2021
(8 hours; Event Moderator)

Helping Clients with Substance Abuse Disorders: Treatment Recommendations for Clients with Co-Occurring Mental Health Issues

Shane Kraus, Ph.D., Nevada Psychological Association

- Overview of best evidence-based clinical practices for the treatment of addiction disorders, including a review of the etiology, prevalence, assessment practices, and clinical guidelines for substance abuse and addiction disorders.

Fall 2021
(24 hours)

Primary Care Mental Health Integration (PCMHI) Competency Training

Department of Veteran Affairs VISN 21

- Intensive, 4-day staff training in best practices around the PCMHI model of care. Included extensive roleplays, consultation, and live assessment of PCMHI psychotherapy model to ensure fidelity to treatment.

Summer 2021
(2 hours)

Military Culture and Mental Healthcare

Jason Mouritsen, Psy.D., Robert Moering, Psy.D., VA Southern Nevada Healthcare System

- Presentation addressing unique cultural considerations impacting mental health treatment within active-duty and veteran populations.

Summer 2021
(1.5 hours)

Psychodynamic Psychotherapy in Pain Management: A Multi-Modal Approach

Marilyn S. Jacobs, Ph.D., American Association of Pain Psychology

- Presentation aimed to explain the basic concepts of psychodynamic psychotherapy and how these are applied in contemporary psychotherapy orientations (specifically in the context of pain care) and instructions on how to prepare an interdisciplinary pain management treatment plan using an integrated psychodynamic model.

Spring 2021
(1 hour)

Integrating Motivational Interviewing (MI) With Cognitive-Behavioral Interventions to Maximize Client Outcomes

Sylvie Naar, Ph.D., Hawaii Psychological Association

- Presentation providing an overview of MI and change language within CBT treatment with particular emphasis on interactions of MI and culture.

Spring 2021
(1 hour)

Healing Fractured Communities: Coming to Terms with Systemic Trauma in Japanese-American Communities

Japanese American Citizens League (JACL), American Psychological Association, Heart Mountain Wyoming Foundation

- Panel presentation that discussed a sociocultural review of Japanese immigration and forced internment in the US and how such histories impact the mental health of contemporary Japanese Americans, Asian Americans, and BIPOC communities in light of anti-Asian hate crimes from the COVID-19 pandemic.

Summer 2020
(1 hour)

The Unconscious: What Took So Long, What We Know, and Clinical Implications

Joel Weinberger, Ph.D., Hawaii Psychological Association

- An introduction to contemporary empirical research on the unconscious and the role the unconscious plays in psychotherapy treatment.

Spring 2020
(1 hour)

Physician Specific Psychotherapy

Steven Graybar, Ph.D., Whitney Owens, Psy.D., The PRACTICE

- Discussed specific clinical concerns when working with physicians, such as physician-specific stressors, personality features, and best practices.

Spring 2020
(2 hours; Event Moderator)

Be the Helper: Implementing Psychological First Aid During Covid-19 Crisis

Noelle Lefforge, Ph.D., Nevada Psychological Association

- Introduction to Psychological First Aid (PFA) and Skills for Psychological Recovery (SPR) to support mental health providers in offering these services during and after crises, particularly regarding the COVID-19 pandemic.

Spring 2020 (2 hours)	<p>What's New and What's the Same About Group Psychotherapy Irvin Yalom, M.D., Molyn Leszcz, M.D., American Group Psychotherapy Association</p> <ul style="list-style-type: none"> • Addressed new developments in group psychotherapy explored through writing the 6th edition of <i>The Theory and Practice of Group Psychotherapy</i>. • Extended discussion on relationships and life informed by Yalom's 2020 book, <i>A Matter of Life and Death</i>.
Spring 2019, Spring 2020 (32 hours)	<p>American Group Psychotherapy Association (AGPA) Connect Conference: Two-Day Institute Participant American Group Psychotherapy Association</p> <ul style="list-style-type: none"> • 2-day, experiential, interdisciplinary, small group, process-based experience aimed at learning about group processes and oneself as well as an opportunity for personal and professional renewal.
Fall 2019 (20 hours)	<p>Comprehensive Training in Dialectical Behavioral Therapy (DBT) Alan Fruzzetti, Ph.D., Armida Fruzzetti, Ph.D., Nevada Psychological Association</p> <ul style="list-style-type: none"> • Comprehensive 2-day training focused on DBT, introducing DBT theory, structure, targets, treatment strategies, skills, skill training, and skill coaching.
Spring 2019, Spring 2020 (16 hours)	<p>Interprofessional Education Day University of Nevada, Las Vegas</p> <ul style="list-style-type: none"> • Annual integrated care workshops with UNLV medical, nursing, psychology, physical therapy, and social work students aimed at increasing awareness of interprofessional education, roles, responsibilities, and understanding of interprofessional team functioning to better serve patients.
Fall 2018, Spring 2019 (4 hours)	<p>Rational Emotive Behavior Therapy (REBT) Debbie Joffe Ellis, LPC, The PRACTICE</p> <ul style="list-style-type: none"> • An introductory lecture on core concepts of REBT.
Fall 2018 (16 hours)	<p>Introduction to Acceptance and Commitment Therapy (ACT) Steven Hayes, Ph.D., Praxis</p> <ul style="list-style-type: none"> • Two-day workshop on experiential understanding of six basic processes of ACT's Psychological Flexibility Model, their relationship with Relational Frame Theory (RFT), case conceptualization, treatment planning.