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The Iterative Nature of Descriptive Experience Sampling: Do Interviewees Build Skills across Sampling Days?

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THE ITERATIVE NATURE OF DESCRIPTIVE EXPERIENCE SAMPLING:
DO INTERVIEWEES BUILD SKILLS ACROSS SAMPLING DAYS?

by

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Abstract

Hurlburt (2009) asserts that iterative training is an essential component of the Descriptive Experience Sampling (DES) method and that interviews of untrained participants are generally characterized by presuppositions about experience and miscommunication rather than pristine experience. Hurlburt and Heavey (2015) further assert that other experience sampling methods (e.g., the Experience Sampling Method) are inadequate due to the minimal training provided in those paradigms. In Study 1, we sought to determine whether DES interviewees decrease in density of subjunctification (i.e., behavioral and verbal indicators that an interviewee is not providing a straightforward account of inner experience) across multiple sampling days, which would suggest that they would improve at describing pristine experience as a result of building skill. We trained research assistants to rate levels of subjunctification in 90 brief videos showing DES interviewees in the DES interview. Raters saw no differences between levels of subjunctification in interviewees' first and fourth days of sampling, and we concluded that subjunctification does not adequately measure an interviewee's skill at DES. In Study 2, we asked experienced DES investigators to rate access to experience (i.e., how skilled the interviewee was at apprehending and describing experience) in the same brief videos of DES interviews. Each of five experienced DES raters saw access to experience to increase, on average, between interviewees' first and fourth days of sampling, and we concluded that DES interviewees increase skills at apprehending and describing inner experience as a result of the iterative process.

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Introduction

All self-report data, including data obtained from interviews, is susceptible to distortion (e.g., Stone et al., 2000). This is particularly problematic for areas of study such as inner experience, which rely entirely upon the participant's willingness and ability to provide faithful self-reports of inner experience phenomena. Hurlburt (2011a) writes that participants may give inaccurate information when describing inner experience for a variety of reasons, including: to hide an embarrassing detail; because they have difficulty putting inner experience into words; or because they struggle to remember details about which they were not expecting to be asked (Hurlburt, 2011a). As such, inner experience researchers need to be particularly alert to the possibility of misreporting.

Descriptive Experience Sampling (DES; e.g., Hurlburt, 1993; Hurlburt & Heavey, 2006; Hurlburt, 2011a) is an inner experience sampling method that relies on interviewing participants about discrete moments of inner experience. Unlike when participants are anonymously submitting questionnaires, DES interviewers can observe dynamic behavioral and verbal responses from the participant. Utilizing this advantage, Hurlburt and Heavey (2006) have identified a set of interview behaviors they call "subjunctification," which, they claim, serve as clues that a DES participant may be faltering in their attempt to provide high fidelity descriptions of inner experience samples of interest. Subjunctification includes a variety of behavioral and verbal cues, such as: verbal forms of the subjunctive mood ("as if," "could be," etc.), undermining expressions (e.g., "well," "sort of," or "like"), causal inferences (e.g., "because"), and distinctive behaviors (e.g., looking away, shrugging; Hurlburt, 2011a, pp. 116-117). Interviewers can respond to these cues by recognizing that subjunctified responses may not be straightforward descriptions of experience and viewing subjunctification as instantaneous feedback about the interviewer's technique (Hurlburt, 2011a, pp. 124).

Thus, the term subjunctification is used broadly to describe interview responses that may indicate a low degree of fidelity to actual inner experience. In his 2011 book, *Investigating pristine inner experience: Moments of truth*, Hurlburt takes initial steps to operationalize subjunctification. He does not emphasize the task of counting instances of subjunctification – his emphasis is rather on using the *density*

of subjunctification to guide the DES expositional interviewer to help participants to provide higher-fidelity descriptions (or to confidently state that they do not know the answer to a question posed to them). However, it is yet to be seen if subjunctification can be reliably identified. If so, this gives credence to the existence of subjunctification as a potentially meaningful construct in DES and perhaps in other interview methods as well. However, Hurlburt (2011a) notes that subjunctification is more important in DES compared to other experience studies, which do not make a bright-line distinction between inner experience at the moment of the beep and all else.

Further, DES is an iterative process (Hurlburt, 2009), by which Hurlburt means that participants can and must be trained across several successive samplings and interviews to improve their ability to apprehend and report inner experience with fidelity. If so, one would expect the density of subjunctification to decrease across interviews, such that earlier interviews (when participants are less skilled) will contain higher rates of subjunctification, on average, while later interviews (after participants have acquired more skill) will contain lower rates.

This primary aim of this study is to test whether DES participants' rates of subjunctification are significantly lower in the 4th day of sampling compared to the 1st day of sampling. The secondary aim is to determine if observers can be trained to recognize and rate the level of subjunctification in participants' utterances. Investigating these questions may demonstrate the usefulness of subjunctification, primarily to DES investigators, and perhaps also to other researchers or clinicians who rely on interview data. Such an investigation may also highlight the iterative nature of DES, thus emphasizing the importance of training DES participants across multiple sampling days in order to obtain high-fidelity descriptions of inner experience.

Chapter 1: Literature Review

Descriptive Experience Sampling

Descriptive Experience Sampling (e.g., Hurlburt, 1993; Hurlburt & Heavey, 2006; Hurlburt, 2011a) is a method for investigating inner experience that aims to collect high fidelity, descriptive samples of participants' day-to-day inner experiences. In DES, the participant is asked to carry a portable beeping device that delivers a beep at random times. When the beeper beeps, the participant attends to the inner experience that was ongoing at the last uninterrupted moment prior to the beep. The participant then jots down a few notes about the inner experience to aid memory when the moment of experience is discussed with DES investigators later on, usually within 24 hours of sample collection, during the DES expositional interview.

The beeper ensures that DES data is ecologically valid and aimed at a series of discrete moments of inner experience, which DES investigators call the “moment of the beep” (e.g., Hurlburt & Heavey, 2004). DES participants sample in their natural environments, and typically report their awareness of being studied minimally disturbs their experience. The participant is typically instructed to wear the beeper for a three or four hour block whenever it is convenient in the natural environment. At a random moment within an hour after activation, the beeper emits the beep, signaling the participant to attend to the inner experience that was ongoing at the moment interrupted and to take a few notes to bring with them to the expositional interview. After each beep, the beeper resets so that it will signal again within an hour; the process continues until the sampling is complete (e.g., the target number of samples have been collected).

The expositional interview. DES investigators use the expositional interview to explore, elaborate, and record the participants' inner experiences. This interview includes asking open-beginninged as well as open-ended probes, bracketing presuppositions about what experience is like or should be like, and iteratively helping the participant to describe only experience that was ongoing at the moment of the beep—to “cleave” to experience (Hurlburt, 2011a, p. 217). Because some of these

elements are not widely known, the terms open-beginninged, iterative, and bracketing are discussed below in the context of DES interviews.

Hurlburt (2011a, p. 161) describes an open-beginninged probe as “one that leaves *both* the beginning and the end of the response spontaneous and unguided... [e.g.,] ‘What, if anything, was in your experience at the moment?’” DES investigators do not want to lead the participant to assume that inner experience must have been present at the moment of the beep; however, if inner experience was ongoing at the moment of the beep, DES investigators want to know about it. Thus, a discussion of any moment interrupted by the DES beep begins with an open-beginninged probe to allow the participant freedom to respond in a manner most faithful to the experience, or lack thereof, that had been ongoing at the moment of the beep.

Another distinct element of DES is the emphasis on iterative training. Hurlburt (e.g., 2009, 2011a) described the process of DES as iterative, as participants build skills in apprehending and describing inner experience by partaking in a sequence of interviews with trained investigators. These early interviews help orient participants to the DES process. For example, participants often require guidance on the following processes: bracketing presuppositions about experience, improving the apprehending of experience at the moment of the beep, discerning what is directly experienced from what exists in the world outside of experience (experience vs. context of that moment), and describing experience clearly and unambiguously to outside observers (Hurlburt, 2011b). Many participants enter the first interview with misconceptions about the task: at the outset of sampling, the subject may not be talking about the precise moment of the beep or about experience at all (Hurlburt & Heavey, 2006). Hence, the first day or two of interviews are crucial for clarifying the task and providing guided practice to the participant, so that subsequent apprehensions of experience and subsequent self-reports about experience can be obtained in high fidelity.

As part of the iterative training, DES investigators guide participants’ descriptions toward inner experience through the process of bracketing presuppositions (Hurlburt, 1990). Qualitative researchers have traditionally used bracketing techniques to “mitigate the potential deleterious effects of

unacknowledged preconceptions related to the research and thereby to increase the rigor of the project” (Tufford & Newman, 2012, p.81). As stated above, participants often initially struggle with the task of describing inner experience, as they are often unaccustomed to doing this task outside of the DES expositional interview. Bracketing allows the investigators to direct the interviewee toward inner experience and away from preconceived ideas about inner experience. In qualitative research, these preconceived ideas include beliefs and values, thoughts and hypotheses, biases, emotions, preconceptions, presuppositions, and assumptions about the phenomenon under study (Tufford & Newman, 2012); in DES, the effects of these preconceived ideas are mitigated by bracketing presuppositions throughout the interview process. For example, a DES participant describes a presupposition about inner experience: “I always talk to myself in my inner voice.” The DES investigator brackets the presupposition and redirects the interview toward inner experience at the moment of the beep: “That may or may not be true, we’re not too sure about that, but in our case we’re not interested in your inner experience in general, we’re interested in the specific experience that was ongoing at the moment of the beep; if words were present at that moment, we’re happy to talk about that, but we don’t want to presume that words must have been present.” Thus, the investigator brackets the presupposition that inner speaking must have been present and refocuses the interview on direct inner experience at the moment of the beep.

As with all methods that rely on participants’ self-reports, the accuracy of the participants’ descriptions of inner experience phenomena is susceptible to distortions. Reasons for these distortions include memory error, lack of confidence in memory, limits of the participants’ language or of language in general for describing inner experience, miscommunication between the investigator and participant, and possible embarrassment about the nature of their inner experience (Hurlburt, 2011a). As such, DES investigators remain skeptical that participants are always willing or capable of providing completely accurate accounts of inner experience phenomena. DES investigators thus observe each participant’s verbal and nonverbal behavior to identify clues, called subjunctification (Hurlburt 2011a), that suggest the participant may not be describing inner experience in high fidelity; DES investigators can respond to

subjunctification by guiding the interview toward inner experience and by bracketing presuppositions that may have arisen. A more expansive review of subjunctification is found later in this literature review.

Mining data from DES interviews. After the interview is complete, the participant's role in that day's sampling is complete; however, for the investigators, it has just begun. An article by Hurlburt (2015) describes the conversion of the interview into qualitative and quantitative inner experience data. After each interview, one of the interviewers creates written "contemporaneous" descriptions of each of the inner experiences that were ongoing for the participant at each beeped moment. This occurs after each discrete interview day, typically within 24 hours of the DES interview. The author of these contemporaneous descriptions circulates that document to the other interviewers, who approve, amend, or create dialogue about that description. When potential disagreements or differing impressions might arise about any beeped moment, the disagreements or differing impressions are confronted and video of the interview is often reviewed. The object is *not* to reach agreement; the object is to repair mistakes if any were made, but more importantly, to keep differing interpretations alive for later reconsideration. Thus, any disagreement or differing impression (even if mild and/or unconfident) is characterized in the written description.

When all sampling with a particular participant is complete, all investigators who had been involved in interviewing that participant meet to discuss each sample with the aim of reaching a shared understanding of salient characteristics of the participant's inner experience as they have emerged across samples and across sampling days. As before, if any disagreements or differences of impression exist, they are either resolved or left explicitly acknowledged. This discussion proceeds sample by sample; sometimes discussion of a later sample triggers returning to the discussion of an earlier sample, shedding light on one or another of the earlier impressions. These sample-by-sample discussions are designed to help each investigator refine and update his or her impressions of the participant's general inner experience as each sample influenced the overall picture.

Next, typically within 24 hours, each investigator who was present at the meeting independently writes a brief description of the salient characteristics that emerged throughout the participant's sampling.

Then those independent, personally written descriptions are compared; discrepancies at this point might trigger a reconvening of the research team. Otherwise, a designated investigator then refers to the brief descriptions to write a full idiographic descriptive account of these features, which is peer-reviewed and edited by other members of the research team until a consensus is reached, including description of disagreements or differing impressions that have been exposed but not resolved. These “Salient Characteristics” descriptions characterize the participants’ salient characteristics, and may also include an accounting of the frequency of inner experience phenomena (e.g., the Five Frequent Phenomena and others; see Hurlburt 2011a) across all samples.

But how do DES investigators describe and quantify different types of experience? A study by Hurlburt and Heavey (2002) identified common and reliable categories of inner experience phenomena. In their study, the investigators rated the frequency of 19 different characteristics of inner experience identified in previous inner experience research. Hurlburt and Heavey categorized experience samples of 10 participants who each provided 6 samples, which produced 60 overall from the group. Five of the characteristics occurred frequently enough to analyze as common, distinct types of experience. These characteristics, now referred to as the Five Frequent Phenomena (5FP), were inner speech (which Hurlburt and Heavey now call “inner speaking”), images (which Hurlburt and Heavey now call “inner seeing”), unsymbolized thinking, feelings, and sensory awareness. Inner seeing is the experience of seeing something that is known to be not actually present. Inner speaking is the experience of speaking words, often with the same vocal characteristics as the person’s own external speech, but with no external (real) sound. Unsymbolized thinking is the experience of thinking some particular, definite thought without the awareness of that thought’s being represented in words, images, or any other symbols. Feeling is an emotional experience, including sadness, happiness, humor, anxiety, joy, fear, nervousness, anger, embarrassment, and so on, and sensory awareness is a sensory experience (itch, hotness, pressure, visual taking-in, hearing) that is itself a primary theme or focus for the subject. These five categories of experience have been found to account for a majority of experience reported by DES participants and are useful descriptors to code and categorize experience.

Implications of DES research. Because of its advantage for describing experiential phenomena vividly, DES has been used to characterize the experience of various populations of interest. Whereas some DES studies have included case studies of a unique individual's experience (Hurlburt & Akhter, 2006; Hurlburt & Schwitzgebel, 2007), most DES studies have investigated clinical populations, such as individuals with schizophrenia (Hurlburt, 1990), depression (Hurlburt, 1993), Asperger's syndrome (Hurlburt, Happe', & Frith, 1994), and bulimia nervosa (Jones-Forrester, 2006, 2009; Hurlburt, 2011b). Similarly, DES has investigated people who share some trait or characteristic such as rapid speaking (Hurlburt, Koch, & Heavey, 2002) or left-handedness (Mizrachi, 2013). By characterizing individuals with these specific traits, investigators can identify salient characteristics that are either particular to an individual's experience or that emerges across participants and therefore characterize that group (Hurlburt & Akhter, 2006). This process begins at the bottom with the faithful apprehension of a single moment of experience from an individual and then proceeds upward to the "nomothetic" characterization of the inner experiences of a group of same-trait individuals.

DES has also been used to examine inner experience in specific situations. For example, a study by Dickens (2008) investigated the inner experience of highly-skilled and moderately-skilled golfers as they were playing golf. Randomly sampled moments of golf experience included golf-related content, such as mental preparation strategies, perceptual awareness, and inner speaking. Other studies have examined the inner experience of participants while reading classical fiction (Brouwers, 2015) and erotic fiction (Lapping-Carr, in preparation). These studies found that readers innerly see depictions of the story in varying degrees of illustrativeness; that participants experience words in a variety of ways, but not all the time; that participants rarely, if ever, narrated the text in an inner voice while reading; and that participants rarely, if ever, reported the momentary experience of arousal during erotica reading, even when they found the story arousing in general.

Additionally, a study by Turner (2015) explored participants' thoughts and reactions to DES following participation in 5 or 6 days of sampling, as well as possible therapeutic effects of DES participation. Investigators interviewed 12 participants after DES participation, and Turner coded various

frequent themes in the interview. The study found that self-reported psychological symptoms decreased on average after DES participation; that 10 out of 12 reported that they learned something interesting about inner experience or increased their awareness of inner experience; and 7 out of 12 reported that DES was difficult at first until they became more skilled. Further, investigators in this study reviewed video footage of DES interviews for 14 participants and coded for each participant various themes that emerged among the interviews. Using this “process coding” procedure, the investigators found that 13 out of 14 participants appeared in discomfort or distress at some point during DES participation, 8 out of 14 participants seemed to learn something interesting about their inner experience, 8 out of 14 appeared to increase in skill at the DES task across interviews, and 6 out of 14 appeared to increase their interest in DES across interviews. These results demonstrate that DES not only characterizes participants’ experience but also has an impact on the participants themselves.

These examples show that DES has been used to examine inner experience in a variety of populations, and has been useful for describing individual (idiographic) and group (nomothetic) trends in inner experience, as well as inner experience while participating in specific activities. Additionally, DES may have a therapeutic effect on some DES participants, and most participants report increased skill at DES and increased insight into their own inner experience across multiple sampling days. DES stands alone as an exemplary experience sampling method in studies where the fidelity of describing inner experience phenomena is a primary research interest.

Subjunctification

Subjunctive mood. *Merriam-Webster’s Collegiate Dictionary* (2012) defines the word “subjunctive” as “of, relating to, or constituting a verb form or set of verb forms that represents a denoted act or state not as fact but as contingent or possible or viewed emotionally (as with doubt or desire).” Examples of words that signify the subjunctive mood include: *could, would, should, suggest, recommend, wish, hope, if, and but*. As such, use of the subjunctive mood indicates that the speaker is not describing the facts of “what is,” but is rather describing “what might be” or “what is not.”

Whereas several articles explore the cognitive processing of the subjunctive mood (e.g., Gregory, 2001), the linguistic challenges of proper subjunctive grammar in English (e.g., Aarts, 2012), and the use of the subjective mood in reasoning tasks (e.g., Espino et al., 2015), little or no research exists on the meaning of subjunctive mood use in interviews. However, a few studies have explored the meanings and implications of subjunctive mood use in speech and writing and as a tool in psychotherapy. As an example of the former, Troop et al. (2013) observed a relationship between self-criticism and subjunctive mood use in an expressive writing task. The investigators asked an experimental group to write about life goals and a control group to write about a less personal subject (e.g., a review of a recent book or film). Their main finding was that the experimental group decreased in self-criticism between baseline and a 2-week follow-up. However, text analysis showed that experimental-group writers who frequently used subjunctive verbs in their writing (e.g., would, could, should) were significantly less likely to decrease in self-criticism. The authors postulate that, because subjunctive verbs convey the possibility of failure or doubt, subjects who used these words in writing were more prone to self-criticism because they doubted the feasibility of their life goal or their potential future self.

The subjunctive is also present in various psychotherapy techniques. For example, an article by Pizer (1996) describes how he has observed and interpreted a patient's use of the subjunctive mood during psychoanalysis. Pizer noted various times the patient, Donald, used the subjective phrase "I wish," thus expressing information about his views of what is not reality and what might be. In response, the therapist was able to explore Donald's subconscious by accessing his fantasies and ideals.

Another clinical use of the subjunctive mood is demonstrated by Hedtke and Winslade (2004). The authors describe the utility of the subjunctive mood for dealing with grief, as the bereaved can turn to a "re-membering" exercise of remembering the deceased in a way that retains their memberships among the living. A clinician can use subjunctive phrases, such as "What would s/he say if..." or "What would s/he do if..." to bring the deceased back into the present consciousness of the bereaved, lessening the feeling that the person is lost forever and will eventually fade from memory.

There are a few remaining examples of subjunctive mood use in clinical work, offered as a useful narrative technique in therapy settings, and contrasting other therapy perspectives that focus on “confronting reality” (e.g., Anderson, 1990; White & Epston, 1990; de Shazer, 1991). The common theme among the clinical and non-clinical implications of subjunctive mood is that people use the subjunctive when they deviate from describing actual, factual information. Instead, they may be describing educated guesses, hypotheses, fantasies, or other such non-reality occurrences. Extended to an interview setting in which the investigators aim to collect descriptive, phenomenological information, use of the subjunctive is one indicator that the participant is not describing facts with a high degree of certainty.

Subjunctification in DES. Hurlburt defines subjunctification 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, 2011a, p. 116). He identifies 11 forms of subjunctification: verb forms of the subjunctive mood, such as “would,” “should,” or “might”; generalities, such as “Whenever I” or “I always”; theoretical inferences, such as “I must have been”; undermining expressions, such as “well” or “maybe”; plausibility indicators, such as “of course”; causal inferences, such as “because”; intentional expressions, such as “I was trying to”; distancing or depersonalization expressions, such as “you feel” or “one would”; metaphors, such as “it was like a ray of sunshine”; procedural discussion, such as “am I supposed to...?”; and behavioral indicators, such as false starts, shrugs, or long pauses. Importantly, Hurlburt notes that subjunctification is evidence, not a conclusion. Participants may subjunctify for reasons other than low confidence, such as: feeling embarrassed, struggling to find the words, or subjunctification may just be typical of that individual’s speech.

Hurlburt (2011a) provides examples of subjunctification in DES interviews, and assists the reader in counting instances of subjunctification in a given paragraph of transcribed interview. However, Hurlburt notes that there are various ways to count instances of subjunctification. Rather than focus on specific counts, Hurlburt calls the reader’s attention to the “density of subjunctification” that an

interviewer can observe in real-time. He further describes that identifying subjunctification is not simple, and that consistent, iterative training is necessary.

Overall, subjunctification is essential to a task such as DES, as interviewers must remain sensitive to the difficulty of the task required of participants. Especially in early interviewers, participants require frequent reorientation to the task, because many early participants do not know what inner experiences is, do not understand what is meant by the moment of the beep, grapple with questions about experience they were not prepared to answer or did not know to observe, and so forth. A critical element of DES is the iterative nature of the process – in theory, participants and interviewers hone and refine their skills at the process in each successive interview (Hurlburt, 2009). As such, one might expect that rates of subjunctification would decrease over time, as interviewers learn the right questions to ask and participants understand their task and develop familiarity with their own inner experience.

Observational Methods of Lie Detection

Whereas subjunctification is not aimed at detecting lying behavior *per se*, there may be behavioral parallels between lying and providing low-confidence descriptive information. A review by Gray (2011) describes various behavioral and verbal cues that suggest lying. The Reid method, a well-known set of tools for assessing lying behavior in an interrogation with the aim of obtaining a confession, uses poor eye contact, fidgeting, and nervousness as possible lie indicators (Inbau, Reid, Buckley, & Jaynes, 2004). Critics of this method have found that law enforcers who rely on the Reid method generally perform poorly at determining who is lying (e.g., Mann, Vrij, & Bull, 2004; Mann, Vrij, Fischer, & Robinson, 2008), which suggests that these behaviors alone do not adequately predict lying; in fact, such authors as Mann, Vrij, and Bull (2004) caution that following the Reid method is often counterproductive to accurately identifying deception because it leads law enforcers to draw too firm conclusions.

Ekman and Friesen (1972), on the other hand, have shown that people's emotional states are often betrayed in behavioral cues, which they call "adaptors." They showed that significant, positive correlations exist between lying and two adaptors: touching one's own face, and what Ekman and Friesen

call a “hand shrug,” an inward and upward movement of the hands – palm up – while the shoulders are moving in. Importantly, these relationships are correlational and small; the authors note that these behaviors do not always indicate lying and that skilled liars can practice suppressing these indicators. Additionally, Ekman and Frank (1993) suggest that micro-emotions, emotions that are expressed for a fraction of a second and then masked, can often betray a lie. The authors identified three emotions associated with lying: guilt, fear, and duping delight, which is the satisfaction a liar feels when he thinks his lie is passing as the truth.

Vrij and Mann (2004) discuss behavioral indicators of the cognitive impact on lying. Difficulty verbalizing the information suggests lying because of the high cognitive complexity of fabricating a story on the spot. Because liars are wary of detection, they may also attempt to suppress any emotional reaction that may betray nervousness or deceit – thus, emotional flatness or rigidity may suggest lying. And finally, liars may attempt to suppress any normal hesitations and mis-speakings that characterize normal speech, and do not correct themselves or admit to flaws in their logic. Importantly, however, Vrij and Mann note that truth-tellers may also exhibit these behaviors if they are concerned about their believability, indicating that these behaviors are only modestly suggestive of lying.

An analytical procedure, Statement Validity Analysis (SVA; Vrij, 2000), was designed to guide clinician’s impressions of criminal offenders’ truth-telling. Due to its validity and popularity, SVA has been deemed admissible as evidence in criminal courts in Germany, Sweden, and the Netherlands, but not in the US. SVA includes identifying details and information that truth-tellers generally provide and liars generally lack. These include: embedding contextual details; reporting quotations of what was said; giving unusual, unnecessary details that represent the speaker’s experience; and describing their subjective mental states. Further, because liars are often guarded about their believability, they also may lack these common elements of truth-telling: spontaneously correcting themselves if they make an error; admitting poor memory skills; and expressing doubts about accuracy.

Reality Monitoring (RM; Johnson & Ray, 1981) is another method of analyzing the validity of a narrative account. RM scores the speaker’s use of allusions to sensory aspects of the event, including:

visual details, auditory details, spatial details about the location, how objects are arranged in space, and relative temporal details of when events occurred. Speakers who naturally provide these details in their accounts are more likely to be telling the truth, as they likely formulate these details from memory of an actual event. In addition, imagined events tend to contain more cognitive operations, such as thoughts and reasonings (e.g., “I must have been wearing my coat because it was cold out”) than do actually experienced events (Johnson & Raye, 1981; 1998). Vrij and Mann (2004) posited that lies may also contain exaggerated thoughts and reasonings, which was verified in a study by Vrij, Akehurst, Soukara, and Bull (2004).

And finally, from a review of behavioral indicators of lying derived from classical studies of gestures and facial expressions, Statement Validity Analysis, and reality testing, Vrij, Evans, Akehurst, and Mann (2004, as cited by Gray, 2011, pp. 34-35) offer the following list of details most associated with lying:

1. The lag time between the question and the answer (increased for liars).
2. Hand and finger movements—without moving the arms (decreased for liars).
3. Speech hesitations: “uhs,” “ums,” or “aahs” between words (increased for liars).
4. The quantity and specificity of details (decreased for liars).
5. Descriptions of time and location (decreased for liars).
6. The reproduction of conversation (decreased for liars).
7. Descriptions of other people's feelings, thoughts, or motives (decreased for liars).
8. The inclusion of visual and auditory details (decreased for liars).
9. The inclusion of spatial information and temporal details (decreased for liars).

Items 1 through 3 would be considered subjunctification by Hurlburt. Items 4, 5, 6, 8, and 9 refer to the specificity of the description, which, Hurlburt would agree, are signs that subjunctification is *not* taking place. The only disagreement between Hurlburt's subjunctification and this list is item 7: Hurlburt would say that descriptions of other's thoughts and motives, because they are not directly observable, count as subjunctification.

As with subjunctification, verbal and behavioral indicators of lying are not strict rules, but are instead guidelines that signify some difficulty with the descriptive process. Just as criminal investigators use these clues to build suspicion that a storyteller is confabulating, DES investigators use subjunctification as a clue that a participant is straying from a high-fidelity inner experience description.

Interactive Training Tools

This study uses an interactive training tool (ITT) to teach participants the concept of subjunctification and to teach them how to rate levels of subjunctification in DES interviews. A brief review of interactive training tools, presented below, supports the usefulness of ITTs in teaching didactic information and practical skills.

A general review. Interactive training tools (ITTs) are computerized training programs designed to teach users information, procedures, or skills through an interactive interface that gives tips and feedback throughout the process. ITTs are common in settings such as education, clinical and rehabilitation work, and research. Studies on ITTs in each of these settings are discussed.

ITTs in education. A few studies have examined formal learning outcomes of ITTs compared to other instructional techniques. For example, Fitzgerald (1995) evaluated the relative efficacy of an interactive training program on classroom observation skills used by special education teachers. Subjects were either trained using the interactive program exclusively or using the interactive training in tandem with six hours of classroom instruction. Students who use the interactive training program exclusively outperformed their training-program-plus-instruction peers. Fitzgerald suggests that these findings are explained by the learner-controlled nature of the interactive-training-program-only group compared to the teacher-controlled nature of the alternative group.

A study by Fouh, Breakiron, Hamouda, Farghally, and Shaffer (2014) analyzed data collected from students in a Computer Science course who were provided an interactive electronic textbook (eTextbook), which allowed the researchers to track the students' usage. The authors found that a majority of students did not read the text, though they often utilized additional electronic resources and exercises, even when use of these features was not required. This study highlights the shift of student

learning preferences away from traditional textbook-style instruction and toward more interaction-based learning.

A third study on the use of ITTs in education examined the use of an Interactive Whiteboard (IWB) and computer graphing software for the purpose of math instruction (Erbaş, Ince, & Kaya, 2015). Students were assigned to attend instructional sessions that either utilized the interactive tools or used a traditional blackboard with no computer access. In the experimental group, the IWB projected lecture notes and graphing outputs onto the screen; in the control group, notes were provided verbally and graphs were written on the blackboard. Both groups were taught by the same instructor using the same example problems. Results showed that the experimental group significantly outperformed the control group on a test of graphing quadratic functions.

ITTs in clinical settings. ITTs have also been used for rehabilitation purposes following neurological conditions such as Alzheimer's disease (Schrieber, Lutz, Schweizer, Kalveram, & Jancke, 1998; Hoffman et al., 2003) and brain injury (Fraas, 2006). ITTs have also been successfully utilized to teach sign language to auditory disabled people (Elsendoorn, Beijck, Lampropoulou, & De Raeve, 1997).

Schrieber and colleagues (1998) compared a series of interactive memory training modules to improve recall of objects and routines to a control condition of a chat with a psychologist. The authors found that Alzheimer's patients demonstrated significantly improved recall of objects and daily routines after the training modules compared to simply discussing these elements with a psychologist. Another study (Hoffman et al., 2003) found that ITTs helped Alzheimer's patients improve performance of activities of daily living (ADLs), such as shopping in the grocery store. Outcomes were assessed by shopping performance on the ITT software, as well as multiple choice questions that assessed the patient's understanding of the required task. Results showed that Alzheimer patients significantly improved on the task and multiple choice questions following a 4-week training program, and gains were maintained until a three week follow-up.

A study by Elsendoorn, Beijck, Lampropoulou, and De Raeve (1997) examined the effects of an ITT designed to teach sign language. The authors found that their software, DICTUM training system,

was an effective tool for training 11 adult and adolescent individuals who were prelingually deaf, as well as for students enrolled in an introductory sign language course, and a control group with no prior knowledge or exposure to sign language. As such, the ITT was determined to be effective as a clinical tool, an educational tool, and for recreational purposes.

ITTs in research settings. ITTs have also been used in a few research studies to train participants in developing particular research or psychological skills. For example, Ekman uses the *Micro Expression Training Tool* (METT; 2006a) and *Subtle Expression Training Tool* (SETT; 2006b) to train participants in the recognition of emotionally-valenced facial features for seven emotions: sadness, anger, surprise, fear, disgust, contempt, and happiness. METT and SETT train similar skills, though METT focuses on reading emotions on the whole face whereas SETT directs the trainee's focus to specific areas of the face. Using Ekman's stimulus set of emotional faces (Ekman, Friesen, & Tomkins, 1971), participants observe a computerized image of a neutral face morph from one target expression to another. The participant is required to identify which emotion was conveyed, and are provided immediate feedback (i.e., "correct" or "wrong").

Various studies have used the METT and SETT programs in research. For example, Asla, de Paúl, and Pérez-Albéniz (2011) found that parents identified as high-risk for child abuse based on the Child Abuse Potential Inventory performed significantly worse on the METT and SETT than low-risk parents, suggesting deficits in emotion recognition among high-risk parents. Another study by Warren, Schertler, and Bull (2009) found that SETT performance, but not METT performance, predicted a participant's accuracy at distinguishing emotionally-valenced lies from emotionally-valenced truths. And finally, a study by Marques and Montoya (2013) demonstrated that the METT was a reliable tool for training individuals with psychopathic traits to detect emotions conveyed in facial expressions.

The DES interactive multi-media project. Descriptive Experience Sampling is a method of obtaining high-fidelity accounts of inner experience using randomly sampled moments in the natural environment and the DES interview. Russell Hurlburt, the developer of the method, and his colleagues have painstakingly reiterated in books (e.g., Hurlburt and Heavey, 2006; Hurlburt, 2011a; Caracciolo &

Hurlburt, 2013; Schwitzgebel & Hurlburt, 2007) and journal articles (e.g., Hurlburt, 2011b; Heavey, Hurlburt, & Lefforge, 2010; Hurlburt & Heavey, 2015) the intricacies of the DES interview and developing the discussions in the interview into faithful descriptions of participants' inner experiences. The labors of the method, particularly the process of bracketing presuppositions and asking open-beginning probes (see Descriptive Experience Sampling section above), make it difficult to learn DES from a book, and Hurlburt's lab at the University of Nevada, Las Vegas, the DES laboratory, has thus trained most DES graduate students and research assistants using a learning-by-doing approach. This makes it difficult for non-members of the DES laboratory to obtain sufficient training in DES.

Therefore, in 2007, Hurlburt began the development of an interactive learning tool called the Descriptive Experience Sampling Interactive Multimedia Project (DES-IMP) to train investigators on the DES method. The IMP uses video segments of DES interviews to demonstrate DES skills, experiential phenomena, and commentary on the process. The architectural design of the IMP was developed by Bensaheb (2009), using feedback from 12 focus group members who test piloted an early version of the IMP. The final IMP framework included a series of computerized training modules. For each module, the IMP shows a brief, introductory video-lecture on the concepts covered, followed by a series of 10 to 20 video clips presenting segments of real DES interviews involving real DES participants. IMP users view videos of increasing complexity to build mastery of the skill, and are asked questions and provided real-time feedback on their responses throughout the various modules. In this way, the IMP is an interactive training tool that allows the trainee to play and replay training materials and receive feedback on their input.

The IMP is currently a work in progress. The DES laboratory's vision of the IMP is that it will include three basic kinds of learning modules: 1) those aimed at teaching DES skills; 2) those aimed at teaching how to recognize particular experiential phenomena; and 3) those that provide complete illustrative DES interviews with commentary. At present, the skill-training modules include: 1) Recognizing the moment of the beep; 2) Recognizing inner experience phenomena (versus context,

background, etc.); and 3) Recognizing subjunctification. The phenomena training modules include: 1) Recognizing sensory awareness; and 2) Recognizing unsymbolized thinking. Illustrative DES interviews with commentary include: 1) An interview on a participant's first day of sampling; and 2) Two sample interviews.

Initial evaluation of the DES-IMP has tested the effectiveness of the IMP in the “Recognizing sensory awareness” and “Recognizing unsymbolized thinking” modules (Bensaheb, 2009). In this study, 100 participants were randomly assigned to one of four training conditions that crossed content (sensory awareness or unsymbolized thinking) with training approach (IMP module or essay describing the phenomenon). Participants then took a test measuring mastery of the content they were presented, which included written items and video presentation items to control for practice effects. Results showed that the IMP approach was significantly more effective at training participants to recognize sensory awareness and unsymbolized thinking compared to the essay approach.

Background of the Methods

We have seen that Hurlburt (e.g., Hurlburt 2009; Hurlburt 2011a) describes Descriptive Experience Sampling as an iterative research process. By this, he means that DES interviewees and DES investigators refine their skills at apprehending high-fidelity, descriptive samples of inner experience throughout multiple days of sampling and interviewing. Interviewees improve their abilities to observe inner experience at the moment of the beep and to describe inner experience during the DES interview, and DES investigators improve in their abilities to ask pertinent questions about inner experience, bracket presuppositions, and conceptualize and describe the interviewee's inner experience phenomena. However, little objective evidence substantiates the iterative claim.

We have seen that Hurlburt defines subjunctification in DES 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, 2011a, p. 116). As such, if DES interviewees truly improve in their abilities to access and characterize inner experience in high fidelity, it follows that the density of interviewee subjunctification during DES interviews should decrease as interviewees refine their DES skills.

Although Hurlburt (2011a) claims this to be true, that claim is based on casual observation, and no formal studies have verified this claim. Study 1 sought to obtain empirical evidence to support this claim.

Study 2 also sought to demonstrate that DES interviewees improve in their access to inner experience across subsequent interviews, though it used a modified approach. Whereas Study 1 relied on the observations of research assistants naïve to DES who receive approximately 1 hour of training, Study 2 relied on the observations of experienced DES investigators who ranged from 3 years to 40 years of sampling inner experience. In addition, Study 2 required observers to attend to a more complex construct, access to experience, as opposed to level of subjunctification. Whereas subjunctification is one indicator that estimates how much access a DES interviewee has to experience, the experienced DES investigators were asked to assess access to experience directly.

Chapter 2: Study 1

Study 1 sought to determine if DES interviewees decrease in density of subjunctification across multiple days of DES interviews. To test this, we trained psychology research assistants naïve to DES to be raters, whose task would be to identify and rate interviewees' levels of subjunctification in brief fragments of DES interviews. We then compared each interviewee's level of subjunctification ratings (averaged across raters) on the first day of DES participation and on the fourth day of DES participation. We hypothesized that levels of subjunctification within the interviewees would be higher on the first day compared to the fourth day, which would support the idea that DES interviewees improve at apprehending and describing inner experience as a result of multiple iterations of DES participation.

Method

Interviewees. Interviewees in Study 1 were 15 undergraduates (3 males and 12 females) who were videotaped while participating in a previous DES study (Brouwers, 2015). Interviewee ages ranged from 18 to 30 with a mean age of 19.83 years. Ethnicity was diverse (3 Hispanic, 2 Caucasian, 2 African American, 1 Asian American/Pacific Islander, 3 who identified as "Mixed," and 4 who did not specify).

Raters. Raters in Study 1 were eight undergraduate research assistants (1 male and 7 females; mean age = 21.75 years, $SD = 1.91$) recruited from a psychology laboratory at the same university as the DES laboratory. Raters had between 1 and 7 semesters of experience working in psychology research labs (mean = 3.00 years). Participation was voluntary following an email invitation from the professor who oversees their lab.

Apparatus.

Subjunctification Essay. The Subjunctification Essay is a two-page essay on subjunctification, drawn primarily from Hurlburt (2011a). The essay contains a description of the subjunctification construct and a table of 11 types of subjunctification identified by Hurlburt (2011a), including examples of subjunctified descriptions of experience compared to confident descriptions.

The Descriptive Experience Sampling-Interactive Media Project (DES-IMP). The DES-IMP is an Internet-based interactive training tool designed to train users on essential DES skills, such as identifying the Moment of the Beep, identifying Sensory Awareness, identifying Unsymbolized Thinking, and recognizing Subjunctification. The Subjunctification module, developed by Reger (2010), was used in this project as a training tool. This module of the DES-IMP presents training materials in slideshow format with opportunities to type responses into a comment box and then receive feedback. Training materials on the Subjunctification module include: 1) an instructional video of Russell Hurlburt describing subjunctification; 2) video examples of DES interviews that ask the trainee to identify verbal and behavioral subjunctification, with feedback; 3) video examples of general DES interviews that ask the trainee to identify any subjunctifiers present, with feedback; and 4) a wrap-up video of Russell Hurlburt reviewing the concepts covered. In this study, we used the DES-IMP Subjunctification module to teach raters what subjunctification is and how to identify it in short videos of DES interviews.

Users of the DES-IMP Subjunctification module have significant control over the review and presentation of the materials. Users can navigate forward in the slide show by pressing the “Next page” button and can navigate backward by pressing the “Back” button. They can re-watch the video presentations by pressing the play button on the video screen after it is complete.

The Subjunctification Rating Trainer (SRT). After raters learned to understand and identify subjunctification from the DES-IMP, they then learned to apply numerical ratings to subjunctification using the SRT. The SRT is an Internet based interactive training tool, similar to the DES-IMP, that focuses on training raters to rate the levels of subjunctification shown in videos of DES interviews on a 5-point scale (0 is “unsubjunctified” and 4 is “highly subjunctified”). The SRT displays an instructional video of me providing standardized instructions and eight short video clips taken from DES interviews. Each video clip shows a brief segment of a DES interview, and the program prompts the raters to assign their own level of subjunctification ratings (LS Ratings). After raters submit each response, the program provides written feedback regarding how experienced DES investigators rated that item and which behaviors influenced that rating. As with the DES-IMP, viewers can re-watch videos by pressing the

“Play” button on the video screen and can navigate forward and backward using the “Next page” and “Back” buttons.

Measures.

Demographic Form. The Demographic Form is a standard demographic questionnaire that requests information on gender, age, ethnicity, year in school, semesters of participation in psychology research labs, average hours of participation in psychology research labs, and past psychology research lab duties. The form also requests basic contact information, such as telephone number and email address.

Subjunctification Quiz (SQ). The SQ is a 20-item quiz that assesses the ability to rate levels of subjunctification. It uses the same computer platform as the DES-IMP and SRT, though responses are entered on a paper response form and feedback is not provided. The first slide is a video of me providing standardized instructions. Each subsequent slide presents a video vignette of a DES interview. Videos on the SQ are identical in format and response to the videos presented by the SRT: each video shows a sample of a DES interview, and each slide prompts raters to record a LS Rating on their response form using the same 0 to 4 rating scale as the SRT. Quiz takers can re-watch video clips on the current test slide, if desired, by pressing the “Play” button on the video screen and navigate forward and backward using the “Next page” and “Back” buttons.

Subjunctification Research Module (SRM). The SRM presents 90 video clips of DES interviews with the camera focused on the interviewee. Raters in this study used the SRM to view the video clips and to rate the level of subjunctification observed in each video. The first slide is a video of me providing standardized instructions. The presentation and rating of SRM videos is identical to the SQ: after each video, the user is prompted to rate the level of subjunctification in the utterance on a 0 to 4 scale (0 is “unsubjunctified” and 4 is “highly subjunctified”) by circling the corresponding number on the response form provided. If a user desires to re-watch the video before rating, he or she is able to do so by pressing the “Play” button on the video window. Once a rating is selected, the viewer pushes the “Next

page” button to move on to the next item or “Back” button to review previous items until all 90 video clips have been viewed and rated.

The user’s task is to rate the interviewee’s level of subjustification (LS rating) on a 5-point scale (0 is “unsubjustified” and 4 is “highly subjustified”). The video clips were selected from 15 DES interviewees who had been videotaped while participating in a previous DES study (see Brouwers, 2015). For each interviewee, three “utterances” were obtained from their first day of sampling (Day 1) and three were obtained from their fourth day of sampling (Day 4). We defined an utterance as any clear, verbal response, two words or longer, where the interviewee is the sole speaker, aside from minor interviewer vocalizations such as “yeah” and “hmm.” Utterances ranged from two-word responses (e.g., “Not really”) to responses several sentences in length.

We selected utterances to be used in the SR based on the following procedure. The object was to select three utterances from Day 1 and three utterances from Day 4. Further, for each day, the object was to select an utterance from the first, from the second, and from the third experience sample discussed that day. The selected video clip for that item would contain the utterance that was ongoing either 20%, 50%, or 80% (selected at random) across the discussion of that sample. For example, suppose that for Interviewee A, Sample 1 is randomly assigned to the 50% time point, Sample 2 is randomly assigned to the 20% time point, and Sample 3 to the 80% time point. Suppose further that Sample 1 is 10:00 minutes in length. To get the utterance at the required 50% time point, we examined the first utterance that was interrupted by (if the interviewee was speaking) or occurred following (if the interviewer was speaking) the 5:00 (50% of 10:00) mark. If the utterance was fewer than two words, was inaudible or incomprehensible, or was interrupted by the interviewers, we discarded that utterance and selected the next uninterrupted utterance of two words or greater. This same procedure was applied to Samples 1, 2, and 3 of both Day 1 and Day 4 sampling days for each of the 15 interviewees. Overall, we selected 90 utterances: three utterances on each of two days for each of 15 interviewees. We created two versions of the SR using the same 90 videos but with a different randomized video order. Appendix A contains descriptions of how each utterance was selected.

Procedure. Raters in this study were research assistants recruited from another psychology laboratory at the same university as the DES lab. We contacted interested research assistants by email and scheduled a 2.5 hour time slot for them to participate in the study, though actual participation took approximately 1.5 hours to complete.

Raters then met with me at the scheduled time. After signing the Informed Consent form and completing the Demographic Form, raters read the Subjunctification Essay. They then completed the Subjunctification training module of the DES-IMP program and the Subjunctification Rating Trainer, administered on the same platform. This training took approximately 40 minutes to complete. Raters were encouraged to ask questions about subjunctification throughout the training, and the author answered any questions asked that did not betray the study's hypotheses.

After training, raters completed the Subjunctification Quiz (SQ) and then the Subjunctification Research Module (SRM). It took approximately 50 minutes for raters to complete both modules. Raters were then thanked and debriefed.

Results

To test whether the raters understood the task of rating subjunctification, we correlated each rater's Level of Subjunctification Ratings (LS ratings) on the 20-item Subjunctification Quiz to the average ratings provided by two expert doctoral researchers from the DES lab. Correlations ranged from $r = .54$ to $r = .80$, which suggests that the raters understood the task and agreed with the expert raters at a moderate to high level. We decided to include data from all eight raters in the main analyses.

The main portion of this study used the eight raters' ratings on the 90-items from the Subjunctification Research Module. First, to refine the data to directly compare Day 1 versus Day 4 ratings within rater and within interviewees seen in the videos, we transformed all LS ratings into z -scores within each combination of rater and interviewee. For example, Rater 1 rated three utterances from Interviewee 1/ Day 1 and three utterances from Interviewee 1/ Day 4. Z -scores were calculated among these six utterances, independent of any other raters or interviewees in the study. We then averaged the three Day 1 z -scores for Rater 1/ Interviewee 1. Similarly, we averaged the three Day 4 z -scores for Rater

1/ Interviewee 1. That allowed a direct comparison of Day 1 ratings to Day 4 ratings within Rater 1 and Interviewee 1. The same process was conducted for each crossing of Rater and Interviewee.

We then computed a dependent samples *t*-test using average Day 1 *z*-scores as our Time 1 variable and average Day 4 *z*-scores as our Time 2 variable. Because there were 15 interviewees and 8 raters, the data were arranged in 120 pairs. We had hypothesized that the raters would rate subjunctification as significantly higher for Day 1 utterances compared to Day 4 utterances. However, the dependent samples *t*-test revealed that the ratings showed no significant differences between levels of subjunctification when comparing each interviewee's Day 1 *z*-score rating ($M = 0.02, SD = 0.42$) to their Day 4 *z*-score rating ($M = -0.02, SD = 0.42$), $t(119) = 0.60, p = .550$. Mean subjunctification *z*-scores for Day 1 and Day 4 averaged within Interviewee (i.e., interviewees' mean subjunctification *z*-scores) are presented in Table 1, and mean subjunctification *z*-scores for Day 1 and Day 4 averaged within Rater are presented in Table 2. However, one limitation of this analysis is that our model violates the *t*-test assumption that observations were mutually independent. We violated this assumption because we have multiple observations from each rater and from each interviewee. Therefore, we also analyzed our data using a Repeated Measures ANOVA design, described below.

Table 1

Study 1: Interviewees' Mean Subjunctification z-scores by Day

Interviewee	Day 1		Day 2	
	Mean z-score	SD	Mean z-score	SD
1	-0.04	0.29	0.04	0.29
2	-0.35	0.31	0.35	0.31
3	0.14	0.34	-0.14	0.34
4	0.11	0.24	-0.11	0.24
5	-0.27	0.35	0.27	0.35
6	0.24	0.36	-0.24	0.36
7	-0.08	0.40	0.06	0.36
8	0.15	0.35	-0.15	0.35
9	0.65	0.18	-0.65	0.18
10	-0.30	0.27	0.30	0.27
11	-0.40	0.34	0.40	0.34
12	-0.01	0.35	0.01	0.35
13	0.30	0.48	-0.30	0.48
14	0.09	0.43	-0.09	0.43
15	0.09	0.29	-0.09	0.29
Mean	0.02	0.42	-0.02	0.42

Table 2

Study 1: Raters' Mean Subjunctification z-scores by Day

Rater	Day 1		Day 4	
	Mean z-score	SD	Mean z-score	SD
1	0.00	0.41	0.00	0.41
2	-0.02	0.44	0.02	0.44
3	0.15	0.43	-0.15	0.43
4	0.01	0.45	-0.01	0.45
5	0.11	0.43	-0.11	0.43
6	-0.05	0.49	0.03	0.48
7	0.01	0.34	-0.01	0.34
8	-0.04	0.40	0.04	0.40
Mean	0.02	0.07	-0.02	0.07

Because we violated the assumption of independence, we computed a Repeated Measures Analysis of Variance (ANOVA) to again test the primary hypothesis that Day 1 ratings would be

significantly higher than Day 4 ratings. For this analysis, we used LS ratings averaged within each Rater, Interviewee, and Day. For example, Rater 1 rated three utterances from Interviewee 1's Day 1 of sampling. Those three LS ratings were averaged to produce a Rater 1/ Interviewee 1/ Day 1 score. Similarly, the three LS ratings from Rater 1/ Interviewee 1/ Day 4 were averaged, and so forth. We used this strategy so we could observe the main effect of Rater and the interaction of Rater and Day on the average LS ratings, as well as the difference between Day 1 and Day 4. Like the previous analysis, the Repeated Measures ANOVA showed no main effect for Day, $F(1, 14) = 0.32, p = .581$, indicating that there were no significant differences between Day 1 average ratings ($M = 1.80, SD = .84$) and Day 4 average ratings ($M = 1.71, SD = .80$). There was a main effect for Rater, $F(7, 98) = 5.72, p < .001$, indicating that raters significantly differed in their average LS ratings. And finally, there was no interaction between Rater and Day, $F(7, 98) = 0.46, p = .859$, indicating that raters did not significantly vary on whether their subjunctification ratings decreased or increased across days (see Table 3 and Figure 1). As interviewees served as our subjects in these analyses, we were unable to calculate the main effect of Interviewee; however, interviewees' average LS ratings for Day 1 and Day 4 can be viewed in Table 4 and Figure 2.

Table 3

Study 1: Raters' Mean Level of Subjunctification (LS) Ratings by Day

Rater	Day 1	Day 4	SD	Difference Score (Day 4 - Day 1)
1	1.82	1.78	0.78	-0.04
2	1.91	1.93	0.90	0.02
3	1.73	1.44	0.76	-0.29
4	1.71	1.67	0.81	-0.04
5	1.40	1.09	0.91	-0.31
6	1.87	1.93	0.74	0.06
7	2.18	2.09	0.72	-0.09
8	1.78	1.71	0.68	-0.07
Mean	1.80	1.71	0.79	-0.09

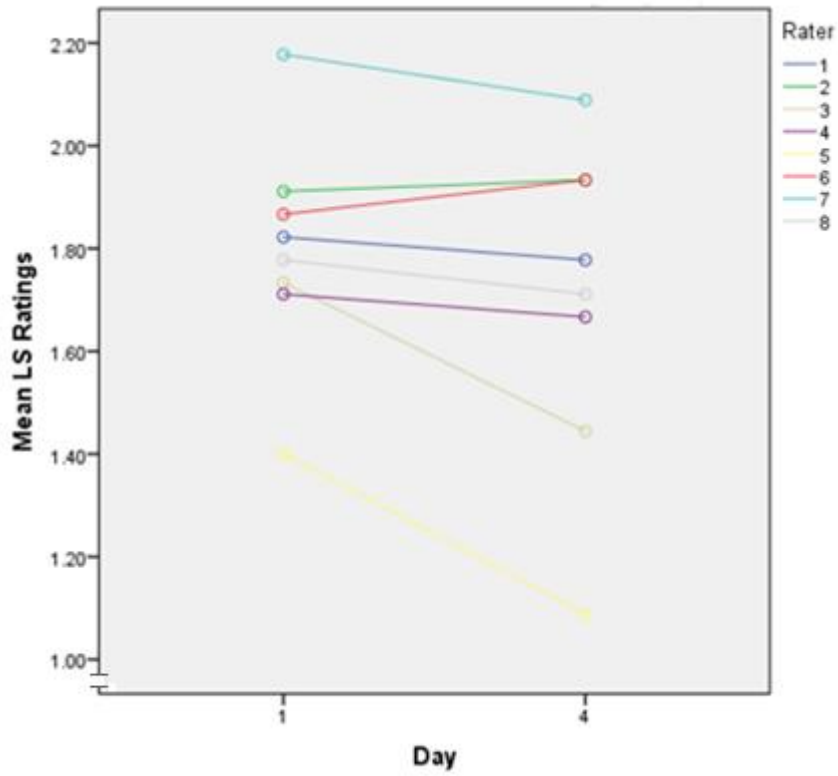


Figure 1. Study 1: Raters' mean Level of Subjunctification (LS) ratings by day. The LS ratings can range from 0 (no subjunctification) to 4 (highly subjunctified).

Table 4

Study 1: Interviewees' Mean Level of Subjunctification (LS) Ratings by Day

Interviewee	Day 1	Day 4	<i>SD</i>	Difference (Day 4 - Day 1)
1	2.67	2.75	0.93	0.08
2	0.75	1.29	0.73	0.54
3	2.38	2.04	0.52	-0.34
4	2.04	1.79	0.58	-0.25
5	1.38	1.96	0.56	0.58
6	1.50	0.96	0.67	-0.54
7	1.58	1.67	0.63	0.09
8	1.67	1.38	0.65	-0.29
9	3.25	1.58	0.62	-1.63
10	1.63	2.33	0.60	0.70
11	1.67	2.58	0.75	0.91
12	1.04	0.92	0.59	-0.12
13	2.21	1.46	0.32	-0.75
14	1.79	1.67	0.33	-0.12
15	1.46	1.21	0.33	-0.25
Mean	1.80	1.71	0.59	-0.09

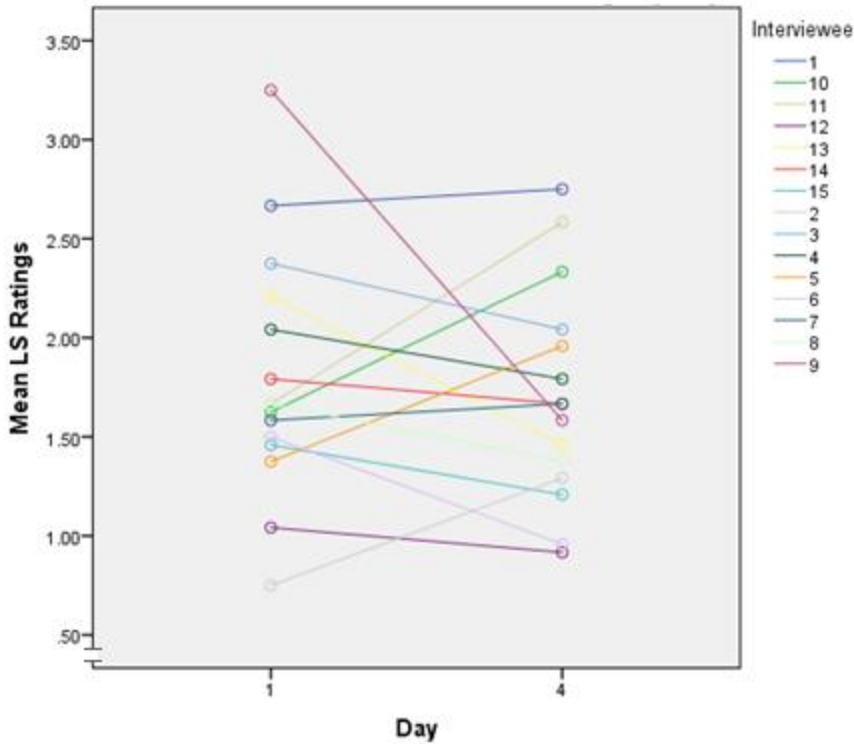


Figure 2. Study 1: Interviewees' mean Level of Subjunctification (LS) ratings by day. The LS ratings can range from 0 (no subjunctification) to 4 (highly subjunctified).

To determine the level of agreement between raters, we calculated intraclass correlation coefficients (ICC) for consistency agreement for raw LS ratings among the eight raters. The ICCs measured the degree of agreement among ratings grouped within each item. The single measures intraclass correlation coefficient for consistency agreement, ICC (C,1), which indicates whether a single rater can produce reliable ratings, was $r = .41$ ($p < .001$), indicating that raters had a low to moderate level of agreement when considered individually. The average measures intraclass correlation coefficient for consistency agreement, ICC (C,k), which indicates the reliability of average scores from all eight raters, was $r = .85$ ($p < .001$), indicating that raters had high levels of agreement in their LS ratings when considered as a group. These reliability measures indicate that multiple raters, but not single raters, produced adequately reliable LS ratings for research purposes.

Discussion

This study was an initial effort to generate empirical evidence that DES interviewees improve at accessing and describing inner experience across sampling days. In DES, interviewers observe interviewees to identify verbal and behavioral signs that the interviewee is struggling to access or describe inner experience. These signs are called subjunctification. If an interviewee's density of subjunctification during a DES interview indicates that he or she is struggling to access or describe inner experience, a skilled DES interviewee should subjunctify less often than an unskilled DES interviewee. Furthermore, if a DES interviewee builds skills across multiple sampling days, the interviewee should subjunctify less frequently on the fourth day of sampling compared to the first day of sampling.

To measure this relation, we trained research assistants from an outside psychology lab who were generally naïve to DES to identify subjunctification and rate levels of subjunctification in DES interviews; in this study these research assistants are called the “raters.” Training involved reading a brief essay on subjunctification and completing an online training tutorial (Training portion). We then tested the raters' understandings of the concept by comparing their ratings on a 20-item video quiz to ratings provided by two expert DES investigators (Quiz portion). We then instructed the raters to view video clips from DES interviews randomly selected from first and fourth days of sampling and to rate the interviewee's level of subjunctification in each video (Research portion).

Results from the 20-item quiz indicate that each of the raters understood the task and completed the task with a moderate to high level of agreement with the experts. From this, we conclude that the brief essay and training program prepared for this study accurately convey a basic understanding of subjunctification to users naïve to DES.

Results from the Research portion of the study indicate that the raters observed no significant differences in levels of subjunctification between the fourth day of sampling and the first day of sampling. These results were contrary to our hypothesis and give rise to multiple possible explanations, to which we now turn.

These results suggest that subjunctification does not decrease across sampling interviews. There are three potential explanations. First, DES is not effective at building skill when describing experience: subjunctification does not diminish because the interviewees' ability to access and describe inner experience does not improve between the first and fourth sampling days. Perhaps DES does not work; or perhaps three days of sampling is insufficient to train DES interviewees due to the difficulty and novelty of the task.

Second, this study is not adequate: this study may have failed to detect differences in subjunctification for a variety of procedural reasons. Perhaps the training provided to the research assistants was insufficient for them to reliably rate a difference in subjunctification between days. Also, though the quiz results indicated that all research assistants correlated moderately to highly with the experts, the 20 items on that quiz were specifically selected to be clear examples. In contrast, the videos in the research portion were randomly selected, and many may have been ambiguous regarding subjunctification for a variety of reasons. For example, the context of the utterance was not provided, and often the videos were brief, sometimes including only two or three word 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.

Third, DES is effective at building skill when describing experience, but subjunctification density does not measure DES skill: even though DES interviewees' ability to apprehend and describe inner experience *does* improve, that improvement is not reflected in a decrease in subjunctification. As Hurlburt (2011b) described, there are multiple reasons why a DES interviewee might subjunctify, including feeling embarrassed, struggling to find the words, or because this is a typical feature of that individual's speech. For example, an interviewee who subjunctifies commonly in normal speech would likely be rated as highly subjunctified in both the first and fourth days of sampling, regardless of whether apprehending and describing experience improved.

This third explanation is supported by DES investigators who report based on casual observation that DES interviewees improve in their ability to apprehend and describe experience across multiple

training days. Likewise, DES interviewees often report increased skill at DES and increased understanding of their own inner experience across multiple sampling days (Turner, 2015). However, such reports are retrospective and perhaps self-serving, and so should not be accepted at face value.

We chose to study subjunctification 1) because Hurlburt (2011a) claims that interviewees subjunctify when they are not skilled at apprehending inner experience. The results of study 1 suggest that lack-of-skill-implies-subjunctification might be an oversimplification: interviewees may subjunctify for a variety of reasons or than lack of skill in apprehending inner experience. As explained in the Literature Review, subjunctification may also occur when an interviewee apprehends experience in high fidelity but is embarrassed to describe that experience, struggles to find accurate words to describe that experience, or characteristically subjunctifies frequently in everyday speech (Hurlburt 2011a). Furthermore, interviewees may subjunctify when they have no experience to report (experience was absent at the moment of the beep or is characteristically absent) and therefore reporting on experience is an impossible task. Considering these confounds, study 1's finding of low relationship between subjunctification and day may be that the result of only a small portion of subjunctification being due to low skill at apprehending experience.

Thus, it is possible that the study 1 interviewees did in fact increase in skill at apprehending experience, but that level of subjunctification alone is a weak indicator of skill. We designed Study 2 to assess interviewee skill at apprehending inner experience more directly.

Chapter 3: Study 2

Considering that Study 1 revealed no significant difference between levels of subjunctification on the first and fourth sampling days, we designed Study 2 to test a similar hypothesis regarding changes in DES interviewees' skills across sampling days. In Study 2, we asked experienced DES investigators to view the same fragments of DES interviews presented in Study 1, though we asked them to rate how well the interviewee apprehended experience instead of levels of subjunctification. We hypothesized that interviewees would be rated as having less apprehension of experience on the first day of sampling compared to the fourth day of sampling, which would support the idea that DES interviewee's gain skill at providing high fidelity accounts of inner experience across subsequent interviews.

Method

Interviewees. Interviewees in Study 2 were the same 15 interviewees used in Study 1.

Raters. Raters in Study 2 were five experienced DES investigators, including the developer of the DES method (i.e., Russell T. Hurlburt), two doctoral level DES investigators, and two graduate students in the DES lab. Experience with DES ranged from 3 to 40 years.

Measure: Access to Experience Research Module (AERM). This study used a slightly modified version of the Subjunctification Research Module (SRM), which I refer to as the AERM. The AERM includes the same 90 randomly-ordered videos of DES interview fragments as the SRM and presents these videos in the same online framework. However, the AERM omits the SRM's instructional video and instead of asking the users to rate levels of subjunctification, the AERM asks users to rate the interviewee's "access to experience" (AE ratings) on a 5-point scale (0 is "no access" and 4 is "high access"). We defined "access to experience" as the interviewee's broad ability to apprehend and describe inner experience phenomena in the DES interview. Users of the AERM recorded their responses on the response form provided.

Procedure. One rater, Russell T. Hurlburt, completed the AERM on two separate occasions, once in his office and once in the DES lab, prior to administering the AERM to our other DES raters. Dr. Hurlburt's pairs of ratings for each item were averaged to produce only one score for Dr. Hurlburt on

each of the 90 items. Our other DES raters were asked to participate during the course of a lab meeting and were informed that the task would take one hour or less of their time. Rating was scheduled during a weekly lab meeting to ensure availability. Raters were assigned to complete the AERM on lab computers, which each contained the AERM software with one of the two randomly ordered versions. After completing the task, raters were free to ask questions about the study and to comment on the procedure.

Results

First, to refine the data to directly compare Day 1 versus Day 4 ratings within rater and within interviewee, we transformed all AE ratings into z -scores within each rater and interviewee pair. This transformation process is identical to that used in Study 1 except that AE ratings were used instead of LS ratings.

As in Study 1, we then conducted a dependent samples t -test using average Day 1 z -scores as our Time 1 variable and average Day 4 z -scores as our Time 2 variable. Because there were 15 interviewees and five raters, the data were arranged in 75 pairs. I hypothesized that the raters would rate Day 4 access to experience as significantly higher for Day 4 utterances compared to Day 1 utterances—that is, interviewees would acquire skill at apprehending and describing experience across the sampling days. Consistent with the hypothesis, the dependent samples t -test showed a significant difference in AE ratings when comparing each Day 4 average z -score rating ($M = 0.19$, $SD = 0.41$) to the paired Day 1 average z -score rating ($M = -.19$, $SD = 0.41$), $t(74) = 3.98$, $p < .001$, indicating that DES interviewees were seen as having greater skill at apprehending and describing experience on Day 4 compared to Day 1. Mean access to experience z -scores for Day 1 and Day 4 averaged within Interviewee are presented in Table 5, and mean access to experience z -scores for Day 1 and Day 4 averaged within Rater are presented in Table 6. However, one limitation of this analysis is that our model violates the assumption that observations were mutually independent. We violated this assumption by having multiple observations from each rater

and from each interviewee. Therefore, we also analyzed our data using a Repeated Measures ANOVA design, described below.

Table 5

Study 2: Interviewees' Mean Access to Experience z-scores by Day

Interviewee	Day 1		Day 4	
	Mean z-score	SD	Mean z-score	SD
1	-0.30	0.35	0.30	0.35
2	-0.03	0.50	0.03	0.50
3	-0.47	0.25	0.47	0.25
4	0.11	0.46	-0.11	0.46
5	-0.19	0.19	0.19	0.19
6	-0.61	0.36	0.61	0.36
7	-0.24	0.47	0.24	0.47
8	-0.27	0.40	0.27	0.40
9	-0.40	0.21	0.40	0.21
10	0.10	0.18	-0.10	0.18
11	0.26	0.07	-0.26	0.07
12	0.14	0.35	-0.14	0.35
13	-0.43	0.32	0.43	0.33
14	-0.46	0.37	0.46	0.37
15	-0.03	0.44	0.03	0.44
Mean	-0.19	0.27	0.19	0.27

Table 6

Study 2: Raters' Mean Access to Experience z-scores by Day

Rater	Day 1		Day 4	
	Mean z-score	SD	Mean z-score	SD
1	-0.42	0.42	0.42	0.42
2	-0.11	0.40	0.11	0.40
3	-0.32	0.42	0.32	0.42
4	-0.05	0.38	0.05	0.38
5	-0.03	0.31	0.04	0.31
Mean	-0.19	0.17	0.19	0.17

Just as in Study 1, we also computed a Repeated Measures ANOVA using data from the DES raters to test the hypothesis that Day 4 AE ratings would be significantly lower than Day 1 AE ratings. For this analysis, we used ratings averaged within each Rater, Interviewee, and Day, using the same procedure described in Study 1 for the Repeated Measures ANOVA analysis. Like the dependent samples *t*-test described in the previous paragraph, the Repeated Measures ANOVA revealed a main effect for day such that AE ratings on Day 4 ($M = 2.49, SD = .82$) were significantly higher than AE ratings for Day 1 ($M = 2.07, SD = .65$), $F(1, 14) = 7.51, p = .016$, suggesting that DES interviewees more skillfully apprehended and described experience on Day 4 compared to Day 1. There was also a significant main effect for Rater, $F(4, 56) = 4.80, p = .002$, indicating that raters significantly differed in their average AE ratings. Furthermore, there was a significant interaction between Rater and Day, $F(4, 56) = 3.04, p = .024$; although all raters increased their AE ratings across days, the increases were larger for some raters than others (see Table 7 and Figure 3). Because interviewees served as our subjects in these analyses, we were unable to calculate the main effect of Interviewee; however, interviewees' average AE ratings for Day 1 and Day 4 can be viewed in Table 8 and Figure 4.

Table 7

Study 2: Raters' Mean Access to Experience (AE) Ratings by Day

Rater	Day 1	Day 4	SD	Difference Score (Day 4 - Day 1)
1	1.89	2.73	0.83	0.84
2	2.09	2.44	0.69	0.35
3	1.87	2.60	0.88	0.73
4	1.91	2.02	0.67	0.11
5	2.58	2.63	0.66	0.05
Mean	2.07	2.48	0.74	0.41

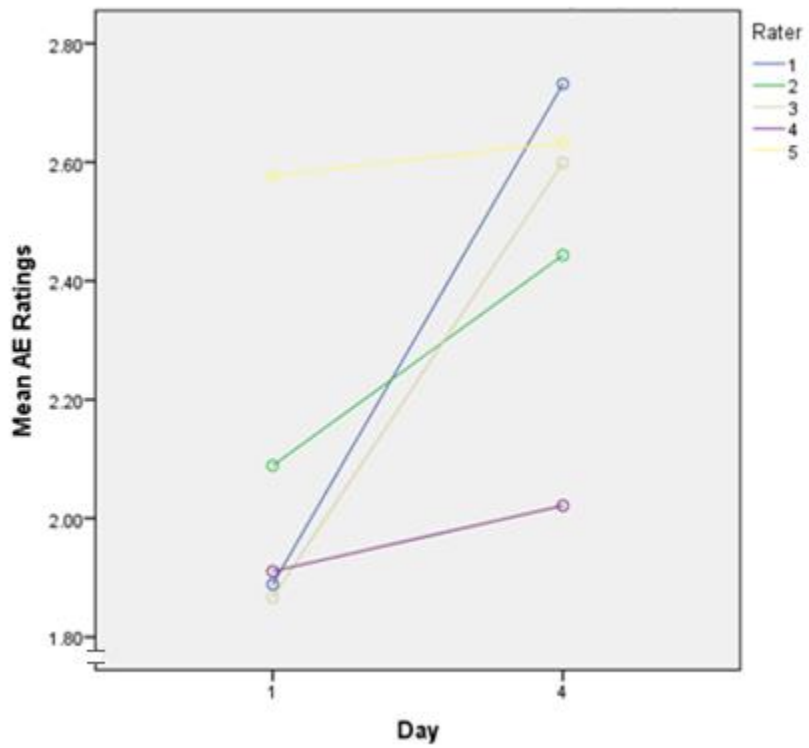


Figure 3. Study 2: Raters' mean Access to Experience (AE) Ratings by Day. The AE ratings can range from 0 (no access) to 4 (high access).

Table 8

Study 2: Interviewee's Mean Access to Experience (AE) Ratings by Day

Interviewee	Day 1	Day 4	<i>SD</i>	Difference (Day 4 - Day 1)
1	1.70	2.40	0.66	0.70
2	3.10	3.10	0.63	0.00
3	1.57	2.57	0.49	1.00
4	2.37	2.23	0.46	-0.14
5	2.20	2.67	0.50	0.47
6	1.90	3.10	0.54	1.20
7	1.93	2.40	0.45	0.47
8	2.17	2.80	0.58	0.63
9	1.47	2.33	0.49	0.86
10	1.70	1.43	0.50	-0.27
11	2.53	1.97	0.50	-0.56
12	3.07	2.73	0.66	-0.34
13	1.20	2.47	0.40	1.27
14	1.53	2.50	0.51	0.97
15	2.57	2.60	0.47	0.03
Mean	2.07	2.49	0.52	0.42

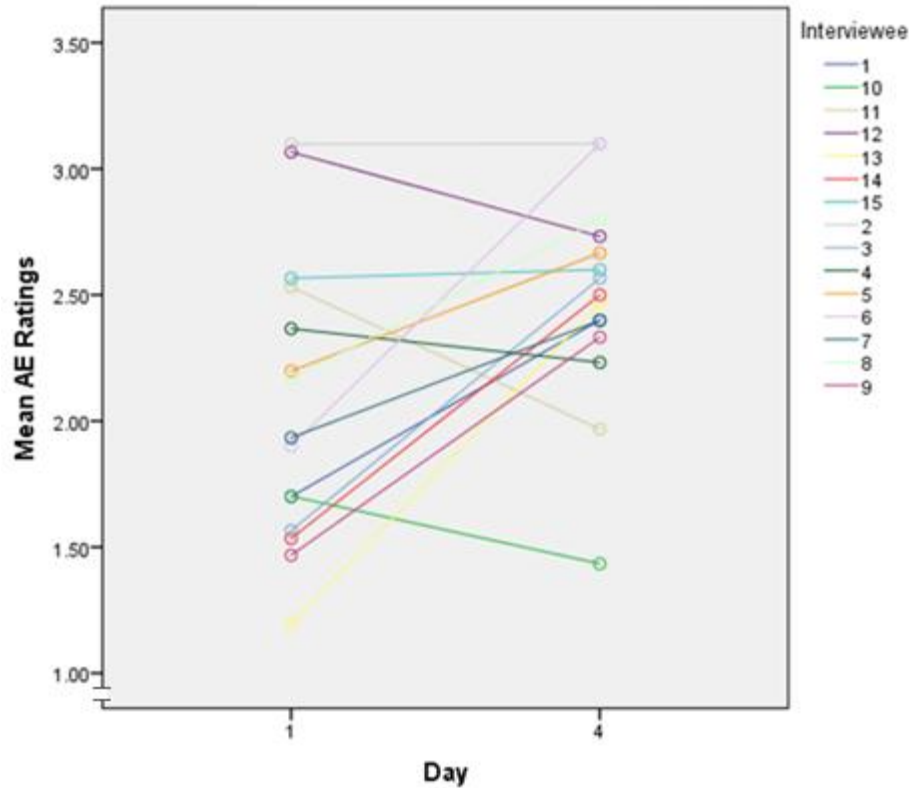


Figure 4. Study 2: Interviewee’s mean Access to Experience (AE) Ratings by Day. The AE ratings can range from 0 (no access) to 4 (high access).

As in Study 1, to determine the level of agreement between raters, we calculated the Intraclass Correlation Coefficient (ICC) for Consistency Agreement for raw AE ratings among the five raters. The ICC measured the degree of agreement among ratings grouped within each item. The single measures ICC (C,1), indicating whether a single rater can produce reliable ratings, was $r = .36$ ($p < .001$), indicating that raters had at a low to moderate level of agreement when considered individually. The average measures ICC (C,k), indicating reliability of average scores from all five raters, was $r = .74$ ($p < .001$), indicating that raters had moderate to high levels of agreement in their AE ratings when considered as a group. These reliability measures indicate that multiple raters, but not single raters, produced adequately reliable AE ratings for research purposes.

Discussion

Study 1 showed no decrease in subjunctification across sampling days, perhaps because 1) subjunctification is an inadequate indicator of low access to experience; or 2) research assistants naïve to DES were unable to adequately rate subjunctification after only one hour of training. Therefore, Study 2 differed from Study 1 in two ways: raters were doctoral investigators and graduate students experienced at DES, and raters were asked to rate access to experience rather than levels of subjunctification. Study 2 raters rated access to experience significantly higher on Day 4 compared to Day 1, suggesting that DES interviewees improve at apprehending and describing inner experience across sampling days (even though their level of subjunctification does not change). This finding is supplemented by a moderate to high average Intraclass Correlation Coefficient observed for the average ratings from the five raters in Study 2.

Some limitations of Study 2 regard the raters used. First, three of the five raters (Raters 1, 2, and 3 in the DES data set) had been present for some of the original interviews depicted in the 90 video items. Though the original interview took place between one and three years prior to the rating task, those three raters may have recalled additional information about those interviewees or interviews that was unavailable to other DES or RA raters; in particular, those raters may have recalled which day a sample was taken from, though the Day condition was intended to be blind. The additional information may have influenced ratings; indeed, Raters 1, 2, and 3 observed the greatest effects of Day on AE ratings, though all five raters observed access to experience to increase from Day 1 to Day 4. Second, two of the five raters (Raters 1 and 2 in the DES data set) were aware of the main hypothesis that access to experience increases from Day 1 to Day 4, which may also have influenced ratings. Third, Raters 1 and 2 are also by far the most experienced DES investigators. They had two of the three greatest increases in rated access to experience. DES experience/skill is a factor that needs further exploration.

Chapter 4: Conclusions

These studies were an initial effort to validate the perspective among DES investigators that apprehending and describing inner experience requires iterative training. In Study 1, we trained raters (research assistants naïve to DES) to rate levels of subjunctification (i.e., verbal and behavioral indicators of uncertainty or difficulty when describing experience) in 90 brief fragments of DES interviews. These raters were blind to the condition that half of the videos (randomly arranged) showed a DES interviewee on their first day of sampling and half showed a DES interviewee on the fourth day of sampling. We hypothesized that between Day 1 and Day 4 of sampling, as the interviewees gained practice and skill at apprehending and describing their inner experience, their levels of subjunctification would decrease. However, our analyses showed no significant differences. We concluded either (a) that DES may not be effective at training interviewees to apprehend and describe experience; (b) that the study was not adequate to detect differences for procedural reasons; or (c) that DES is effective but subjunctification does not adequately measure the skills developed by DES interviewees across multiple sampling days.

Study 2 was designed to explore explanation (c): if DES is effective in increasing skill (even though density of subjunctification does not change as skill is acquired), then we need another method of capturing an interviewee's skill increase between Day 1 and Day 4. Therefore, in Study 2, we asked experienced doctoral investigators and graduate students from the DES lab to view the same 90 videos and rate what we called "access to experience" (i.e., the broad ability to apprehend and describe inner experience in the DES interview) instead of subjunctification. As in Study 1, raters were blind to whether each video contained Day 1 or Day 4 footage. Our Study 2 analyses showed that, consistent with our hypothesis, interviewees were rated as having significantly higher access to experience on Day 4 compared to Day 1, suggesting that interviewees increased their skills at apprehending and describing inner experience. Thus, Study 2 suggests that potential Study 1 explanation (c) is to be preferred over explanations (a) and (b).

Whereas other experience sampling and thought sampling methods (e.g., the Experience Sampling Method [ESM; Csikszentmihalyi, Larson, & Prescott, 1977], Ecological Momentary

Assessment [EMA; Shiffman & Stone, 1998], Articulated Thoughts in Simulated Situations [ATSS; Davison, Robins, & Johnson, 1983]) presume that research participants can accurately report on experience with minimal training and no iterative skill building (see Brouwers, 2015, for a review of experience sampling methods), the DES method emphasizes the need for continual, painstaking efforts to guide interviewees toward apprehending and describing inner experience. The results of Study 2 support that claim.

In the area of inner experience research, the research participant's ability to apprehend inner experience is an essential skill, regardless of the data collection format (e.g., interview, questionnaire, diary, etc.). If a participant does not have clear apprehension of his or her experience or indeed has a different understanding than the researcher about what inner experience is, the data collected from that participant are what Hurlburt and Heavey (2015) call "some impure and messy mixture of at-the-moment pristine inner experience and unexamined-but-substantial presuppositions about participants' own and others' inner experience" (p. 157). The participant and researcher then miscommunicate and do not acquire a shared understanding of the target experience. Participants need guidance when learning how to apprehend and describe inner experience. Study 2 is evidence that the iterative process indeed increases participants' abilities to apprehend and describe experience in the DES interview.

Limitations

The Discussion section of Study 1 identified three possible explanations about why Study 1 showed that subjunctification does not substantially decrease across sampling days: that DES is not effective at building skill in describing experience, that the study was not procedurally adequate to detect a skill increase, and that subjunctification is not a good measure of DES ability. Study 2 supported the third alternative. However, changes to the design of Study 1 would perhaps yield positive results in a future study. For example, rather than a one hour training with a short essay and a video, a more extensive training about inner experience research and DES may further explain the purpose of identifying subjunctification and help raters provide better ratings. Should raters view full DES

interviews or participate themselves in DES for training, they may learn to be more sensitive to rating subjunctification, particularly verbal subjunctifiers that are more complex to rate. If DES interviewees and DES investigators benefit from an iterative training process, subjunctification raters may also benefit from an iterative training technique.

The video selection process used for the SRM and AERM may also have been suboptimal for this project. We considered multiple factors when devising this selection process. As this project was originally focused directly on interviewee subjunctification, we wanted minimal influences of other factors such as unclear or leading interviewer questions and the tone of the interviewer's voice. As such, video clips were context free, including only the interviewee's response randomly chosen according to the time stamp on the video. However, context may be an important indicator about whether a response contains high or low subjunctification, and perhaps context should have been included. Another approach could have been showing the interviewee's initial response immediately after the first question of the interview, which in DES is always some form of, "What, if anything, was going on in your experience at the moment of the beep?" This would provide a much more standardized context for the interviewee's response.

The context-free video approach may have been even more problematic for the DES lab members who were rating access to experience. Whereas subjunctification, in its strict behavioral and verbal definition, is an operationalized variable, access to experiences is much more difficult to operationalize. Indeed, DES lab members were merely instructed to rate the interviewees' access to experience without specific instructions on how to form that judgment other than experience with the method and intuition. When compared to subjunctification, judgments on access to experience likely relied much more on the content of the interviewee's words than on specific behaviors or verb tenses. As such, especially short utterances or utterances whose meaning relied on the context of the conversation were likely impossible to rate consistently; DES lab members did, in fact, comment informally on the difficulty of rating those types of items.

And finally, while we generally conclude that Access to Experience was rated higher on Day 4 compared to Day 1 because interviewees increased skill at DES, there are alternative explanations why interviewees appeared more skilled on Day 4. First, it may be that the interviewers, rather than the interviewee, increased their skills at DES. For example, DES interviewers must learn to cleave to experience, recognize and respond to subjunctification, and undermine presuppositions, and the abilities to do so with a particular interviewee may increase across days. Second, it may be that the developing relationship between the interviewers and interviewee influenced the process. For example, both parties have likely become more accustomed to the others' communication style, they have likely become more comfortable together, and perhaps interviewees are more willing to share details of their inner experience and less likely to be embarrassed at doing so as rapport builds. Third, the DES method, by requiring the interviewee to iteratively sample inner experience and discuss it in an interview, may actually have changed the interviewee's *inner experience itself* rather than the interviewee's skill at apprehending and describing it (see Hurlburt & Heavey, 2006). If inner experience changes to become more clear or straightforward, it would naturally be easier for the interviewee to describe inner experience in the DES interview. The fourth and most likely reason is a combination of all these factors: indeed, when Hurlburt (2011a) describes the iterative nature of DES, he suggests that both the interviewee and interviewer build skill from multiple iterations of the DES interview. Therefore, though Study 2 likely identifies some element of interviewee skill building, improved descriptions of inner experience on Day 4 compared to Day 1 may not only be due to changes in the interviewees' skills.

Future Directions

Experience sampling as a research paradigm has much work ahead in order to justify it as a valid, empirical line of psychological research. DES, a primarily qualitative approach, at times blends art together with science in the skillful ways DES investigators cleave to pristine inner experience in DES interviews. This study sought to validate a central tenet of DES, that the process requires iterative training in order to collect high fidelity accounts of inner experience from DES interviewees. Additional studies in DES and other experience sampling methods should seek to validate these methods of

researching psychological topics, as doing so may broaden the exposure of inner experience results to the psychological community.

Specific to DES, investigators should look for other ways to empirically support the claim that the DES method improves an interviewee's ability to apprehend and describe inner experience. Methods can include observing other behavioral and verbal differences between Day 1 and Day 4, including times interviewers intervene to redirect the interviewee toward experience; times interviewees contradict themselves; comparing language in written descriptions of the beeps to note when DES investigators or DES interviewees were uncertain about content described in the interview; and comparing the duration of beep discussions across days as indicators of directness (short duration) or ambiguity (long duration) in the experience discussed. Other ways to validate DES participation as a skill include comparing DES skill ratings to other variables that may relate to these skills, such as verbal abilities, level of education, or expertise at tasks requiring keen awareness of one's body or one's environment (e.g., athletes, dancers, artists, photographers, etc.); likewise, future studies may test whether taking part in mindfulness training or other meditation practices would increase an interviewee's apprehension of experience. Direct, momentary inner experience is a unique construct in psychology, and inner experience researchers should continually seek to justify their efforts through empirical means.

Appendix A: Utterance Selection

This table shows our process for selecting the utterances depicted in each item on the Subjunctification Research Module (SRM) and Access to Experience Research Module (AERM). Here is a description of each columns:

- The Item column lists the item numbers (1 through 90).
- The Interviewee column lists which of the 15 interviewees was shown in that item.
- The Day column shows which day of sampling the utterance was taken from (Day 1 or Day 4).
- The Sample column shows from which beep sample within that interviewee and day the utterance was taken (Sample 1, 2, or 3).
- The Sample Length column shows how long the interview of that sample took to complete, in seconds.
- The Random Interval column shows the randomly ordered time interval (20%, 50%, or 80% into the interview of that sample) assigned to that item to guide utterance selection.
- The Target Seconds into Interval column multiplies the Sample Length by the Random Interval to find how many seconds elapsed into the interview before the utterance was selected for that item.
- The Target Minutes into Interval column is a simple conversion of Target Seconds into Interval from seconds to minutes.
- The Length of Utterance column shows how long the selected utterance lasted, in seconds.
- The Selection Description column is a narrative description of how the actual utterance was selected after viewing the target moment in that particular sample. The narrative description describes how the selection rules were followed (see SRM section for a description of the selection rules).

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
1	1	1	1	318	0.8	254	4:14	4:20-4:35	15	Interviewer talking at 4:14. Subject's next utterance at 4:20.
2	1	1	2	586	0.2	117	1:57	1:38-2:11	33	Subject talking at 1:57. Backed up to start of utterance at 1:38, goes until 2:11.
3	1	1	3	949	0.5	475	7:55	7:24-7:57	33	Subject talking at 7:55. Backed up to start of utterance at 7:24, goes until 7:57.
4	1	4	1	557	0.5	279	4:39	5:19-5:37	18	Subject talking at 4:39, utterance interrupted by interviewer, next utterance at 5:19 was used.
5	1	4	2	214	0.8	171	2:51	3:05-3:32	27	Interviewer talking at 2:51, next utterance interrupted by interviewer, next utterance at 3:05.
6	1	4	3	386	0.2	77	1:17	1:02-1:31	29	Subject talking at 1:17, backed up to beginning of utterance at 1:02.
7	2	1	1	617	0.2	123	2:03	2:05-2:10	5	Interviewer talking at 2:03, subject's next utterance at 2:05.
8	2	1	2	192	0.8	154	2:34	2:41-2:49	7	Interviewer talking at 2:34, subject's next utterance at 2:49.
9	2	1	3	348	0.5	174	2:54	3:02-3:04	2	Subject incoherent at 2:54, next clear utterance at 3:02.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
10	2	4	1	618	0.8	494	8:14	8:18-8:23	5	Interviewer talking at 8:14, next subject utterance at 8:18.
11	2	4	2	391	0.5	196	3:16	3:24-3:34	10	Interviewer talking at 3:16, next subject utterance is one word, next utterance at 3:24.
12	2	4	3	446	0.2	89	1:29	1:50-2:04	14	Interviewer talking at 1:29, next subject utterance is one word, next utterance is interrupted, next utterance at 1:50.
13	3	1	1	867	0.5	434	7:14	7:07-7:15	8	Subject talking at 7:14, utterance began at 7:07.
14	3	1	2	809	0.2	162	2:42	2:38-2:44	6	Subject talking at 2:42, backed up to beginning at 2:38.
15	3	1	3	669	0.8	535	8:55	8:40-8:58	18	Subject talking at 8:55, backed up to beginning at 8:40.
16	3	4	1	793	0.8	634	10:34	10:35-10:50	15	Interviewer talking at 10:34, next subject utterance began at 10:35.
17	3	4	2	925	0.5	463	7:43	7:33-7:49	16	Subject talking at 7:43, backed up to beginning at 7:33.
18	3	4	3	550	0.2	110	1:50	1:52-1:59	7	Interviewer talking at 1:50, next subject utterance at 1:52.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
19	4	1	1	564	0.8	451	7:31	7:59-8:12	13	Subject talking at 7:31, interrupted by interviewer, next two utterances are one word, next utterance at 7:59.
20	4	1	2	487	0.5	244	4:04	4:13-4:15	2	Interviewer talking at 4:04, next utterance one word, next utterance at 4:13.
21	4	1	3	453	0.2	91	1:31	1:37-1:48	11	Interviewer talking at 1:31, next utterance at 1:37.
22	4	4	1	331	0.8	265	4:25	4:22-4:28	6	Subject talking at 4:25, backed up to start of utterance at 4:22.
23	4	4	2	271	0.2	54	0:54	0:45-0:58	13	Subject talking at 0:54, backed up to start of utterance at 0:45.
24	4	4	3	294	0.5	147	2:27	2:11-2:38	27	Subject talking at 2:27, backed up to start of utterance at 2:11.
25	5	1	1	439	0.2	88	1:28	2:09-2:15	6	Interviewer talking at 1:28, next utterance at 1:31, subject and camera obscured, next utterance at 2:09.
26	5	1	2	236	0.8	189	3:09	2:52-3:11	19	Subject talking at 3:09, starts at 2:52.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
27	5	1	3	281	0.5	141	2:21	2:14-2:28	14	Subject talking at 2:21, starts at 2:14.
28	5	4	1	329	0.5	165	2:45	2:54-3:20	26	Silence at 2:45, then interviewer talked, next utterance at 2:54.
29	5	4	2	357	0.8	286	4:46	4:36-4:56	20	Subject talking at 4:46, starts at 4:36.
30	5	4	3	289	0.2	58	0:58	0:05-1:08	63	Subject talking at 0:58, starts at 0:05.
31	6	1	1	623	0.5	312	5:12	5:25-5:58	33	Interviewer talking at 5:12, next utterance at 5:25.
32	6	1	2	320	0.8	256	4:16	4:38-4:54	16	Subject talking at 4:16, interrupted by interviewer, next utterance incomprehensible, next utterance at 4:38.
33	6	1	3	282	0.2	56	0:56	1:17-1:22	5	Interviewer talking at 0:56, next two utterances interrupted, next utterance at 1:17.
34	6	4	1	294	0.8	235	3:55	4:16-4:18	2	Interviewer talking at 3:55, next utterance one word, next utterance incomprehensible, next utterance at 4:16.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
35	6	4	2	388	0.5	194	3:14	3:57-4:02	5	Interviewer talking at 3:14, next few utterances interrupted, next uninterrupted at 3:57.
36	6	4	3	581	0.2	116	1:56	1:54-2:02	8	Subject talking at 1:56, starts at 1:54.
37	7	1	1	385	0.8	308	5:08	4:48-4:49	1	Interviewer talking at 5:08, next utterances until end are one word, first utterance before target starts at 4:48.
38	7	1	2	404	0.2	81	1:21	1:28-1:32	4	Interviewer talking at 1:21, next utterance at 1:28.
39	7	1	3	614	0.5	307	5:07	5:04-5:09	5	Subject talking at 5:07, starts at 5:04.
40	7	4	1	123	0.2	25	0:25	0:27-0:30	3	Interviewer talking at 0:25, next utterance at 0:27.
41	7	4	2	140	0.5	70	1:10	1:33-1:38	5	Silence at 1:10, next utterance incomprehensible, next utterance at 1:33.
42	7	4	3	444	0.8	355	5:55	6:01-6:05	4	Interviewer talking at 5:55, next utterance at 6:01.
43	8	1	1	840	0.5	420	7:00	7:00-7:29	29	Subject starts utterance at 7:00.
44	8	1	2	737	0.2	147	2:27	2:05-2:30	25	Utterance started at 2:05, overlapped 2:27.
45	8	1	3	677	0.8	542	9:02	9:05-9:08	3	Interviewer talking at 9:02, next utterance at 9:05.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
46	8	4	1	668	0.8	534	8:54	9:06-9:09	3	Interviewer talking at 8:54, next utterance at 9:06.
47	8	4	2	310	0.2	62	1:02	1:07-1:09	2	Interviewer talking at 1:02, next utterance at 1:07.
48	8	4	3	398	0.5	199	3:19	3:14-3:23	9	Subject starts utterance at 3:14, overlapped 3:19.
49	9	1	1	871	0.8	697	11:37	11:56-12:26	30	Interviewer talking at 11:37, next utterance at 11:56.
50	9	1	2	923	0.2	185	3:05	3:32-3:50	18	Subject talking at 3:05, interrupted by interviewer, next utterance at 3:32.
51	9	1	3	254	0.5	127	2:07	2:15-2:34	19	Interviewer talking at 2:07, next utterance at 2:15.
52	9	4	1	1053	0.2	211	3:31	3:36-3:44	8	Interviewer talking at 3:31, next utterance one word, next utterance at 3:36.
53	9	4	2	307	0.5	154	2:34	2:35-2:38	3	Interviewer talking at 2:34, next utterance at 2:35.
54	9	4	3	609	0.8	487	8:07	7:58-8:12	14	Subject talking at 8:07, starts at 7:58.
55	10	1	1	580	0.2	116	1:56	2:18-2:21	3	Interviewer talking at 1:56, next utterance at 2:18.
56	10	1	2	635	0.8	508	8:28	8:48-8:51	3	Interviewer talking at 8:28, next utterance at 8:51.
57	10	1	3	398	0.5	199	3:19	3:09-3:31	22	Subject talking at 3:19, starts at 3:09.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
58	10	4	1	473	0.2	95	1:35	1:51-2:07	18	Interviewer talking at 1:35, next utterance at 1:51.
59	10	4	2	128	0.5	64	1:04	1:06-1:08	2	Interviewer talking at 1:04, next utterance at 1:06.
60	10	4	3	609	0.8	487	8:07	8:20-8:33	13	Interviewer talking at 8:07, next utterance at 8:20.
61	11	1	1	635	0.5	318	5:18	5:19-5:30	11	Silence at 5:18, utterance starts at 5:19.
62	11	1	2	382	0.8	306	5:06	5:32-5:42	10	Interviewer talking at 5:06, next 3 utterances are one word, next utterance at 5:32.
63	11	1	3	848	0.2	170	2:50	2:57-3:03	6	Interviewer talking at 2:50, next utterance at 2:57.
64	11	4	1	188	0.2	38	0:38	0:43-0:56	13	Interviewer talking at 0:38, next utterance at 0:43.
65	11	4	2	898	0.5	449	7:29	8:32-8:46	14	Interviewer talking at 7:29, conversation is not about the beep, resumes at 8:32.
66	11	4	3	601	0.8	481	8:01	7:58-8:02	4	Subject talking at 8:01, starts at 7:58.
67	12	1	1	373	0.2	75	1:15	1:13-1:17	4	Subject talking at 1:15, starts at 1:13.
68	12	1	2	434	0.5	217	3:37	4:02-4:03	1	Interviewer talking at 3:37, next utterance is one word, next utterance is not about the beep, next utterance at 4:02.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
69	12	1	3	157	0.8	126	2:06	2:13-2:22	9	Interviewer talking at 2:06, next utterance at 2:13.
70	12	4	1	262	0.5	131	2:11	2:08-2:11	3	Subject talking at 2:11, starts at 2:08.
71	12	4	2	252	0.8	202	3:22	3:36-3:40	4	Interviewer talking at 3:22, next two utterances are one word, next utterance at 3:36.
72	12	4	3	325	0.2	65	1:05	1:25-1:33	8	Interviewer talking at 1:05, next utterance incoherent, next utterance at 1:25.
73	13	1	1	312	0.2	62	1:02	1:02-1:16	14	Subject talking at 1:02, starts at 1:02.
74	13	1	2	333	0.5	167	2:47	2:57-3:11	14	Interviewer talking at 2:47, next utterance at 2:57.
75	13	1	3	230	0.8	184	3:04	2:34-2:45	11	Interviewer talking at 3:04, next utterance is overlapped by interviewer, no other utterances through end of beep. First utterance prior to 3:04 is 2:34.
76	13	4	1	207	0.2	41	0:41	0:48-0:50	2	Interviewer talking at 0:41, next utterance at 0:48.
77	13	4	2	159	0.5	80	1:20	1:15-1:20	5	Subject talking at 1:20, starts at 1:15.
78	13	4	3	213	0.8	170	2:50	3:04-3:13	9	Interviewer talking at 2:50, next utterance interrupted, next utterance at 3:04.

Item	Interviewee	Day	Sample	Sample Length (seconds)	Random Interval	Target Seconds into Interval	Target Minutes into Interval	Actual Utterance Used	Length of Utterance (seconds)	Selection Description
79	14	1	1	1037	0.8	830	13:50	13:51-13:52	1	Silence at 13:50, next subject utterance at 13:51.
80	14	1	2	198	0.2	40	0:40	0:04-1:08	64	Subject talking at 0:40, starts at 0:04.
81	14	1	3	342	0.5	171	2:51	2:50-3:12	22	Subject talking at 2:51, starts at 2:50.
82	14	4	1	504	0.8	403	6:43	6:57-7:00	3	Interviewer talking at 6:43, next utterance at 6:57.
83	14	4	2	453	0.5	227	3:47	3:33-3:48	15	Subject talking at 3:47, next utterance at 3:33.
84	14	4	3	537	0.2	107	1:47	1:56-2:18	22	Interviewer talking at 1:47, next utterance at 1:56.
85	15	1	1	837	0.8	670	11:10	11:27-11:45	18	Interviewer talking at 11:10, next utterance at 11:27.
86	15	1	2	467	0.5	234	3:54	3:54-3:55	1	Subject talking at 3:54, starts at 3:54.
87	15	1	3	388	0.2	78	1:18	1:33-1:56	23	Interviewer talking at 1:18, next utterance interrupted by interviewer, next utterance at 1:33.
88	15	4	1	468	0.5	234	3:54	3:48-3:57	9	Subject talking at 3:54, starts at 3:48.
89	15	4	2	304	0.2	61	1:01	1:00-1:02	2	Subject talking at 1:01, starts at 1:00.
90	15	4	3	432	0.8	346	5:46	6:06-6:10	4	Interviewer talking at 5:46, next utterance is one word, next utterance at 6:06.

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EDUCATION

August 2015-present	Doctor of Philosophy, Clinical Psychology University of Nevada, Las Vegas (UNLV) Major Advisor: Russell T. Hurlburt, Ph.D. Dissertation Title: The Iterative Nature of Descriptive Experience Sampling: Do Interviewees Build Skills across Sampling Days? Expected Date of Defense: June 2016
August 2015	Master of Arts, Clinical Psychology University of Nevada, Las Vegas (UNLV) Major Advisor: Russell T. Hurlburt, Ph.D. Thesis Title: The Inner Experience of Reading: A Descriptive Experience Sampling Investigation
May 2006	Bachelor of Arts, Psychology, English Loyola Marymount University (LMU), Los Angeles, CA Magna Cum Laude University Honors Program Major Advisor: Joseph Labrie, Ph.D., S.J. Honors Thesis Title: Identity Factors and Identity Self-Esteem in College vs. Non-College Emerging Adults

CLINICAL TRAINING AND EXPERIENCE

Pre-Doctoral Clinical Practicum Training

11/15-5/16 **Stein Forensic Hospital**
Las Vegas, NV
Supervisor: Shera Bradley, Ph.D.

Co-conducted competency to stand trial evaluations and completed full competency to stand trial reports including extensive record review, diagnosis, opinion on competency, conclusions, and

recommendations. Conducted psychological testing for intellectual abilities (RIAS-2, RBANS) and malingering (ILK, M-FAST, SIRS, TOMM). Attended weekly treatment team and responded to psychological consults. Attended weekly psychiatry case conference meetings and presented on a novel clinical case. Received weekly individual supervision.

9/13-8/14, **Innovative Psychological Solutions (Private Practice)**

9/15-11/15 Las Vegas, NV

Supervisor: Shera Bradley, Ph.D.

Co-conducted forensic evaluations for criminal court purposes, including: competency to stand trial, not guilty by reason of insanity, death sentence mitigation, diminished capacity.

Participated in all phases of these evaluations, including record review, psychological test administration/scoring, examinee interviews, collateral interviews, and report writing. Conducted individual therapy with adult, emerging adult, and adolescent populations, primarily using DBT, ACT (including trauma-focused ACT), and psychodynamic orientations. Conducted individual and DBT group therapy with adolescent victims of sex trafficking. Received weekly individual supervision and attended conferences on forensic psychology and sex trafficking.

9/14-5/16 **Desert Psychological Services (Private Practice)**

Las Vegas, Nevada

Supervisors: Stephanie Holland, Psy.D.; Bree Mullin, Psy.D.

Collaborated with supervisors on forensic evaluations for civil court purposes, including child custody evaluations, child interviews, and parental capacity evaluations. Conducted individual therapy with adjudicated youth in the criminal justice system while in a correctional setting (Caliente Youth Center) and while on parole. Co-led group therapy for adjudicated youth in a correctional setting. Selected test batteries and conducted Uniform Psychological/Psychoeducational Evaluations (UPPAs) for Southern Nevada youth in the foster care system (ages 6-18), as well as selected test batteries and conducted evaluations for adults and adolescents through private referrals. Co-led brief psychodiagnostic interviews of military veterans for combat-related compensation claims. Received weekly individual supervision and attended weekly trainings, including specialized trainings on forensic assessment, conducted by licensed psychologists, post-doctoral trainees, and interns on staff.

8/12-8/13 **The PRACTICE: A UNLV Community Mental Health Clinic**

Las Vegas, Nevada

Supervisors: Jason Holland, Ph.D.; Michelle Paul, Ph.D.; Noelle Lefforge, Ph.D.

Conducted individual therapy, group therapy using a DBT model, intake interviews, psychodiagnostic evaluations, and neuropsychological evaluations in a department-sponsored community mental health training clinic. Client population was diverse, primarily composed of lower socioeconomic status individuals or college students referred by University Counseling Center for long-term therapy; presenting concerns commonly included depression, anxiety, psychosis and personality disorders such as Borderline Personality Disorder. Conceptualized cases from an integrative perspective, drawing most heavily from CBT, ACT, DBT, process-experiential, and psychodynamic approaches. Also participated in student outreach programs including community mental health awareness fairs, lectures on integrative mental health services, and collaborations with the UNLV police related to involuntary hospitalization. Received weekly individual and group supervision.

SUPERVISION EXPERIENCE

5/14-8/14, **The PRACTICE: A UNLV Community Mental Health Clinic**

5/15-8/15 Las Vegas, Nevada

Student Supervisor

Supervisors: Michelle Paul, Ph.D.; Noelle Lefforge, Ph.D.

Provided supervised supervision of three junior clinical psychology doctoral students at UNLV as they provided individual psychotherapy to clients of diverse backgrounds and diagnoses at a psychology-department-sponsored community mental health center. Supervision philosophy was developmental. Training included weekly didactic seminar taught concurrently during summer 2014; weekly individual and biweekly group supervision of supervision, and video tape review of my supervision session. Supervision of supervision monitored client case conceptualizations, conceptualization of my supervisee's developmental level and needs, review of supervision record keeping pertaining to the clients, supervisees, and the supervision process.

5/13-08/13 **The PRACTICE: A UNLV Community Mental Health Clinic**

Las Vegas, Nevada

Undergraduate Intern Supervisor

Supervisor: Michelle Paul, Ph.D.

Provided supervised supervision of an undergraduate field intern in a community mental health clinic. Duties included meeting with the intern for one hour per week, assigning readings on clinical topics (such as clinical interviewing, therapist traits, self-awareness skill, attending skills), discussing readings, conducting role-plays to practice clinical skills, mentoring future graduate school/career aspirations, and overseeing intern tasks, such as scheduling intakes to shadow, developing administrative skills, and organizing the clinic's resource library.

8/11-present **Outreach Undergraduate Mentoring Program (OUMP), UNLV**

Las Vegas, Nevada

Graduate Mentor

Provided mentorship to undergraduate psychology students at UNLV. The OUMP program primarily seeks to provide mentorship to students from backgrounds that are traditionally underrepresented in graduate programs. Annually mentored students from diverse backgrounds, including students with special interests in forensic assessment. Mentorship included providing information on graduate school applications, feedback on CVs and admissions essays, and individual discussions of mentees' clinical and forensic interests.

RESEARCH EXPERIENCE

06/15-present **Doctoral Dissertation Research: *The Iterative Nature of Descriptive Experience Sampling: Do DES Interviewees Build Skills across Sampling Days?***

Principle Investigator

University of Nevada, Las Vegas

Committee Chair: Russell T. Hurlburt, Ph.D.

Purpose: To validate the Descriptive Experience Sampling (DES) method, a qualitative experience-sampling method aimed at obtaining high-fidelity accounts of daily, lived experience,

by demonstrating that research participants decrease their levels of subjunctification (i.e., behavioral and verbal indicators that the participant is not describing high-fidelity, momentary inner experience) across successive interview days. This study will involve training undergraduate participants to rate the levels of subjunctification in video-recorded interview segments and analyzing 1) whether undergraduates and reliably rate subjunctification after training, and 2) whether rates of subjunctification decrease as sampling participants become more experienced at the method. DES research studies collect high-fidelity qualitative data on the nature of momentary, pristine inner experience – an endeavor that no other research method can claim to achieve – and has been applied to a variety of clinical and non-clinical populations. The dissertation has been proposed, data collection has begun, and defense is anticipated in June 2016 or earlier.

8/11-6/15 **Master's Thesis Research: *The Inner Experience of Reading: A Descriptive Experience Sampling Investigation***

Principle Investigator

University of Nevada, Las Vegas

Committee Chair: Russell T. Hurlburt, Ph.D.

Purpose: To apply the Descriptive Experience Sampling (DES) method, a qualitative experience sampling method aimed at obtaining high-fidelity accounts of daily, lived experience, to the task of reading classical fiction. We trained 17 participants on the DES method and sampled their inner experiences at quasi-random moments in their natural environments, followed by an interview in which they describe inner experience at those random moments. Once trained, participants' experiences were sampled while they read two short stories on a computer. They again participated in the DES interview. Results showed that most inner experiences involved innerly seeing the story they were reading in various degrees of illustrativeness, and that many readers experience words in a variety of ways, but rarely or never in the form of an internal narration of the text as it was read. This study, an initial survey of reading phenomenology, may provide insight into readers' inner experience, and future DES studies may wish to examine the inner experience of readers with learning disabilities or other cognitive impairments. DES research studies collect high-fidelity qualitative data on the nature of momentary, pristine inner experience – an endeavor that no other research method can claim to achieve – and has been applied to a variety of clinical and non-clinical populations.

8/05-5/06 **Undergraduate Honors Thesis Research: *Identity Factors and Identity Self-Esteem in College vs. Non-College Emerging Adults***

Principle Investigator

Loyola Marymount University, Los Angeles, CA

Committee Chair: Joseph LaBrie, Ph.D.

Purpose: To examine the subjective feelings of adulthood among emerging adults (age 18-25) sampled from college and non-college (i.e., never attended a 4-year college) populations. Compared the two groups on measures of ego identity, dimensions of emerging adulthood, identify self-esteem, drinking behavior, transitions to adulthood, financial independence, and prosocial tendencies. Results indicated that college students report significantly higher identity moratorium and significantly lower identity diffusion than their non-college peers. Subjective feelings of adulthood were significantly predicted by financial stability and negative correlated with the dimensions of emerging adulthood.

8/05-5/06 **Research Assistant, Undergraduate Research Project**

Loyola Marymount University

Principal Investigator: Joseph LaBrie, Ph.D.

Purpose: To examine relationships between undergraduate alcohol consumption, alcohol-related consequences, and alcohol expectancies, as well as to identify students high-risk for alcohol related problems and target high-risk students for intervention (Heads Up program). Duties included data entry, data analysis, and literature review.

8/04-5/06 **Research Assistant, Undergraduate Research Project**

Loyola Marymount University

Principal Investigator: Larry Bernard, Ph.D.

Purpose: To examine the relationship between motivation and emotion from an evolutionary perspective. Duties included scheduling and running participants (e.g., measuring grip strength, waist circumference, and chest circumference; administering questionnaires), rating survey items by motivational category, and coordinating subject pool credits.

PEER-REVIEWED PUBLICATIONS

Brouwers, V., & Hurlburt, R. T. (in press). Experience sampling. *The SAGE Encyclopedia of Abnormal and Clinical Psychology*.

Barchard, K. A., & **Brouwers, V.** (in press). Internal consistency and power when comparing total scores from two groups. *Multivariate Behavior Research*.

PROFESSIONAL PRESENTATIONS

Brouwers, V., Barchard, K. A., Westfall, R. S., & Benning, S. D. (2016, May). *Gender Differences in the Factor Structure of the Intermediate Psychopathy Measure*. Poster presented at the Western Psychological Association annual convention, Long Beach, CA.

Brouwers, V. (2015, May). Inner experience while reading fiction. In R. T. Hurlburt (Chair), *The inner experience of inner speaking, reading fiction, and reading erotica: What's really going on?* Symposium conducted at the meeting of the Western Psychological Association annual convention, Las Vegas, NV.

Benning, S. D., Barchard, K. A., Westfall, R. S., & **Brouwers, V.** (2015, May). *The Intermediate Psychopathy Measure: Factor Structure and Criterion-Related Validity*. Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

Barchard, K. A., & **Brouwers, V.** (2015, May). *The false promise of increasing internal consistency reliability*. Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

Barchard, K. A., & **Brouwers, V.** (2015, February). *Spearman-Brown's false prophesy: The false promise of scale lengthening*. Poster presented at the Society for Personality and Social Psychology annual convention, Long Beach, CA.

Barchard, K. A., & **Brouwers, V.** (2014, May). *Increasing statistical power for group comparisons*. Poster presented at the Association for Psychological Science annual convention, San Francisco, CA.

Brouwers, V., Kelsey, J., Lapping-Carr, L., Turner, D., Heavey, C. L., & Hurlburt, R. T. (2014, May). *Inner Experience while Reading*. Poster presented at the Association for Psychological Science annual convention, San Francisco, CA.

Brouwers, V., Diliberto, R., Pitts, M., & Barchard, K.A. (2014, April). *Examining the psychometric properties of the empathic concern scale*. Poster presented at the Western Psychological Association annual convention, Portland, OR.

Brouwers, V., & LaBrie, J. (2011, April). *Identity Factors and Identity Self-Esteem in College vs. Non-College Emerging Adults*. Poster presented at the Western Psychological Association annual convention, Los Angeles, CA.

TEACHING EXPERIENCE

1/15-5/15 **Basics of Psychotherapy Process (PSY 451)**

1/16-5/16 Instructor

University of Nevada, Las Vegas

Average student ratings of instructor = 4.55/5 (avg. across 2 sections)

Independently taught two sections of an upper-division undergraduate course introducing students to basic skills of psychotherapy, as well as exposing students to various schools of psychotherapy (e.g., psychoanalytic, psychodynamic, cognitive-behavioral, client-centered, process-experiential, etc.) via lecture, examples, demonstrations, and video review. Created lectures, assignments, discussions, class activities, and exams for this course.

8/15-12/15 **Introductory Psychology – Online Hybrid Course (PSY 101)**

Instructor

University of Nevada, Las Vegas

Independently taught two psychology courses per semester aimed at providing a basic overview of important topics in psychology. Created lectures, activities, discussions, a paper topic, exams, and assignments to help students gain an understanding of psychological concepts and research. This course was designed to be partially live and partially online. Students were provided additional assignments and online learning opportunities while only attending course meetings equal to one half of the normal semester schedule.

8/13-12/14 **Introductory Psychology (PSY 101)**

Instructor

University of Nevada, Las Vegas

Average student ratings of instructor = 3.81/4 (avg. across 6 sections)

Independently taught two psychology courses per semester aimed at providing a basic overview of important topics in psychology. Created lectures, activities, discussions, a paper topic, exams, and assignments to help students gain an understanding of psychological concepts and research.

8/11-5/13 **Statistical Methods in Psychology (PSY 210)**

Graduate Assistant to Russell Hurlburt, Ph.D.

University of Nevada, Las Vegas

Assisted in teaching an introductory statistics class for six semesters. Responsibilities included teaching weekly statistics labs, grading quizzes, homework, and exams, teaching substitute lectures for the instructor of record, and keeping grade records throughout the course.

SUPPLEMENTAL CLINICAL TRAINING

12/14-present **PsychTalks Lecture Series**

Nevada Psychological Association, Early Career Psychologists, UNLV

Ongoing, monthly lecture series of clinical psychology topics

8/14-6/15 **Weekly Trainings**

Desert Psychological Services

Weekly, 1.5 hour interactive trainings and discussion groups in forensic psychology, psychological assessment, and psychological treatment topics

6/14 **Spirit of Motivational Interviewing**

Featuring: Billy Arndt, MFT, LADC

One-day workshop, Nevada Partnership for Training

10/13 **Partnership in Action: Providing Tools to Enhance Our Response to Human Trafficking**

One-day workshop, Southern Nevada Human Trafficking Task Force

11/12-4/13 **Comprehensive Training in Dialectical Behavioral Therapy**

Featuring: Alan Fruzzetti, Ph.D.

Eight-day workshop, Nevada Psychological Association

Nov 2012 **Ethics and Decision Making for Nevada Psychologists**

Featuring: Stephen Behnke, J.D., Ph.D.

One day workshop, Nevada Psychological Association

PROFESSIONAL AND SERVICE ACTIVITIES

2015 Discussant, UNLV Boyd Law School

Discussion Title: Confidentiality in Juvenile Forensic Evaluations

2015 Presenter, Clark County Department of Family Services, Training Team

Presentation Title: Common Childhood Disorders in Foster Children & How to Respond

2013 Undergraduate Intern Supervisor, The PRACTICE Clinic, UNLV

2013 The PRACTICE Clinic Representative, Mental Health Awareness Fair,
Pearson Community Center, Las Vegas
2009-2010 Vice-President, Psi Chi Honor Society, Loyola Marymount University
2008-2010 Member, Psi Chi Honor Society, Loyola Marymount University

PROFESSIONAL AFFILIATIONS

2015-present American Psychology-Law Society
2014-present Association for Psychological Science
2014-present Society for Personality and Social Psychology
2013-2014 Society of Teaching Psychology
2011-2012 American Psychological Association
2011-present Nevada Psychological Association
2010-present Western Psychological Association