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Inner Experience while Reading Fiction: A Descriptive Experience Sampling Exploration

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INNER EXPERIENCE WHILE READING FICTION: A DESCRIPTIVE
EXPERIENCE SAMPLING EXPLORATION

by

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ABSTRACT

Reading is ubiquitous. In Western culture, childhood education places a strong emphasis on acquiring the ability to read. Whereas many studies have examined the cognitive processes underlying reading ability, no previous studies have used a high-fidelity method of sampling inner experience to examine the direct, momentary inner experience while reading. The current study used the Descriptive Experience Sampling Method (DES) to explore the inner experience of 17 undergraduates, who had been trained in DES, while reading classical short stories. We found that participants while reading often innerly saw a visual depiction of the story, though the congruency of these depictions with the actual story on the page varied across participants and across moments. We also found that words were often present in participants' experience, though they were rarely, if ever, present as simply innerly voicing the text as it was read. We further observed that experiential styles while reading varied across participants, including the degree to which imagery or words were present while reading fiction. Implications and limitations of these findings were discussed.

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CHAPTER I

INTRODUCTION

According to a report by the Central Intelligence Agency (2013), 99% of Americans are literate. This compares to an 84.1% world literacy rate, which reflects variability in the cultural emphasis on reading. For many industrialized nations, the literacy rate exceeds 99%, whereas for underdeveloped countries such as those in sub-Saharan Africa, rates often fall well below 50% of the population. In spite of these exceptions, a majority of people in this world read. These readers read for their jobs, their schoolwork, and in their everyday lives. A vast amount of worldwide information is shared through text media. Whether individuals read functionally or for leisure, reading is a vital part of the culture of most nations.

Because of its popularity and usefulness, studying the phenomenology of reading may be important. Many researchers investigate the perceptual and semantic processes involved in reading (e.g. Arya & Feathers, 2012; Catinelli et al., 2013); however, little attention has been paid to individuals' inner experience as they engage the process of reading. This may be the case because studying inner experience is difficult, time consuming, and a subject of theoretical debate (e.g. Hurlburt & Schwitzgebel, 2007; Caracciolo & Hurlburt, 2013). In response, researchers have developed various methods to obtain data about participants' inner experience. Each of these methods has particular advantages and limitations, and as with any research method, must be sufficient for answering the research question. Therefore, a researcher interested in the phenomenology of reading must select a method that is well suited for pursuing that aim.

A method that hopes to capture a high fidelity experiential view of reading must satisfy at least three conditions. First, the method itself must exert minimal influence over the naturalistic experience of reading. Second, the reader must be able to engage the reading process in a relatively natural environment. And third, the participant must understand the process of attending to, and then describing, randomly signaled moments of inner experience.

Before exploring inner experience as it occurs during reading, it is important to define *inner experience* and to determine the necessary characteristics of a high-fidelity experience sampling method. Hurlburt defines *inner experience* as “thoughts, feelings, sensations, anything that ‘appears before the footlights of consciousness’” (Hurlburt, 2011b). In other words, inner experience is a person’s directly experienced contents of consciousness at a given moment in time.

Inner experience has long been a topic of interest and debate in the study of psychology. To a researcher, studying experience can provide insight into how an individual perceives and interprets the internal and external environment. A description of inner experience attempts to describe inner experience as it presents itself to the experiencer.

Researchers have developed various methods to obtain samples of inner experience. These methods, discussed in detail below, include experience data collected in interviews, on rating forms, written in diaries, and verbally produced via “think aloud” methods. Data from experience sampling methods have been used in a variety of ways, such as for demonstrating trends in clinical populations, exploring the experience of individuals in certain situations or while experiencing certain emotions, showing

uniqueness of experience within individuals, as well as showing shared qualities of human experience across many individuals.

As discussed below, studying inner experience can be a challenging task. Each experience sampling method has particular advantages and disadvantages, and experience researchers must select a method that is well-suited to address their particular research questions. The following literature review discusses various experience sampling methods, as well as previous research on reading phenomenology. The current research aims to extend the study of reading into the realm of inner experience, and proposes Descriptive Experience Sampling as the preferred method of addressing this task.

CHAPTER 2

LITERATURE REVIEW

Apprehending Experience

Boring (1953) traced introspection, the notion of the mind observing its own processes, as far back as the early Greek philosophers Aristotle and Plato; however, the empirical study of introspection was not established until the advent of experimental psychology, brought about by such psychological pioneers as Wundt, James, and Titchener. Boring discussed how, in the early models, consciousness was conceptualized as made up of sensations, feelings, and images, which became synthesized in the form of perceptions and ideas. In fact, these researchers used introspection as a tool to study the *processes* of the mind; this differs somewhat from the study of *experience*, which is interested in consciousness as it directly presents itself.

As the field of psychology developed throughout the 20th Century, the emerging Behaviorist movement changed the focus of psychological research from consciousness to behavior, which was considered to be a more directly observable, empirical phenomenon than was consciousness (Lieberman, 1979). This change, however, was in contrast to Wundt's original intent when he established psychology as an independent discipline. In fact, Wundt considered empirical psychology to be "the science of inner experience" (Wundt, 1897).

By the early 1970's, new investigations of consciousness and experience began to emerge. Such authors as Lieberman (1979) and Ericson and Simon (1984) began to call for renewed focus on consciousness research, nested in current psychological paradigms. Hence, researchers have developed numerous methods of capturing and examining inner

experience empirically. Following Wundt's model, methodologies have continued to appreciate two primary factors of experience: *content*, and *apprehension* of the content (Wundt, 1897). Thus, the study of experience requires apprehending the content in a way that is interpretable, but also in a way that is minimally invasive, aiming to preserve the content it hopes to apprehend.

Challenges of apprehension and recall. Considering the challenges of experience sampling, some theorists may question whether studying experience is a worthwhile pursuit. For example, Nisbett and Wilson (1977) reported that individuals may have limited introspective access regarding their own cognitive processes. Nisbett and Wilson's research reviewed the experience of decision-making, and they concluded that simply asking a participant about experience often proves fruitless (e.g. Miller, 1962). In a review of verbal reports of stimulus-response experience, Nisbett and Wilson identified that individuals are often unaware of information that affects their decision-making, including insight into their own perception and memory. However, Nisbett and Wilson also noted that participants are sometimes capable of responding to questions about their mental processes during decision-making, particularly when deciding factors are salient and they can identify a specific rationale for making that decision.

Nisbett and Wilson (1977) also identified several pitfalls to obtaining accurate verbal reports on mental processes. In a review of perceptions regarding cause and effect, Nisbett and Wilson reported that accuracy depends on six factors: *availability* of events in memory (i.e. salience); the amount of *time* between the experience and the report; *mechanics of judgment* such as serial order effects, position effects, or contrast effects of a perceived stimulus; *contextual factors* which may affect perception;

nonevents whereby an individual makes a judgment based on what he or she did not experience, as opposed to what was experienced; *nonverbal behaviors* in others that may be prone to misjudgments; and *discrepancy between the magnitudes of cause and effect*, whereby an individual may believe that a large effect necessitates a large cause, or vice-versa. In other words, the reality of experience may become distorted in memory as a result of a multitude of factors. Thus, from this perspective, verbal reports on mental processes are likely to be biased and inaccurate in most real-world scenarios.

Hormuth (1986) noted that one limitation of experience sampling research is that it relies heavily on untrained subjects to attend to both subjective (thoughts, feelings) and objective (external, situational) information. With many methods, the only source of data may be self-reports of participants who may suffer such setbacks as memory problems, difficulty attending to experience in the moment, non-adherence to the protocol, and embarrassment about content which may lead to distortion. In response, Hormuth proposed that various checks, including observational data, peer ratings, and questionnaires, could improve the quality of self-report inner experience data. He further noted that controls and checks on the subject, such as ensuring that they are responding in a timely manner, could also improve experience sampling methods dependent on momentary reports of experience.

Shiffman and his colleagues (1997) also questioned the validity of retrospective recall. They observed the experience of individuals at risk for relapse from smoking cessation. Comparing real-time ratings of mood, activity, triggers, and abstinence violation effects with retrospective samples, they found that current mood and attitudes were strong confounds to accurate recollection. Further, participants' retrospective

responses regarding experience and behavior were found to be inaccurate compared to their own recorded responses which were made in real-time. This finding corroborated Nisbett and Wilson's (1977) concerns about time elapsed before recall, and it may follow that a participant's current beliefs or affective state during recall may bias a retrospective report.

A similar study by Stone et al. (1998) compared real-time versus retrospective ratings of experience. This particular study was interested in the use of coping skills during times of stress. Findings emphasized that retrospective accounts are often inaccurate, and that participants generally underreported cognitive coping skills in their retrospective accounts while overreporting behavioral coping skills. This cognitive underreporting trend may indicate that cognitive processes are less salient than behavior to a participant who tries to remember them long after they occur. The authors concluded that real-time momentary assessments are good tools for observing moment-by-moment cognitive events, such as coping skills. Retrospective recall may be more useful for investigating broader or more salient events that may not be captured by a moment-by-moment sampling procedure.

Wilson and Dunn (2004) also discussed the limits of self-knowledge as it regards consciousness. The authors acknowledged that insight into consciousness is limited by both motivational and non-motivational means. Individuals are sometimes motivated to suppress thoughts, feelings, or memories, which can occur either consciously or unconsciously. Regarding non-motivational inaccuracies, these researchers looked at discordance between implicit (procedural/behavioral) and explicit (verbal/attitudinal) measures of internal states. Implicit measures have been found to tap into mental

processes that are non-conscious and inaccessible to introspection (Wilson, 2002).

Because of the high frequency of discordance between implicit measures and verbal reports, it is likely that individuals are often even inaccurate about personal traits such as attitudes and self-concepts. Wilson and Dunn (2004) provided suggestions on how individuals can become more self-aware, including reducing attempts to suppress thoughts and making conscious attempts to observe their own behaviors.

Guiding participants towards experience. Because of the difficulty of obtaining high fidelity samples of experience, some researchers have developed methods aimed at guiding the recollection and description of experience. These techniques, often called *bracketing*, are used by qualitative researchers 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). Through bracketing, researchers help focus the participants and themselves away from presuppositions and reactions about the data. When this task is accomplished, what remains is a high-fidelity account of experience. Techniques for bracketing presuppositions include taking detailed notes or memos during data collection (e.g. Glaser, 1998), soliciting feedback from other colleagues (e.g. Rolls & Relf, 2006), and guided interviewing of the participant (e.g. Hurlburt, 1990; Petitmengin-Peugeot, 1999).

For both researchers and participants, the bracketing process “slackens the intentional threads which attach us to the world, and thus brings them to our notice” (Merleau-Ponty, 1945, p. xiii). That is to say, bracketing suspends all presumptive constructs about experience in order to understand a participant’s “intentional world of lived experience” (Aanstoos, 1983, p. 253). These presumptive constructs include beliefs

and values, thoughts and hypotheses, biases, emotions, preconceptions, presuppositions, and assumptions about the phenomenon under study (Tufford & Newman, 2012). As a result, bracketing procedures help researchers and participants obtain higher fidelity descriptions of the actual experience phenomenon.

Why sample? The primary reason that experience sampling researchers study experience is that experience sampling provides rich data about experience that cannot be obtained through other, more technical means. Following the tradition of the introspectionists, some researchers have returned to experience sampling to study mental processes such as problem solving and decision-making (Bloom & Broder, 1950; Miller, 1962). As a more recent application, experience sampling methods have been used in the field of personality psychology. These methods are particularly useful because they collect data that is otherwise inaccessible, such as rich phenomenological data on a single individual (Hormuth, 1986).

Following this trend, experience sampling research has been used to obtain detailed phenomenological descriptions of participants' experiences and has been especially useful in examining the experience of a particular group, such as a clinical population, or for observing targeted events, such as an undesirable behavior. For example, such methods as Descriptive Experience Sampling (e.g. Hurlburt, 2011b) and the Experience Sampling Method (e.g. deVries, 1992) have explored the inner experience of individuals with mild to severe psychiatric diagnosis. Other methods which are more amenable to event-contingent sampling have been able to target such behaviors as smoking cessation (Shiffman et al., 1997) and sexual risk-taking (Morrison-Beedy et al., 2008).

An exemplary personality study by Franzoi (1981) demonstrated the usefulness of experience sampling and its potential use in generating correlational data. In this design, the researcher employed a random time-interval method to investigate the applicability of self-described adjectives over time. Subjects pre-rated themselves on a list of adjectives, checking which adjectives were “descriptive” of themselves and which were “very descriptive.” They then were given timers that beeped at a random time during a 90-minute interval, and were sampled several times a day. When the beep went off, the subject would then fill out a checklist of adjectives that described them at that given point in time. Results supported the hypothesis that adjectives pre-rated as “very descriptive” would be endorsed significantly more than “descriptive” or unchecked adjectives. The author concluded that these central aspects of self-concept, identified through self-assessment, were also present in moment-by-moment assessment. This finding showed how experience sampling data can provide a behavioral measure, albeit still based on self-report, that helps discern whether self-report data extends beyond the testing scenario.

The content of inner experience. What do researchers find when they examine inner experience? An exemplary study by Hurlburt (1979) quantified some experience sampling data as reported on rating scales by 9 undergraduate volunteers (4 females and 5 males). Participants responded to the rating scales at randomly signaled times in their natural environments. Several conclusions were drawn based on data from 778 thought samples. The data indicated that most thoughts were neutral as opposed to having a positive or negative affect, overt sexual thoughts occurred about 1% of the time (which was less than most self-estimates), about one third of thoughts were not about what the

participant was currently doing, and that most thoughts did not regard interacting with others, even though considerable time was spent with others while participants were sampled. Further, the types of thoughts experienced by males varied by time of day, while the types of thoughts experienced by females were consistent across times of day. Many participants were surprised when shown the results of their sampling, demonstrating the value of random sampling procedures versus retrospective self-report.

Another thought-sampling study by Hurlburt, Lech, and Saltman (1984) sought to categorize experience. The authors distributed questionnaires that participants were asked to apply to each randomly sampled thought, which were sampled in the participant's natural environment. The questionnaires measured the presence of various cognitive variables which the participants could endorse as relevant to their experience at the randomly interrupted moment. From these data, the authors aggregated clusters of descriptors into factors, which could more generally describe thought content. The factors included an Aggressive/Bad Mood factor, a Pleasant/Sexual factor, a Daydreaming/Past Sexual factor, a Clear Thought factor, a Self-Critical factor, and a Duration factor. In a second study, participants were sampled while watching a movie, *Annie Hall*. Significantly similar factors emerged in this different sampling environment. These results imply that an individual's inner experience phenomena can be categorized into significant and stable patterns.

A study by Hurlburt and Heavey (2002) rated the appearance of 19 different characteristics of inner experience and determined the frequency of each. The researchers looked at 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 distinct types of experience. These characteristics 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) noise. 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.

An exploratory thought-sampling study by Foulkes (1994) examined mental images, which can be likened to the “images” category identified by Hurlburt and Heavey (2002). In Foulkes’ study, 15 female participants entered a state of relaxed wakefulness, were instructed to form mental images, and then received a random signal. They reported on the experience interrupted by that signal. Foulkes found that subjects reported that a majority of imagined mental images were experienced as if seeing through their own eyes (60%), although there were also instances of seeing themselves from a third person perspective (15%) and instances of forming an image in which they were not present (21%). The author also noted that when subjects considered scenarios in which they did

not imagine themselves to be present, such images tended to be single still shots as opposed to a series of shots as in a movie.

Another experience category that has garnered much attention from experience researchers is inner speaking. In examining its phenomenology, McCarthy-Jones and Fernyhough (2011) developed a measure of various dimensions of inner speaking. The Varieties of Inner Speech Questionnaire (VISQ) assesses such dimensions as dialogicality, condensed/expanded quality, evaluative/motivational nature, and the extent to which inner speaking incorporates other people's voices. Items for the VISQ were derived from Vygotskian theories on inner speaking phenomenology (Vygotsky, 1987), and dimensions were established based on an exploratory factor analysis of these items when used with a standardization sample. The authors administered the questionnaire to a sample of college students. Results included that 77.2% of participants endorsed having experienced Dialogicality in Inner Speech (inner speech is like a conversation with self), 36.1% endorsed Condensed Inner Speech (inner speech contains fragments as opposed to full sentences), 82.5% endorsed Evaluative/Motivational Inner Speech (inner speech is used to evaluate self or to regulate behavior), and 25.8% endorsed Other People in Inner Speech (inner speech involves an inner hearing of the voice or words of others). One main limitation acknowledged by the researchers was that participants may not have been accurate reporters of inner speaking experience. The researchers suggested that further support of the dimensions of inner speaking derived from the VISQ could be obtained through more ecologically valid methods, such as the Experience Sampling Method (Csikszentmihalyi & Larson, 1987) or Descriptive Experience Sampling (Hurlburt & Heavey, 2006), which are discussed in further detail below.

While many researchers agree that sensory awareness, inner speaking, feelings, and inner seeing are all aspects of inner experience, some have questioned whether unsymbolized thinking is even possible. In response, Hurlburt and Akhter (2008) described evidence of unsymbolized thinking and the theoretical importance of acknowledging its occurrence. The authors described unsymbolized thinking as a cognitive or “thoughty” phenomenon that does not include the experience of words, images, or any other symbols. In addition, unsymbolized thinking is a complete, distinct phenomena; it is conscious in experience; it is cognitive; it is explicit; and it is differentiated. The following is an example of unsymbolized thinking:

Benito is watching two men carry a load of bricks in a construction site. He is wondering whether the men will drop the bricks. This wondering does not involve any symbols, but it is understood to be an explicit cognitive process (Heavey & Hurlburt, 2008).

As with many researchers, Hurlburt and Akhter (2008) noted that many participants have difficulty describing an unsymbolized thought. To describe such a thought, a participant would of course have to put it into words. Experience researchers are tasked with helping the participant determine whether symbols, such as words, actually were or were not present as a feature of that experience.

Another study by Heavey and Hurlburt (2008) provided frequency data on the 5 most common categories of inner experience. Using the Descriptive Experience Sampling method, the researchers sampled 30 college students of varying levels of psychological distress. Among other findings, the researchers discovered that each of the five main phenomena occurred in 22% or more of the samples collected. The next

highest categories, inner hearing or just doing, occurred only 3% and 2% of the time, respectively. These data provided further evidence that the five categories (inner speaking, inner seeing, unsymbolized thinking, feeling, and sensory awareness) are indeed more common in experience. Regarding individual profiles, some within subject patterns emerged. Most participants showed consistency among their inner experiences, such that 1 or 2 categories would occur most frequently (as much as 100% of the time, in the case of one participant with sensory awareness), or that 1 or 2 categories would occur much less frequently (e.g., 9 participants did not experience sensory awareness, 8 did not experience unsymbolized thinking, etc.). The only correlate of psychological distress was inner speaking; the authors found a negative correlation between frequency of inner speaking and psychological distress ($r = -.36, p < .05$). Overall, these findings demonstrated that there are commonalities among different people's inner experiences insofar as experience is able to be reliably categorized. However, there were also within-subject consistencies, whereby individuals tended to have a unique pattern to the types of experiences they would report. Further, experience sampling was shown to provide rich data about individuals, groups, and specific phenomena. Various methods and applications of experience sampling are discussed in the next section.

Methods of Sampling Experience

Because of the many complications that come with sampling inner experience, researchers must be careful when selecting an inner experience sampling methodology to use in their research. Several methods have been created and successfully implemented, and because each of these methods have particular strengths and weaknesses, it is crucial for researchers to select a method that is most suited for their own research projects. This

section discusses various methods of sampling inner experience, provides brief descriptions of the types of topics these methods are used to explore, and offers both advantages and disadvantages to utilizing each of these methodologies.

Diary methods. In some experience sampling methods, participants are required to keep a written self-report narrative of their experience. These diary methods aim to obtain ecologically valid data on experience as it unfolds in the participant's life. Researchers can focus data collection on experience in general, or upon specific, predetermined phenomena (Bolger, Davis, & Rafaeli, 2003; Breakwell & Woods, 1995). Participants are asked to record information about their thoughts, emotions, and behaviors at specific times or in specific scenarios. Often, specific forms or scales are provided to help guide a participant's attention to certain categories or aspects of their experience (e.g. Hedges et al., 1990; Wutich et al., 2009).

When using diary methods, researchers often provide some kind of structure for when and how the participants are expected to describe their experiences. There are three contingencies that researchers can use that signal a participant to record experience: fixed time schedules, variable time schedules, and event contingencies (Bolger, Davis, & Rafaeli, 2003). In fixed time schedules, researchers and participants agree upon certain times of the day when a participant will attend to their ongoing experience. In variable time schedules, some kind of signal is provided by an electronic device, usually at a random moment, to alert the participant to record their experience in that particular moment. In event contingent sampling, participants are asked to report on their experience during particular events that they experience in the lab setting (while performing a task) or in their natural environments (e.g. when they happen to be

smoking, when they happen to be experiencing an anxiety attack). In particular to studies focused on inner experience, variable time schedules are most preferred because the researchers presume that the signal interrupts a highly naturalistic moment of inner experience; in contrast, in designs using fixed time schedules or event contingencies, a participant's awareness of the sampling task may interfere with experience and generate a less generalizable account (Bolger, Davis, & Rafaeli, 2003).

In addition, there are various methods of recording data obtained from diary methods. The simplest and cheapest method is to have the participants complete their diaries with pen and paper. However, electronic methods have also been developed for their particular advantages (Bolger, Davis, & Rafaeli, 2003; Thiele, Laireiter, & Baumann, 2002; Taylor, Fried, & Kenardy, 1989). These advantages help the researcher have more control over the study. For example, researchers can control when participants are prompted or reminded to fill in their diaries; determine whether the participant responded immediately, after a delay, or not at all; and conveniently provide instructions or questionnaires in digital format. While pen and paper methodologies are still more common, the convenience and/or the compliance record keeping of electronic diaries may relate to greater compliance rates. A study of compliance by Stone et al. (2002) used photosensor technology that could detect when a participant opened a paper diary. Compared to participant self-reports of up to 90% compliance with the protocol, the photosensors detected that participants opened the diary as low as 11% of the times they were required. In contrast, the group of participants using electronic diaries had compliance rates of 94%, which was evidenced by time stamps of when the diary was activated. In addition, a study by Taylor, Fried, & Kenardy (1989) found a compliance

rate of 88% when pairing electronic diary use with fixed time schedules. Hence, researchers must consider the tradeoff between cost and compliance rates when selecting a diary method.

The diary method has been used for a variety of applications. In addition to its use in psychological research, a review by Thiele, Laireiter, & Baumann (2002) highlighted the use of such diaries in psychotherapy, both for therapeutic effects and as an assessment tool. Examples included diaries on mood or anxiety (e.g. Stone & Neale, 1982; Ollendick, 1995) sexually risky behaviors (Morrison-Beedy et al., 2008), alcohol consumption (e.g. Web et al., 1991), and eating behavior (e.g. Conner, Fitter, & Fletcher, 1999). Previous studies have used diary methods to gain insight into such phenomena as chronic pain (Turunen, 2008), marital relationships and family dynamics (Laurenceau & Bolger, 2005), and work motivation (Navarro, Arrieta, & Ballen, 2007). The use of diary methods has been diverse, and the simplicity and convenience of this method allows researchers to investigate practically any phenomenon about which participants are willing and able to record experience.

Diary methods have particular advantages and disadvantages when compared to other experience sampling methods. Several reviews have discussed this particular paradigm (e.g. Bolger, Davis, & Rafaeli, 2003; Breakwell & Woods, 1995; Thiele, Laireiter, & Baumann, 2002). One main advantage identified by these authors is that diaries allow for immediate recall and recording of experience (as long as the participants adhere to the method). Second, the open-ended format allows for personal, in-depth narrative accounts of experience. Such detailed qualitative information would be difficult to obtain using closed-ended questionnaires, one-shot methods, or retrospective recall

tasks (Hektner & Csikszentmihalyi, 2002). Third is the ease with which diaries can be used across time to track both within subject and between subject change (Bolger, Davis, & Rafaeli, 2003). A participant who has been trained to use a diary can do so for long periods of time with only minimal interaction with the researcher. To summarize these advantages, a diary method can be a simple way to obtain rich data about experience.

In contrast, the disadvantages of the diary method are numerous. First, there is a high time cost of filling out the diaries. Often, participants are required to follow the diary protocol for weeks or months at a time, recording in their diaries multiple times per day (Bolger, Davis, & Rafaeli, 2003). This investment of time and effort can be costly to participants, and motivation to continue the study may diminish over time. Further, participants are often not available to record in their diaries as frequently as desired by the protocol. To do so may interrupt their daily lives. As a result, diary methods often need to be as unobtrusive as possible in order to reduce attrition rates, which are generally high for diary methods. Similarly, there also appears to be a decrease in participant interest over time, as the length and quality of diary entries tend to diminish (Stone et al., 1991). Relatedly, diary studies may have high attrition rates (Bolger et al., 2003), and there may be some systematic differences between participants who stay the duration of the study and those who drop out (Stone, Kessler, & Haythornthwaite, 1991).

As mentioned above, compliance is often an issue with diary studies, particularly when the method is to use pen and paper. First, participants may simply forget to fill out their diaries as they become distracted by everyday life. Also, participants may lose interest in the study over time, and they may choose to respond less frequently or in less detail. There is also the problem of ensuring timely responses. People may choose to

record entries about events long after they occur, and their memory of experience may become distorted or even fabricated when they have forgotten to record (Stone et al., 2002). This type of responding will likely increase with the length of the study (Stone et al., 1991).

Bolger, Davis, & Rafaeli (2003) also noted that diary methods have potential for reactivity bias or social desirability effects. For example, an experience may be shameful or embarrassing for a participant, and even if confidentiality is assured, he or she may be unwilling to record it. Hence, an experience may be omitted or even changed in order to avoid shame or embarrassment. Often, researchers in diary methods have very little contact with the participant during the study. As a result, the researcher is less able to answer questions for the participant, ensure she is following protocol, or to encourage or check in on truthful responding (Thiele & Baumann, 2002). Further, a participant may exhibit reactivity to the sampling process, particularly in studies of sensitive phenomena. Participants who are made more aware of the phenomenon through the act of recording may become increasingly sensitive or embarrassed in their recording (Thiele & Baumann, 2002). To summarize these disadvantages, diary methods are hard for researchers to control and to ensure that participants are diligent, accurate, and honest in their recording process throughout the duration of the study.

Think Aloud and Articulated Thoughts in Simulated Situations. Extending from the early tradition of introspectionists such as Titchener and Wundt, researchers developed a method of examining cognition through the present-focused, verbal expression of the experiencer (Aanstoos, 1983). Think Aloud (TA) methods seek to explore inner experience through the verbalized thoughts of the participants (Aanstoos,

1983; Ericsson & Simon, 1984). However, whereas the introspectionists sought to train a participant as an “objective observer” of experience, the TA method focuses on the experiencer as inseparable from experience itself. Thus, as with diary methods, the samples of experience from TA are considered phenomenological and accept experience as a subjective phenomenon inherently linked to the experiencer. Obtaining experience samples via the TA method generally occur in the laboratory environment, in order to control the situation and ensure that the verbalized experiences are captured and recorded.

TA methods operate under the assumption that thoughts, or experiences in general, occur in a stream-of-consciousness format that can be accessed in short-term memory and readily articulated by the experiencer. Some studies (e.g., Sowder, 1974; Brehmer, 1974) have shown that verbalizing information has a minimal effect on cognition, and that verbalization is only problematic when a participant reports on information to which he would not otherwise have attended (Ericsson & Simon, 1980). From this perspective, TA is considered to be a valid representation of inner experience.

Researchers have used various coding strategies to describe or quantify TA data. Most coding and categorization of TA data depends on the target of research and on relevant themes or patterns of content. In a more general sense, Ericsson and Simon (1984) have provided some guidelines for encoding and categorizing TA data, which are widely used in the TA paradigm (Yang, 2003). Drawing from information processing theory as proposed by Newell and Simon (1972), Ericsson and Simon (1984) have proposed a context-free approach to interpreting and coding TA data. In this method, recordings of TA data are segmented and randomized in the coding process, so that

analysts can be free from any biasing effects of viewing data in context. From there, the analyst decides how to encode or categorize data as discrete segments, according to the categorization procedure defined by the method. However, other researchers have disputed the use of context-free coding methods, citing that segments of experience are context-specific, or that experiences do not fit neatly into categories (e.g. Yang, 2003; Pressley & Afflerbach, 1995). For example, Yang (2003) proposed a context-appreciative coding method in which segments of data are not randomized, but are kept in their normal sequence. A segment of data may be cross-referenced to other segments that illuminate the context from which the original segment can be understood. In this way, experience can be understood as a mosaic of interrelated ideas as opposed to discrete units of thought.

TA research primarily focuses on cognitions that occur while a participant accomplishes some sort of task. The earliest focus of TA has been cognitive strategies employed during various problem-solving scenarios (Aanastoos, 1983). As early as the 1950's, TA was used to study problem-solving skills in college students (Bloom & Broder, 1950); in the 1960's, researchers used this method to study the thought processes of average and superior chess players (de Groot, 1965). Since then, the scope of the method has been broadened to investigate the experience of other phenomena. For example, some researchers have examined cognition during other procedures, such as how participants evaluate a self-report questionnaire while filling it out (Darker & French, 2009; French, Cooke, McLean, Williams, & Sutton, 2007). Additionally, studies have used TA as a tool to assess thoughts during a task, and to identify targets for cognitive restructuring (e.g., Camp, Blom, Hebert, & van Doorninck, 1977).

Contemporary TA studies have further broadened the focus of this method. In the realm of education, studies have used TA to examine attention and reading comprehension, as well as the usefulness of educational tools (Davison et al, 1997). It has also been used as an intervention tool to assess and expand students' vocabularies (Ebner, 2013). Other TA studies have examined cognitions in clinical populations. For example, Barnhofer, de Jong-Meyer, Kleinpa, and Nikesch (2002) studied memory differences between depressed and non-depressed individuals. Participants followed the TA procedure after being primed with positive and negative emotion words (e.g. happy, sad, lonely). Responses were coded for the number of memories described and the amount of detail in each memory. Participants who were diagnosed with depression reported fewer memories of specific, detailed events than the non-depressed individuals. In addition, the depressed participants reported a more general, categorical list of memories. This suggested that the depressed individuals may experience less vivid or detailed memories than those who are not depressed.

A variant of the TA paradigm is Articulated Thoughts in Simulate Situations (ATSS), which follows a TA-like procedure but uses an imaginal approach (Davison, Robins, & Johnson, 1983). In ATSS studies, participants are asked to imagine themselves in a hypothetical scenario, either as an observer or a participant. Often, videos or audio recordings stimuli are presented to help create the scenario. During the imaginal activity, participants verbalize their ongoing cognitions. The hypothetical situations create the experiential context of an ATSS study and are often designed to evoke some type of emotion or reaction (Eckhardt, Barbour, & Davison, 1998; Zanov & Davison, 2009).

The ATSS is particularly useful for studying emotions. Emotions are difficult to evoke naturalistically for research purposes; however, using imaginal procedures such as ATSS, researchers can access a wide range of emotions from the participant. For example, imaginal TA research has investigated anger and aggression, which may otherwise be unethical to evoke in a laboratory setting. Eckhardt and Kassiove (1998), as well as Barbour, Eckhardt, Davison, and Kassiove (1998), used ATSS to examine differences between violent men who were maritally distressed and non-violent men who were maritally satisfied. Both studies used a scenario in which the participant heard a recording of his wife criticizing him to another woman, and a second scenario in which the participant heard his wife flirting with another man. The combined results of these studies indicated that, in accordance with hypotheses, the violent men verbalized more irrational and dysfunctional thoughts during the simulated situations than did the non-violent men.

Aside from emotion, ATSS is also useful to study experience in situations that may be difficult to recreate in a laboratory. These often include studies of clinical relevance, such as phobia of flying (Moller, Nortje, & Helder, 1998), cognitive distortions (Eckhardt & Kassiove, 1998), and smoking relapse (Haaga, 1989). As with other TA methods, ATSS has been used as a therapy tool to assess cognitive change (Szentagotai, Lupu, & Cosman 2008). ATSS has also been used to study attitudes such as anti-gay bias (Rayburn & Davison, 2002).

The TA method and ATSS share certain advantages for studying cognition. First, in-the-moment data collection minimizes errors inherent to retrospective recall (Ericsson & Simon, 1984). Further, because the verbalization occurs immediately, it is less likely

that the participants react to their own experiences and alter the experiences in their reports (Davison, Navarre, & Vogel, 1995). Also, both TA and ATSS are flexible approaches that can be applied to many different tasks or scenarios. Because the data is generated on-the-spot and without verbal guidance by the researcher (such as in an interview format), it is less likely that participants' experiences are altered by restrictive or leading questions.

TA methods have disadvantages as well. First, most TA studies occur in laboratory settings in the presence of a researcher or research assistant. As a result, TA and ATSS have been criticized for lacking ecological validity, as participant reports may be influenced by the unnatural setting or the presence of novel others (Genest & Turk, 1981). Further, the process of attending to cognitions and verbalizing thoughts while inner experience occurs may be a difficult task for many participants (Davison, Navarre, & Vogel, 1995; Cotton & Gresty, 2006). In addition, verbalization itself may interfere with naturalistic experience, causing the participant to omit cognitions or experience something differently than normal (Klinger, 1975). Participants may limit their verbal reporting based on presuppositions of what their experiences *should* be like (Hurlburt & Heavey, 2003), or to report only on cognitions that feel relevant to the task at hand (Davison, Navarre, & Vogel, 1995). Also, TA methods depend on experiences that are easily verbalized. In fact, research indicates that inner experience is not always a purely cognitive occurrence, and may comprise phenomena such as feelings/emotions, sensory awareness, imagery, and other experiences that are not easily verbalized (Hurlburt & Heavey, 2006). Because of these limitations, TA and ATSS seem to be methods that are unable to capture the full breadth of experience. As a result, these may be inadequate

methods for investigating experience and are better suited for studying primarily cognitive operations where the experience of interest is oriented towards a specific task.

Experience Sampling Method and Ecological Momentary Assessment. Other methods of experience sampling have sought to address the disadvantages of Think Aloud (e.g. low ecological validity, reliance on presence of researchers) and diary methods (e.g. low compliance rates). One such method is the Experience Sampling Method (ESM), developed by Csikszentmihalyi, Larson, and Prescott (1977). In developing this method, the researchers aimed to bridge their understanding of inner experience, behaviors, and situational factors in a participant's everyday environment (Hormuth, 1986; Csikszentmihalyi & Larson, 1987).

In ESM (Csikszentmihalyi, Larson, & Prescott, 1977), researchers provide participants with a portable electronic device (such as a pager or wristwatch) that produces a signal at quasi-random times throughout the day. At these times, participants are asked to fill out a self-report questionnaire called the Experience Sampling Form (ESF) which helps guide their descriptions of their experiences. The ESF contains both close-ended Likert scale questions (concerning affect, activity level, cognitive efficiency, and motivation) and open-ended free response questions (concerning social context, engagement in activity, thought content, location, and time of day). The form reportedly takes about 2 minutes to complete. By combining randomly timed samples in the participant's natural environment with an immediate recall format, ESM obtains information about inner experience that is difficult to capture using standard psychological measures (Klinger & Kroll-Mensing, 1995).

Similar to diary methods, ESM has used both pencil-and-paper and electronic formats for the ESF. The advantages and disadvantages of each format are also similar to those observed in diary studies. Pencil-and-paper methods are easy and cost-effective. A participant simply responds to the beeping mechanism by filling out the ESF questionnaire on paper. Disadvantages of this format include the need for participants to carry around the forms during sampling and minimal capacity for the researchers to verify compliance. In the electronic format, participants instead fill out the ESF on a handheld electronic device (e.g., a Palm Pilot) which is provided by the researchers. While this method is more expensive than using paper forms, advantages include the convenience of carrying a small device instead of paper forms, electronic data which can be sent to the researchers instantly, as well as data collected electronically about compliance (i.e., whether the participant responded immediately to the signal). Further, electronic forms can randomize the order of questions on the ESF to encourage participants to pay closer attention to their responses. Also, electronic devices reduce the potential for human error in handling the data, and studies indicate that their use increases the likelihood of timely responding when the signal sounds (Barrett & Barrett, 2001). Disadvantages include cost, maintenance and programming of the devices, and limiting the number of participants that can be sampled at one time based on how many devices are available (Stone, Kessler, & Haythornthwaite, 1991).

The use of questionnaires in ESM helps researchers to direct a participant's focus more specifically at inner experience, while also exploring behavior and situational factors that co-occur (Csikszentmihalyi & Larson, 1987). ESM researchers consider the interrelatedness of these factors and are often interested in motivations and emotions

involved in experience. Regarding emotions, ESM has been used to investigate the emotional states of adolescents (Csikszentmihalyi & Hunter, 2003), emotions of mothers with infants (Wells, 1988), and cultural variations in emotional reactivity (Scollon, Diner, Oishi, & Biswas-Diner, 2004). For exploring motivation, ESM has been used to assess why adolescents engage in certain activities (Csikszentmihalyi, Larson, & Prescott, 1977) and motivation to accomplish work based on awareness of time (Conti, 2001). Researchers have also used ESM to gather data about the inner experience of psychological disorders, such as schizophrenia (e.g., Kimhy, Delespaul, Corcoran, Ahn, Yale, and Malaspina, 2007).

A variant of the ESM, the Ecological Momentary Assessment (EMA) method, was developed as a medical assessment tool aimed at obtaining ecologically valid data on patients. Like ESM, EMA uses a similar signaling system to that of ESM (e.g., a wristwatch, pager, or Palm Pilot) to prompt the participant to fill out an experience questionnaire or take a physiological measurement (e.g., pain rating, blood pressure, etc.) (Shiffman, 2000). EMA allows for momentary assessment to occur several times over the course of a day for extended periods of time, as necessary.

In addition to acting as an assessment tool in the area of behavioral medicine, EMA was developed to obtain ecologically valid information about how people experience medical illnesses and interventions in their everyday lives (Shiffman & Stone, 1998; Stone & Shiffman, 1994). Unlike the random reporting schedules of ESM, EMA allows the researchers to use various types of reporting schedules, based on the times they choose to make assessments. Such reporting schedules parallel those used in the diary research described above, and compliance is prompted by the electronic signal.

Researchers may use time-contingent sampling, random sampling signaled by a quasi-random signaling device, or event-contingent sampling in which the participant reports only after the event of interest has occurred (e.g., after an anxiety attack, or when pain occurs). Thus, researchers can select the reporting schedule based on their particular assessment interests (Stone & Shiffman, 1994).

Beyond obtaining in-the-moment data on medical measurement, EMA allows for data collection on a participant's experience as it relates to certain medical conditions (Stone & Shiffman, 1994). EMA has been used to study a variety of health-related topics, including the relationship between smoking and drinking (Shiffman, Fischer, Paty, & Gnys, 1994), stress and coping (Bolger & Zuckerman, 1995), the psychological antecedents of migraines (Sorbi, Honkoop, & Godaert, 1996), eating disorders (Smyth et al., 2001), and the link between cardiovascular risk and psychosocial stress (Kamarck, Schwartz, Shiffman et al., 2005). As with the Experience Sampling Method, EMA research can focus on behaviors and situations associated with experience. Thus, EMA is able to provide data about the inner (in immediate awareness: feelings, sensations, perceptions, cognitions, etc.) and outer (context: behaviors, physiological measures, situations, etc.) experience of the phenomena of interest (Stone, Schwartz, Neale, Shiffman, Marco, et al., 1998).

The ESM and EMA methods have advantages for sampling experience. Both can provide idiographic data on individuals for case studies or in larger samples of individuals for collecting more generalizable data (Csikszentmihalyi & Larson, 1987). ESM and EMA also place minimal demands on participants, who generally must be able to read, write, and comply with research requirements (e.g., respond in a timely manner

to the signal; answer questions truthfully). Further, these methods are ecologically valid; because they use random signaling in a participant's natural environment, samples of experience or other self-report data are believed to be externally valid representations of reality outside of the laboratory (Stone, Shiffman, & DeVries, 1999). The immediate reporting aspect of the methods also reduces problems with retrospective recall such as problems with memory (Hufford, Shields, Shiffman, Paty, & Balabanis, 2002; Stone & Shiffman, 1994). In addition, the method allows for repeated measures whenever the signal sounds, enabling a researcher to collect much data in a short period of time. As with other methods that use handheld electronic devices, recording and sending data electronically can assure the researcher that participants are responding to signals in a prompt and in-the-moment manner (Hufford et al., 2002; Stone & Shiffman, 1994). Also, because these methods gather information on both experience and context, researchers are able to view how experience is influenced by situational variables (Hormuth, 1986; Stone & Shiffman, 1994).

Particular to EMA, the method allows for momentary assessment of medical variables as well as related experience. To evaluate EMA's usefulness for gathering ecologically valid data, several studies have compared EMA data to the standard alternative assessment, retrospective self-report. In one example, researchers used EMA to examine the accuracy of pain reporting in patients with rheumatoid arthritis (Stone, Broderick, Kaell, Delespaul & Porter, 2000). Comparing EMA data to retrospective recall, it was found that patients tended to over-represent the memory of the highest pain level felt throughout the week. In contrast, EMA data showed that pain levels were significantly more variable than participants described it retrospectively. Other studies

(e.g. Stone et al., 1998; Anestis, Selby, Crosby, Wonderlich, Engel, & Joiner, 2010) have similarly shown a tendency for participants to omit many details in retrospective recall that can be collected in real-time using EMA.

Each method also has limitations. For example, the Experience Sampling Method uses the ESF questionnaire as a primary measure of experience. The ESF is a self-report measure, which leaves it vulnerable to reporting biases and the possibility of purposefully inaccurate reporting, especially when dealing with sensitive information (Klinger & Kroll-Mensing, 1995). Further, inner experience is not a common concept to most participants. As such, participants may have difficulty self-reporting about experience because they lack appropriate guidance by experienced researchers. Likewise, when using a paper-and pencil ESF, data collection is often not monitored and there may be concerns about not responding promptly to the signal (Hormuth, 1992).

There are also questions about whether the ESF questionnaire adequately orients participants towards accurately describing experience. As with any standardized questionnaire, data collection is limited to the contents of the survey and the participants' abilities to respond to these questions (Stone et al., 1991). While the ESF asks questions about various aspects of experience, it is uncertain if these questions capture a full depiction of experience, and the number of questions on the ESF is limited by the participant's time and willingness to answer them. Also, because the participant is interfacing with a paper or electronic form, there is no flexibility in what aspects of experience are queried, as would be the case in an open-ended interview format. Although some items on the ESF are open-ended, participants may not understand these questions or may respond to them inappropriately without guidance; likewise, researchers

are not afforded the opportunity to ask follow-up questions after a participant responds to a questionnaire.

The close-ended questions on the ESF are also a concern. Forced-choice items may result in participants selecting an option that is close to the truth but not entirely accurate. This can result in skewing the description in favor of the options provided. Because it is unfeasible to produce an exhaustive list of possible choices that reflect the experiences of participants, it may be that an accurate description of a particular experience is not listed as an option. Because of this, participants may either omit a report of an experience, or choose an option that does not accurately capture the experience (Klinger & Kroll-Mensing, 1995).

Ecological Momentary Assessment also has its limitations. For example, EMA requires participants to train in self-administering a targeted physiological measure, then record responses repeatedly each day for the duration of the study (Stone & Shiffman, 1994). This type of time commitment may limit what types of individuals are available to participate and may create a selection bias or high rates of attrition (Stone et al, 1999). Many potential participants may have jobs or lifestyles that prevent frequent momentary assessments throughout the day (Shiffman, Stone, & Hufford, 2008). There is also the question of reactivity to the process. It is unclear whether observing and monitoring one's own behavior, affect, and cognitive processes may somehow impact those same phenomena, making it difficult to gather ecologically valid data (Hufford et al., 2002). Because of this concern, several studies have examined reactivity in EMA. In a study of drinking behavior, Hufford et al. (2002) found that a participant's motivation to reduce drinking behavior moderated the effects of reactivity, such that participants who were

motivated to reduce drinking were less susceptible to reactivity. The authors concluded that reactivity effects were small, however, and other authors (e.g. Farchaus & Corte, 2003; Litt, Cooney, & Morse, 1998) have found little evidence of the impact of reactivity on their results.

A final disadvantage of EMA regards a participant's willingness to disclose health information in the context of research (Shiffman, 2000). As in any self-report research, participants may exhibit purposeful or inadvertent biases in self-presentation due to embarrassment, shyness, or incorrect perceptions (Farchaus & Corte, 2003). Coupled with the need to frequently administer self-assessments, likely when doing so is inconvenient (e.g. the participant is somewhere public), there are questions as to whether EMA data is always accurate or ecologically valid.

Descriptive Experience Sampling. A study by Hurlburt (1990) introduced an experience sampling procedure, which he later called Descriptive Experience Sampling (DES), in which a participant volunteers to carry a beeper device that beeps at random time intervals, prompting the participant to write down notes about her inner experience at the moment of the beep. Usually within one day after the samples are generated, the researchers interview the participant about the samples of experience she recorded. Through the interview process, the researchers help the participant to focus descriptions on the content of experience at the exact moment the beep interrupted. The researchers use a series of probing questions to help the participant to "bracket" her presuppositions about experience, that is, to guide participants away from preconceived notions about what experience is like in an effort to reduce ambiguity.

As with ESM and EMA, the DES procedure obtains ecologically valid data by use of a random signaling device, the beeper, which participants carry with them in their everyday environments. The beeper emits a beep randomly through an earphone, and the participants are asked observe inner experience at the moment that the beep interrupted, and immediately write notes about their observations. Participants then reset the beeper, continue their everyday activities, and await the next randomly signaled moment. They repeat this process several (usually 6) times on a sampling day. Typically within 24 hours, an “expositional” interview takes place. During this interview, researchers interview each participant about the signaled moments of inner experience. The purpose of the interview is to aid the participants in describing their inner experience in high fidelity. Researchers ask questions in an open format to clarify any descriptive elements of inner experience that the participant is able to report.

The DES interview also serves a different purpose early in the sampling process. Hurlburt (2009) 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 researchers. These early interviews help orient participants to the DES process. For example, participants often require guidance on the following processes: improving observation of experience at “the moment of the beep,” discerning what is innerly experienced from what exists in the world outside of experience (experience vs. context of that moment), and describing experience clearly to outside observers (Hurlburt, 2011c). 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 to the participant, so that subsequent apprehensions of experience and subsequent self-reports about experience can be obtained in high fidelity. Once the collection of samples and subsequent interviews are complete, researchers review various data sources of the inner experience samples (i.e., written descriptions, memory and videotapes of the interviews, past written and verbal discussions about the samples, etc.) and observe salient characteristics about each participant. These reviews allow for the creation of an idiographic description of an individual's inner experience.

An advantage of the DES interview is that its open format does not impose restrictions on the types of experience or activities in which the experimenter is interested. While questionnaire methods, including ESM and EMA, limit participants in their abilities to report specific phenomena, the DES method enables and encourages the participant to describe experience in high fidelity. The participant is given an open format to describe experience, and interviewers use questioning to refine and clarify relevant aspects of his or her experience. The interviews result in unique idiographic descriptions of participant's experience, based on the collaboration of informed participants and seasoned inner experience researchers.

In DES, ecological validity is obtained by sampling participants in their natural environments as opposed to in laboratory settings. However, further validity questions arise concerning whether the idiographic descriptions are valid depictions of participants' experiences (Hurlburt & Heavey, 2006). In DES, researchers aim to collaborate with participants in describing experience faithfully, insofar as the participant is able to describe it with the support of the researchers. However, while DES aspires to *high*

fidelity accounts of experience, it does not necessarily comment on the *accuracy* of descriptions (Hurlburt, 2011c). The goal of DES is to describe experience as best it can, acknowledging that the human ability to apprehend and describe experience may be limited. The researchers work towards a shared understanding of a participant's experience and also evaluate the believability of descriptions that participants provide during interviews.

But how do DES researchers evaluate fidelity throughout the interview process? DES interviewers look for instances of "subjunctification," any vocalization or behavior that indicates that the participant has strayed from describing experience at the moment of the beep (Hurlburt, 2011b). Some common examples of subjunctifiers include the use of verbs in the subjunctive mood (e.g., "I would think..."), as this indicates that what follows is a supposition, and not necessarily fact. Subjunctification can also include general or theoretical statements (e.g., "I usually...", or "Whenever I X, I experience Y..."), which again suggest that the participant is not describing a factual account of a specific experience. Other descriptions that undermine a true, specific account of an experienced moment include: plausibility indicators (e.g., "Of course"), causal inferences (e.g., "because"), intentional expressions (e.g., "I was trying to"), and behavioral indicators of uncertainty such as false starts, long pauses, or appearing stressed or unsure when answering a question. Hurlburt (2011b) cautions that subjunctification is evidence of a non-straightforward description, but not a conclusion that misrepresentation has taken place. Other reasons a participant may subjunctify their responses include: distress or embarrassment, encountering difficulty with the task of apprehending or describing experience, or because subjunctification is a natural idiosyncrasy of that participant's

language. Nonetheless, the interviewer must be aware of subjunctification and consider it possible evidence that the participant is not faithfully describing inner experience at the moment. In contrast, if a participant uses subjunctification infrequently in a response, and instead answers questions directly and confidently, this is evidence that the participant is describing experience as it was apprehended. Observing subjunctification is an essential element of DES because describing experience is often difficult; subjunctification is an indication that a participant lacks certainty in his own experience description, and hints that an account may not be high fidelity in regards to what was actually experienced. Recognizing subjunctification during a DES interview is important for discerning faithful accounts of experience from uncertain ones.

DES results can be used for between-subjects analyses. Towards this aim, a study by Hurlburt and Heavey (2002) demonstrated that DES can be a reliable method for accessing experience and coding it into categories. In the study, two researchers independently interviewed the same 10 participants about their inner experiences as sampled by the DES method. For each participant, one researcher would conduct the first half of the interview and then the other researcher would conduct the second half. The order of the interviewers was counterbalanced and alternating. Each participant was interviewed a total of three times, after each of three sampling days. Afterwards, both researchers categorized the same experience samples using 16 different inner experience categories originally identified by Hurlburt (1990; 1993). Five of the categories were used in the analysis, as a majority of the samples contained these five elements: inner speaking, feelings, unsymbolized thinking, sensory awareness, and images. The samplewise (interobserver) and participantwise reliability was measured for these five

common elements of inner experience. The samplewise reliability ranged from .52 to .92 for this study, and the participantwise reliability ranged from .91 to .98. The observer agreement fell between 83% and 97%. The researchers concluded that this is strong evidence that independent observers can describe inner experience processes consistently.

Because of its advantage for describing experiential phenomena vividly, DES has been used to characterize the experience of various populations of interest. While 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), or 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, researchers 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 successfully demonstrated commonalities among the experiences of individuals in various groups. For example, DES has been used to investigate the inner experiences of individuals with schizophrenia (Hurlburt & Melancon, 1987, Hurlburt, 1990), and has noted several tendencies in a small sample of subjects. In particular,

subjects with schizophrenia experienced a high frequency of inner visual experiences, concrete visual images that were often “goofed up,” and words that appeared as inner visual images that moved. Surprisingly, they were able to report clear emotional experience in spite of the common symptom of outwardly blunted affect. Another study investigated the inner experience of individuals with Asperger’s disorder (Hurlburt, Happé, & Frith, 1994). These subjects reported thoughts that were primarily in the form of images, with no feelings, inner speaking, or bodily sensations, and also had a higher than normal frequency of having no experience. Also contrary to typical subjects, the Asperger’s subjects showed little interest in the experience of other people. It is important to note, however, that some of Hurlburt, Happé, and Frith’s Asperger’s subjects were able to consider the experience of other people without difficulty, a finding at odds with the usual view of Asperger’s disorder. DES has also studied individuals with anxiety (Hebert & Hurlburt, 1993), which demonstrated that anxious individuals may experience higher proportions of self-criticism than non-anxious peers. DES studies of depression (Hurlburt, 1993) showed evidence that depressed individuals may experience a higher rate of unsymbolized thinking (thinking that is not characterized by words or images) than non-depressed individuals. And finally, a study of women with bulimia nervosa (Jones-Forrester, 2006, 2009; Hurlburt, 2011b) found that these women often experienced what the author calls “fragmented multiplicity of experience,” in which an individual is experiencing multiple inner experience phenomena at one moment in time. The women in the study ranged from demonstrating 44 percent to 92 percent of experiences that contained multiple phenomena, which is surprisingly high compared to the median 0 percent observed in non-bulimic subjects. Importantly, none of the women

in this study were previously aware that they had multiple experience phenomena occurring simultaneously.

The examples above 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. DES stands alone as an experience sampling method in studies where the depth of describing inner experience phenomena is a primary research interest.

Reading Phenomena

Whereas no studies to date have explored the momentary inner experience of readers while reading, a variety of studies have applied qualitative approaches to the study of reading. For example, Holland (1975) recruited five university students to read a collection of short stories (e.g., “A Rose for Emily” by William Faulkner, “Winter Dreams” by F. Scott Fitzgerald, etc.) and to discuss them in a semi-structured group setting. Holland observed and moderated these group meetings and later analyzed the readers’ discussions from a literary perspective. His analysis began with the premise that individuals reading the same story can have different interpretations from one another; further, these different interpretations are a result of individual differences, such as the interaction between both the individual’s personality and past experiences and the narrative itself.

Holland phrased his overall research question as “What do readers read and how?” However, his work primarily focused on the reaction of readers to particular fictional stories, as opposed to an in-the-moment exploration of how the reading process unfolds. The author transcribed the interviews and in his analysis he described the style

of each reader in their discussions of the texts. From these analyses, he devised “Four Principles of Literary Experience.” These principles were “Style Seeks Itself,” “Defenses Must Be Matched,” “Fantasy Projects Fantasies,” and “Character Transforms Characteristically.” The theme of these principles was that the readers compared the narratives to their own styles, experiences, and identities. He theorized that an individual’s reaction to a text reflected the perceived applicability of the story to his or her own self.

Several investigations have used the think-aloud paradigm, a method commonly used to study experience (see a review above), to research procedural elements of reading comprehension. Pressley and Afflerbach (1995) extensively reviewed a collection of these studies. In the studies summarized therein, researchers used think-aloud methods to categorize verbally reported data and to discover themes. Data from these studies helped support and extend theories of reading comprehension, such as strategic, metacognitive, knowledge-based, and social theories. Pressley and Afflerbach proposed a concatenation of these theories, emphasizing a few key points. The authors asserted that skilled readers are constructively responsive, actively building meaning through a reflective and integrative response to the text. These skilled readers reflect on information learned earlier in the text or from outside knowledge, and they integrate this information into current comprehension of what is being read. This involves top-down processes as proposed by schema theory (e.g., Anderson & Pearson, 1984) as well as bottom-up process of taking in new information (van Dijk & Kintsch, 1983). Pressley and Afflerbach also found support for the idea that reading is inferential; as a communication form, reading with comprehension often serves social goals. Pressley and Afflerbach

concluded their reflections by stating that constructively responsive reading is both complex and orderly, and that participants are generally able to articulate the strategic processes, monitoring, and use of knowledge that occurs.

However, Pressley and Afflerbach (1995) also acknowledged limitations to the reliance on think-aloud data. First, as with any self-report method, the data relied on the participants' abilities to be accurate regarding their own experience. Accuracy relied not only on the ability to introspect, but also on the ability to describe experience and to separate the contents of their experience from their interpretations of that content. Pressley and Afflerbach also expressed concern about the use of concurrent vs. retrospective reports. Think-aloud methods generally use concurrent verbal reports that describe experience, while doing so is quite difficult in a process such as reading where verbal processing is already taxed. When retrospective reports are used, there is always a question of whether the information accessed from memory is an accurate depiction of what was actually experienced (Ericsson & Simon, 1980). For these reasons, Pressley and Afflerbach stated the need for more refined studies of the reading process that address these methodological concerns.

Perhaps more central to the idea of inner experience, research on situation models have described the mental representations readers may create while reading a text. Situation models are mental representations of the people, objects, locations, events, and actions described in a text (Zwaan, 1999). Various studies have demonstrated that the experience of reading narrative may often involve the reader vicariously experiencing the situations as if he or she is actually there. From this viewpoint, readers of narratives become situated to spatial and temporal relationships, as they would in real life.

For example, Glenberg, Meyer, and Lindem (1987) investigated spatial relations in text. They found that objects described as spatially near a protagonist were more easily recognized by readers on a recognition task compared to objects that were described as far away, and therefore less immediately relevant. Similarly, Zwaan (1996) showed that situations described as recently occurring (e.g., “a moment ago”) were more accessible than situations described as occurring earlier (e.g., “an hour ago”), demonstrating that time relevance in narrative may also mimic time relevance in real life. Other findings showed that accomplished goals in narrative are less accessible than ongoing goals (Trabasso & Suh, 1993), that people make inferences about and empathize with a protagonist’s emotional states (Gernsbacher, Goldsmith, & Robertson, 1992), and that reading speed is slowed down when a reader encounters information that is surprising or violates a stereotype (Carreiras, Garnham, Oakhill, & Cain, 1996). These examples have all suggested that readers of narrative have inner experiences that align with the hypothetical experience of characters in the story, a phenomenon called vicarious experience.

Other research has examined the role of inner speaking in silent reading (see Perrone-Bertolotti et al., 2014 for a review). Evidence from experimental psychology suggests the presence of an inner voice while reading. For example, when readers are manipulated to believe the author of a passage is a fast-talker or a slow-talker, readers adjust their reading rate accordingly (Alexander & Nygaard, 2008). Studies using fMRI have also suggested the use of inner voice, particularly when reading direct (e.g., Mary said: “I’m hungry”) compared to indirect (e.g, Mary said that she was hungry) speech sentences (Yao, Belen, & Scheepers, 2011). Data from fMRI indicate that the direct

speech condition causes greater activation in voice-selective areas of the auditory lobe compared to the indirect speech condition. Although these methods study reading phenomena indirectly, they provide compelling evidence that the reading process may involve inner speaking for many readers.

When and how does innerly speaking the text occur? To investigate this, an intracranial EEG study by Perrone-Bertolotti et al. (2012) utilized findings from Jäncke and Shah (2004), which demonstrated that participants imagining the audition of syllables show similar brain activity in the auditory cortex to when they actually hear the syllables produced. In Perrone-Bertolotti et al. (2012), findings suggested that inner speaking is a top-down process during reading which is moderated by attention and cognitive strategy. When participants were asked to attend to specific words (colored grey) that formed a story and ignore others (colored white) that were scattered among the target words, activity in the temporal voice areas (TVA) was increased for attended words compared to ignored words. Additionally, upon presentation of the stimuli, the TVA was slower to activate compared to visual cerebral regions, which suggested that innerly speaking the words was a top-down process that came after initial stimulus detection. Whereas Perrone-Bertolotti and colleagues conclude that their findings support the inner speaking of text as it is read, particularly when the reading is closely attended, it is important to note that the reading task in this study is different from natural environment reading. It may be that presenting the stories as a rapid succession of words, some the participants attended to and others they ignored, is significantly different from a straightforward reading of a story. Thus, Perrone Bertolotti et al. likely measured a phenomenon somewhat different from inner speaking while reading in the natural environment.

Another study by Kurby, Magliano, and Rapp (2009) concluded that participants were significantly more likely to engage in silent speaking when reading dialogue of characters whose voices they have heard compared to characters whose voices they have not heard. To measure this, the researchers played recordings of a radio show to familiarize participants with two voices. They then asked participants to read scripts, of which some indicated that the familiar voices were speaking. When later asked whether target words were present in the read scripts, participants were quicker to respond when the script indicated that a familiar voice was speaking. Kurby et al. concluded that the quicker recognition implied that the participant had internally spoken the words attributed to familiar voices. In contrast, the findings from Perrone-Bertolotti et al. (2012) suggested that innerly speaking the reading was a spontaneous process and occurred even when reading narrative with no identifiable speaker. In both cases, the experimental circumstances of the reading may have influenced the presence or absence of silent speech while reading, and other methods may be needed to fully explore the role of silent speech while reading.

Other findings suggested that inner speaking occurred more often when reading difficult passages compared to easier ones (Alexander & Nygaard, 2008). The authors theorized that difficult passages relate to increased inner speaking because readers must read more slowly and carefully, which promotes silent speaking of the text as opposed to more abstract processing. This latter finding paralleled past research by Hardyck and Petrinovich (1970) that found that subvocal speech while reading, as measured by muscle action recordings with an electromyogram, was more frequent while participants were reading difficult texts compared to easier ones.

Thus far, most research on the reading process has focused on indirect evidence of inner experience, such as the inner speaking studies above, or on procedural aspects of comprehension as opposed to apprehending the actual inner experience of reading. Caracciolo and Hurlburt (2013), however, investigated the inner experience of two readers while reading the story *The Metamorphosis* by Franz Kafka. The authors used the DES method to obtain quasi-random samples of the participants' inner experiences while reading. The main finding of this study was that the two participants, "Alex" and "Lynn," experienced reading the text in drastically different fashions. Lynn's moment-by-moment reading experience mostly pertained to the content and details of the narrative. In 3 out of 4 samples, Lynn was innerly seeing a scene that was imaginarily related to the content of the story at that given moment in time. In contrast, Alex's momentary experience was quite different. In all 4 of his samples, Alex was experiencing the word itself. At the moments the beeps interrupt, nothing else was present in experience except the word he was reading. While Alex was later able to comprehend and recall what he read, his in-the-moment experience did not include anything related to comprehending or representing the story in any way. This was surprising to Caracciolo because this description of Alex's reading experience appeared to contain no conscious, in-the-moment awareness of the narrative. Alex's reading style contradicted the idea of situation models described above, and Caracciolo was unable to believe that Alex understood what he was reading.

While Lynn's reading experience was unsurprising to the authors, Alex's reading experience defied Caracciolo's presupposition of what the reading experience should be like, and Caracciolo could not at first accept that Alex could experience reading word by

word by word and still comprehend the story. However, when Hurlburt later sampled Caracciolo regarding Caracciolo's own experience, Caracciolo's experience was in some ways like Alex's! For example, Caracciolo was listening to his friend speak. At the moment of the beep, Caracciolo was experiencing his friend saying the Italian word "*saltavi*." At that particular point in time, Caracciolo was not experiencing the meaning of the word or the sentence his friend was speaking. He was simply experiencing the hearing of the word, though he was later able to comprehend and recall what was spoken. This example demonstrates the importance of bracketing presupposition, and it also showcases the value of sampling inner experience of reading in a descriptive, probing way. While Caracciolo and Hurlburt (2013) have taken initial steps towards examining the inner experience phenomenology of reading, further research with more participants is needed to further characterize inner reading experience.

CHAPTER 3

METHOD

The current study investigated the inner experience phenomenology of reading using the Descriptive Experience Sampling (DES) method. We chose DES as our method of exploring reading phenomena for a variety of reasons. First, the focus of DES on obtaining rich, descriptive accounts of inner experience phenomena aligns with the aims of an initial study of reading phenomena. Little is known about the inner phenomena of reading, and we believed that an exploratory, qualitative method such as DES would help to expand knowledge about the experience of reading. Second, DES allows for both nomothetic and idiographic analyses. While we were interested in the inner experience of people in general while reading, we were likewise interested in individual experiences while reading. Using DES, we were able to explore ways in which the inner experience of reading was similar across individual readers. At the same time, we were able to characterize the reading experience of individuals, highlighting individual differences in the way the reading process was experienced. These advantages made DES a well-suited method for investigating the range of possible descriptions of inner reading experience.

A third advantage concerned the diligence of the DES method in obtaining and preserving high-fidelity accounts of inner experience. In his 2011 book *Investigating Pristine Inner Experience*, Hurlburt described six reasons an iterative method such as DES is effective for obtaining and preserving high-fidelity accounts of inner experience. These are: “(a) Practice may refine the observational skill; (b) practice may improve interview skill; (c) iteration allows the synergy of refining observation and improving

interviews; (d) iteration may make the observer more prepared to observe; (e) iteration may lessen the need for reconstructions; (f) iteration may improve the fidelity of reconstructions” (Hurlburt, 2011b, p. 158).

A variety of measures were taken during our study to ensure that the iterative process utilized these advantages to obtain high fidelity samples. First, by nature of the DES method, each participant was interviewed on multiple occasions, in an effort to build skills for both the participant and the interviewers. Participants often enter the DES process not knowing what to expect. They likely do not know what inner experience is, what the moment of the beep is, how to attend to inner experience, how to describe it in a way that other people might understand, how to bracket their presuppositions about what their own experience is like, etc. The interviewers, on the other hand, also need to build skills at training and educating the participant effectively, asking clearly worded questions that are aimed at experience, bracketing presuppositions, asking open-beginning probes, etc. By the iterative nature of DES, participants and interviewers work synergistically toward building an understanding about the process and about experience.

Other methodological considerations aided in building higher fidelity descriptions of experience. Within 24 hours after an interview, DES researchers wrote descriptions about what was in the participant’s experience during each sample. These short descriptions condensed the findings of the interview and helped to distinguish what was determined to be in experience at the moment of the beep, as opposed to contextual elements that were often mentioned as well. The researchers then peer-reviewed the descriptions to ensure that there was agreement about how each experience was

described. All DES interviews were videotaped with permission from the participants, so any conflict or uncertainty was reviewed on the video tapes by the researchers and then discussed.

After all sampling interviews with a given participant concluded, the researchers then met to discuss each of that participant's samples. As a group, we came to a consensus about themes or "salient characteristics" of the individual's inner experience. This included categorizing experience phenomena according to the Five Frequent Phenomena (hereafter called "5FP") of inner experience, originally identified for their frequency by Hurlburt and Heavey (2002), and other types of experience phenomena that may have occurred. The fruits of these discussions were then summarized in a written document, which was also peer-reviewed by the research team. These documents, along with the beep descriptions, preserved our collective findings and interpretations about the participant's inner experience.

Participants

In the screening phase, participants were 260 undergraduates from a large public university. Most participated to fulfill a research requirement for a psychology course. Of these participants, 74 identified as male, 165 as female, one identified as "N/A," and twenty did not provide gender information. Participants' ages ranged from 18 to 49 with a mean age of 20.6 years.

We invited some of the participants from the screening phase to participate in the experience sampling phase for additional research credit and a small cash stipend, which was \$5 for each of four sampling days in the participants' natural environments and \$20 for a fifth sampling day that occurred after participants were beeped while reading.

Seventeen undergraduates participated in the experience sampling phase (3 males and 14 females), and ages ranged from 18 to 30 with a mean age of 19.93 years.

Measures

Demographic Questionnaire. The demographic questionnaire asked participants to provide information about age, ethnicity, year in college, and relationship status. It also asked the participants to provide contact information including email address, home address, and a phone number.

Symptom Checklist-90 (SCL-90). The SCL-90 (Derogatis, 1994) is a 90-item self-report questionnaire that assesses psychological distress and multiple aspects of psychopathology, including somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism (aggressiveness and interpersonal hostility). Respondents use a 5-point Likert scale to describe how much they experience distress as a result of psychological symptoms, ranging from 0 (“not at all”) to 4 (“extremely”).

Nevada Inner Experience Questionnaire (NIEQ). The NIEQ is a self-report questionnaire originally developed for this study. Respondents read various questions that pertained to characteristics of their own inner experience (e.g., “How frequently do you talk to yourself in your inner voice?”; “Generally speaking, what portion of the inner experience of people in general is in images (seeing things in your imagination)?”) and of their impression about the inner experience of people in general (e.g., “How frequently do people in general mentally see or visualize something?”; “Generally speaking, what portion of the inner experience of people in general consists of thinking about something specific but without using any words or mental images?”). Questions related to the 5

characteristics of inner experience identified by Hurlburt and Heavey (2002).

Respondents recorded their answers on a visual analog scale with frequency items ranging from “Never” to “Always” and proportion items rating from “None” to “All.”

Self-Talk Scale (STS). The STS was designed by Brinthaupt, Hein, and Kramer (2009) to measure the frequency of self-talk, which is defined as the behavior of carrying on an internal conversation with oneself. Items measure various subscale factors of self-talk, which include Social Assessment, Self-Reinforcement, Self-Criticism, and Self-Management. Respondents read statements regarding self-talk behaviors, which begin with the stem “I talk to myself when...” and end with a situation (e.g. “I try to anticipate what someone will say and how I’ll respond to him or her”; “I need to boost my confidence that I can do something difficult”). Respondents recorded their answers on a 5-point Likert scale, ranging from 1 (never) to 5 (very often). The scale was used to produce subscale scores and total scores of self-talk frequency.

Brouwers Literary Reading Questionnaire. This five item questionnaire was adapted from the *Current Reading Questionnaire* (Miall & Kuiken, 1995). On three items, participants estimated how many literary works they have read in the past year, how often they read literary works, and how often they re-read novels that interest them by responding to ordinal response scales. The remaining two items were open-ended, asking the participants to write down authors and titles of literary works they read in the last year and to name up to three authors they particularly enjoy, as well as some works by those authors.

Reactions to DES interview. This semi-structured interview was designed by Turner (unpublished) to explore the impact of DES participation on a participant’s life,

such as impacting their thoughts, feelings, behaviors, or any other aspects of existence or awareness. The structured interview contains seven questions, although researchers are free to ask follow-up questions as necessary. The seven questions are as follows:

1. What was it like to collect samples?
2. What were the interviews like for you?
3. Did DES have an impact on you, positive or negative?
4. Did DES have an impact on your life outside of sampling, your thoughts, or your feelings?
5. Is there anything you do differently because of your participation in DES?
6. Has DES influenced the way you view yourself or anything else?
7. Do you have any other thoughts or reactions about participating in this study?

Equipment/Apparatus

This study used random signal generators, or “beepers.” The beeper is a small, portable box that can easily be clipped to the waist or carried in a pocket. The beeper is connected to a headphone, which carries the DES beep to the participant’s ear. It is programmed to signal randomly within one hour of being activated with an average of 30 minutes elapsing between each beep. The participants were given a pocket-sized notebook to record notes about their inner experience at the moments the beep interrupted.

This study also used a computer program, designed for these studies, which presented fiction stories for participants to read. This proprietary program was accessible to participants via any computer with access to the internet. The two stories presented were “Winter Dreams” by F. Scott Fitzgerald, a modernist romance story, and “Big Two-

Hearted River” by Ernest Hemingway, an existential story in a naturalistic setting. The program presented the stories as pages that contained approximately 10-15 lines of text. On six preselected pages, a beep sound was administered to signal the participant to attend to his or her inner experience at the moment the beep interrupted.

Procedure

This study was conducted as part of a three-part study. The portion primarily discussed here is referred to as the “Reading Study” and explored the phenomenology of reading experience. The second portion compared a participant’s presupposed estimates of inner speaking to actual experiences of inner speaking observed in natural environments. The third portion investigated participants’ reactions to participating in DES and the impact DES may have on their lives. Select participants who passed the initial screening phase were invited to complete all three portions of the study.

The overall study procedure has four phases: (1) screening, (2) “Natural Environment” DES participation, (3) “Fiction” DES participation (including a post-sampling debriefing interview), and (4) a follow-up “Reactions to DES” interview.

Screening phase. Participants consenting to screening completed five questionnaires (requiring about 30 minutes): the brief demographic questionnaire, the Symptom Checklist-90-Revised (SCL-90-R), the Brouwers Literary Reading Questionnaire (BLRQ), the Self-Talk Scale (STS), and the Nevada Inner Experience Questionnaire (NIEQ). Participants were thanked and informed that they may be contacted in the future about voluntary participation in the next phase of the study.

We invited a selection of participants who scored in the top or bottom quartiles on the STS to participate in the next phase of the study. Participants from these quartiles

were invited on a first-come first-serve basis after screening identified them as eligible; if screened participants declined the invitation, the next top or bottom quartile participants were invited. We selected from the top and bottom quartiles primarily to satisfy the requirements of the inner-speaking portion of the study, which is not the primary interest of the present study. We contacted the participants so selected (both high and low self-talkers) via telephone or email and invited to the next phase of the study.

Natural Environment DES. A sample of participants scoring in the top or bottom quartiles of the Self-Talk Scale was invited to participate in the remaining phases of the study. Participants who accepted this invitation were given a beeper which they were instructed to wear in their natural environments, for a few hours at a time, at their leisure. The beepers are programmed to beep randomly (on average, one beep per half hour) when activated. We instructed participants to attend to their inner experience at the moment the beep interrupted. We asked them to then jot down a few notes (in a notebook we provide to them) about their inner experience to aid their recall later. Each participant was asked to wear the beeper until he or she had taken notes on six beeps. This took approximately 3 hours and was considered one day of sampling. After the participant took notes on six beeps (i.e., collected six samples), he or she participated in the DES expositional interview within 24 hours.

The expositional interview is a detailed inquiry into the participant's inner experience. It is contained within a culture of constructive confrontation in concrete instances – that is, interviewers work together to manage presuppositions, biases, and misinterpretations that may occur for either the participant or for other interviewers. As such, DES interviewers are called to be mindful of leading questions, unclear

communication, and other pitfalls that may lead the conversation away from discussing direct experience at the moment of the beep, and must be willing to confront these issues in-the-moment while interviewing. Out of these confrontations comes a consensus of how the questioning may proceed in the interest of collecting high-fidelity samples of inner experience.

After each of four sampling days, participants were interviewed individually regarding their inner experience that was caught in flight by the beep. Between two and five researchers (UNLV professors and graduate students listed in the protocol) conducted each interview. The interviews lasted approximately one hour each and were videotaped for future examination by the researchers. Although it is not possible to provide a transcript of the interview questions because of the free flowing and interactive nature of the interview, the initial question was always some version of “What was in your experience at the moment of the beep?” Interviewers then asked follow-up and clarification questions working toward a high-fidelity understanding of the experience present at the beep. To the fullest extent possible, all questions were aimed at understanding what was present in experience at the moment the beep interrupted. For each interview, this process was then repeated for each beep until all six beeps have been discussed or for one hour, whichever came first. For this phase of the study, each participant engaged in the expositional interview four times, after each of four sampling days.

After each expositional interview, the researchers wrote a beep characterization of each experience sample. These written characterizations describe the direct experience that was present at the moment of the beep; additional information that was not in direct

experience (e.g., situational factors, notable elements that were absent from experience, etc.) is notated in brackets. Once written, the characterizations were circulated to other researchers who were present at the interview for commentary. If disagreements arose, the characterizations were discussed openly with research members and video of the interview was reviewed until agreement was achieved or continued disagreements were acknowledged. At that point, the characterization was edited, if necessary, to portray the consensus description or standing disagreement, and then confirmed by a final round of review.

Fiction DES. After the Natural Environment DES phase was complete, the same participants were asked to participate in one additional sampling day to take place while reading some short fiction works selected by the researchers; we called this phase Fiction DES, and it was the primary focus of the Reading Study. In the Fiction DES phase, participants were asked to read two short stories (“Winter Dreams” by F. Scott Fitzgerald, and “Big Two-Hearted River” by Ernest Hemingway) which were provided via internet. They were free to complete this task in a natural setting, such as their home or in a library. As described above, the stories were displayed on a series of pages. Prior to the first story, participants were provided a title page that reminded them to plug in the DES earphone, as used in Natural Environment DES, into their computers. They were also instructed to click on the “Next page” button to navigate to the next page. After turning the first page, participants heard a DES “test beep” and were instructed to set their computer volume to a comfortable level. Participants could navigate back and forth to the test beep page to ensure that the volume was at a comfortable yet audible level, just as in the Natural Environment DES. A final instructional page informed the participants

that they were to read two stories and respond to the DES beeps in the same way they responded to beeps in the Natural Environment DES. They were also informed that they could hit the “Back” button to navigate to previous pages.

They then proceeded to the pages which presented the readings. On six preselected pages, the participants received a 700 hz DES beep, the same as the beep they had heard in the Natural Environment DES. The reading task took approximately one hour. The note taking task and expositional interview were identical to those used in the natural environment except that the beep terminated itself after a few seconds instead of being terminated by the participant. After the expositional interview, we asked participants to specify the portion of text they were reading when each of the DES beeps interrupted them. As in the Natural Environment DES phase, the researchers followed the same procedure of writing, editing, and forming a consensus or acknowledging disagreements regarding beep characterizations.

Reactions to DES interview. Immediately after the expositional interview following the reading task, we conducted the Reactions to DES interview, which was also video recorded. We then asked the participant to complete the SCL-90-R. This interview and questionnaire are parts of the reactions to DES portion of the study and need not concern us here. This concluded the participant’s involvement in the research process. Each participant was thanked and dismissed.

Data Preparation. After a participant had completed the study, all the researchers who had been involved in interviewing that participant met to discuss each sample with the aim of reaching a shared understanding of each, identifying where discrepant understandings exist, and then either resolving those discrepancies or leaving

the discrepancies explicitly acknowledged. This discussion proceeded sample by sample; when uncertainty or disagreement arose, the researchers reviewed the video of the interview to reach a consensus. The products of these sample-by-sample discussions included coding the sample according to the 5FP or other descriptive categories (e.g., words present, scanning), refining and updating the researchers' perceptions of the participant's general inner experience as each sample influenced the overall picture, and eventually describing the salient characteristics of inner experience phenomena that occurred across the participant's sampling days.

Next, typically within 24 hours, each researcher who was present at the meeting wrote a brief description of salient characteristics that emerged throughout the participant's sampling. The designated researcher assigned to that participant then referred the brief descriptions to write a full descriptive account of these features, which was peer-reviewed and edited by other members of the research team until a consensus was reached or disagreements exposed but not resolved. These "Salient Characteristics" descriptions, which characterize the participants' natural environment salient characteristics, salient characteristics while reading, and the frequency of the 5FP in the natural environment and while reading, can be found in Moynihan (in preparation).

To analyze the reading data from this study, the researchers aggregated all samples that included reading fiction from both the Natural Environment DES and the Fiction DES. Additionally, we included reading samples from a pilot study in which two participants, Alex and Lynn, read the story *The Metamorphosis* by Franz Kafka (hereafter referred to as Kafka DES), and from an adjoining study using the same participants from the present study, in which seven of the participants also read an erotic fiction story, "Not

Her Type,” by an anonymous writer with the pseudonym “hotknight” (hereafter referred to as Erotica DES). *The Metamorphosis* by Kafka is a classic German novella about a man transformed into giant a spider or insect, and we used a version translated from German to English by David Willie in 2002. “Not Her Type” by “hotknight” is a hardcore, graphic erotic fiction story posted to the website Literotica.com depicting a young heterosexual couple’s adventurous sexual experiences. The study designs for the Kafka DES and the Erotica DES were approximately the same as the present Fiction DES study, though the Kafka DES and Erotica DES studies each contained only four beeps. Further, the Kafka DES beep descriptions were not subjected to the same process of peer review described above, and were instead written by the developer of the DES method and reviewed and approved by a co-investigator. All reading samples across these studies were sorted and categorized based on notable experience characteristics (e.g., illustrative inner seeing, feelings related to the text, seeing a word, etc.), which are described in detail in the Results section below.

CHAPTER 4

RESULTS

The following sections describe and exemplify various phenomena that occurred while reading, as well as individual differences in reading experience. We first describe inner experience phenomena that occur while reading fiction; for this portion, we obtained 97 samples during the Fiction DES phase, 27 samples of fiction reading in the Erotica DES phase, five samples of fiction reading in the Natural Environment DES phase (all by participant Maddi), and eight samples from the Kafka DES pilot study (137 total fiction samples). For the most part, our discussion regards reading fiction. However, on a few occasions, we discuss nonfiction reading that occurred during Natural Environment DES that sheds light on fiction reading phenomena. After we describe inner experience phenomena that occurred while reading fiction, we briefly discuss individual differences in fiction reading experience across participants.

Appendix A contains a description of all fiction and nonfiction reading samples and their codings into the 5FP and phenomenological categories below (aside from the Erotica DES samples that can be found in Lapping-Carr, 2015)

The descriptions below are labeled based on the participant, the sampling day, and the page in the text. Because Fiction DES took place on the fifth day of experience sampling, all Fiction DES samples begin with the participant's name, the number "5," and a decimal followed by the corresponding beep we are referring to (1 through 6 for the Fiction DES). For example, "Olivia 5.2" refers to a description of Olivia's inner experience on the fifth day of sampling (i.e., Fiction DES day) on the page where we provided the second beep. In some cases, due to technical or human error, participants

did not receive the beeps on the designated pages. For these beeps, we named the description based on the beep prior to the moment the participant actually received the beep and added the letter “A” afterward. For example, Felicity received a beep between the third and fourth designated pages; we named it Felicity 5.3A to show its relative position in the reading. A second unplanned beep that came before the fourth page was called Felicity 5.3B, and so forth. And finally, unplanned beeps that occurred before the first designated page were identified by relative position with a “0” following the decimal and then a letter (for example: Kevin 5.0A). The same description naming procedure was used for Erotica DES, though each sample begins with “6,” as Erotica DES took place on the 6th day of sampling. Because Natural Environment DES beeps while reading were not planned on specific pages, they are simply named by the participant’s name, the number of the sampling day, and the number of beep, in order, as it occurred on that day. For example, “Maddi 2.3” refers to the third beep Maddi responded to on the second day of experience sampling.

For the Fiction DES samples, the text selections that readers were reading at the moment of the beep can be found in Appendix B. For the Erotica DES samples, the text selections that readers were reading at the moment of the beep can be found in Lapping-Carr (2015). Table 1 contains brief demographic information about our 17 DES participants (age, sex, and ethnicity). Table 2 contains STS total scores and NIEQ scores. Table 3 contains Imagery vs. Words phenomena while reading and BLRQ responses (Q1: “How many literary works have you read in the past year?”; Q2: “How often do you read literary works?”; Q3: “How often do you re-read a novel that has interested you?”).

Table 4 contains percentage of the 5FP in the Natural Environment, and Table 5 contains percentage of the 5FP while reading fiction.

Phenomena While Reading Fiction

We identified three primary categories of inner experience that occurred while reading fiction: inner seeing experiences, experiences involving words, and other experiences. Each category is described below.

In the first section below, “Inner Seeing Experiences,” we describe inner seeing phenomena, which occurred in approximately 81 out of 137 fiction samples. Within this broad category, we identified 10 distinct inner seeing-related phenomena: illustrative inner seeing; semi-illustrative/tangentially-related inner seeing; incorporating personally-relevant details into the seeing; details incongruent with the story; progressively adding details; stylized illustration of the story; illustrating words, not story; multiple inner seeings; innerly seeing the physically impossible; and imageless seeing.

In the second section, “Experiences Involving Words,” we describe word-related experiences, which occurred in approximately 28 out of 137 fiction samples. We identified five distinct word-related phenomena: silent speaking of the text; silent hearing of the text; inner speaking in response to the text; focus on specific word or words; and word present, nothing else.

In the third section, “Other Experiences,” we describe other phenomena that did not fall into either the inner seeing experiences or experiences involving words categories; these other experiences occurred in approximately 54 out of 137 fiction samples. We identified nine such categories: analyzing/thinking about reading content; just reading with comprehension; as if present in the story; sensation related to the story;

feelings related to the text; skimming; experience related to elements of the study; unrelated to reading/stopped reading; and experience of the reading process.

Inner seeing experiences. Inner seeing emerged as the most common experience while reading fiction (approximately 81 out of 137 fiction samples). However, participants experienced these inner seeings in variety of ways, both across moments and across participants. We identified 10 distinct seeing-related phenomena that occurred throughout fiction reading samples. These phenomena are presented below.

Illustrative inner seeing. The most common phenomenon experienced while reading fiction was an inner seeing that illustrated the story that was being read. Out of 137 fiction beeps, approximately 59 contained an illustrative inner seeing. Here is a straightforward example of innerly seeing an illustration of the story:

Kevin 5.5: At the moment of the beep, Kevin is innerly seeing the movement and change of light coming from the fire as it moves in the wind about 3 feet in front of Nick's tent at night. The fire is in motion, very detailed and clear, and orange and yellow in color. The fire is seen from Nick's first-person perspective looking out of the triangular opening of the tent. He innerly sees the edge of the tent, just a dark triangle with no features. The tent might be a very dark green. [Kevin was unsure if it was green or if everything other than the fire was black. This scene is directly illustrative of what was occurring in the story at the moment of the beep. Reading was ongoing, but was not in experience.]

As can be seen by reviewing the story text, Kevin's inner experience essentially illustrated what he was reading, detail by detail. Further, his seeing is quite detailed and

vivid. Maddi's experience while reading the same text was also illustrative of the reading but was less vivid:

Maddi 5.5: At the moment of the beep, Maddi is innerly seeing a campfire on the . The fire is orange and the grass is green. [She was not paying particular attention to the colors].

Thus, these individuals differed in terms of how detailed or elaborated the seeing was in their experience. Importantly, the difference between Kevin's detailed description and Maddi's basic description is not believed to be a mere artifact of the descriptive process but rather a reflection of differing levels of seen detail. Even when she was invited to describe all details that were present in experience, Maddi provided only the minimal details above. Further, in some of Maddi's other reading samples (see Maddi 5.1 and Maddi 5.6), Maddi described seeings in greater detail, indicating that differences existed within subjects as well as between.

Although it was a common phenomenon for individuals to innerly see an illustration of the text, these samples demonstrate that inner seeing while reading can be experienced in a variety of ways. Further examples will elaborate the idiosyncratic ways that participants experienced these stories in visual domains.

Semi-illustrative/tangentially-related inner seeing. In some instances (approximately 21 out of 137 fiction samples), readers' inner seeings were only semi-illustrative or tangentially related to the text. In some cases, the inner seeings were still highly related to the text, though they were not simply illustrating the story. For example:

Caitlin 5.1: At the moment of the beep, Caitlin is innerly seeing her own tan arm, particularly aimed at her skin tone against the white trim of a dress. Her arm is seen as if she were looking down at her own left arm. Caitlin is simultaneously innerly seeing the less-tan arms of Judy Jones. She sees Judy from the front, her entire body, and wearing a blue dress with white trim, but is primarily focused on the tanness of her arms and she does not see details such as the woman's face or hair color. Both inner seeings are in color. [Caitlin characterized this experience as wondering about Judy Jones's (the story character) tan, as somehow comparing her own tan to that of Judy Jones. But there was no directly experienced comparison at the moment of the beep.] [Reading was not directly present. This inner seeing was related to a description of the tanned Judy Jones in the story.]

Whereas this seeing certainly illustrated a specific part of the reading, Judy Jones's skin tone against the white trim of the dress, Caitlin's inner experience was more specifically pointed at a comparison between her own skin tone and Judy's skin tone. Her experience was not of simply illustrating the text, and had instead taken a tangential route to comparing skin tones.

In some semi-illustrative experiences that were more distantly related, participants created scenes that were similar to the story, but were not illustrative of the story. For example:

Eden 5.5: [Eden was reading the words "and the match went out".] At the moment the beep, she is innerly seeing the orangey-red candle-lit glow of the inside of a cabin with a man sitting on a bed. Eden's experience is mostly focused on the orangey red light of the scene and the feeling that it evoked. This

positive/romantic feeling is attached to and not separate from the orangey red color—as if the orangey-red-candle-glow *is* the feeling or is inseparable from the feeling. The man is not very detailed and is not Nick from the story, but is just a man. [That is, Eden was innerly seeing a scene that was related to the reading but was *not* directly illustrative of the reading—she saw a man (not recognized to be Nick) in a candle lit room, not Nick with a match.]

Whereas Eden’s inner experience had some elements in common with the text, such as fire, a forest theme, and a lone male character, Eden was seeing a candle, not a match; a cabin, not a tent; and an unidentified man, not Nick from the story. Furthermore, she was feeling positive/romantic, not tired as was Nick. She was reading about one thing in the story and innerly seeing something related but markedly different.

In other examples, participants’ inner seeings were even less related to the text, although they still retained some common element or theme. For example Olivia was reading the passage about the forest tent and campfire (we have seen two examples above):

Olivia 5.5: [Skype was still active, but she was now reading silently and not interacting with the person on the line. Olivia had just read about the character in the story pitching a tent.] At the moment of the beep, Olivia is innerly seeing Katniss [from *The Hunger Games* movie] surviving in the woods. Katniss is facing Olivia’s point of view and is wearing a jacket; there is some orangeness perhaps as a stripe on dark colored clothing, and a backpack, and her brown hair is in a braid. Katniss is surrounded by trees and green foliage. [While the

“surviving in the woods” theme was consistent with the story, Olivia had left the story in favor of the Katniss seeing.]

Whereas her experience illustrated surviving in the woods, a theme related to the text she was reading, Olivia’s inner seeing was about a story from a movie, not from the text that she was reading. At the moment of the beep there was no experience of a discrepancy. Overall, some inner seeings while reading were only partially related to the text, and involved some unique creation of the reader’s inner experience that strayed from the actual storyline.

Incorporating personally-relevant details into the seeing. Some fiction readers incorporated distinct, personally-relevant details into their inner seeing of the story. This occurred in approximately 12 out of 137 fiction samples. For some readers, this involved seeing a known person (e.g., a friend, a television character) in place of one of the fiction characters. In Harrison 5.1, Harrison was seeing his girlfriend’s eyes in place of the female character’s eyes:

Harrison 5.1: [Harrison was reading with comprehension but outside of awareness.] At the moment of the beep, he is innerly seeing a face from the cheekbones up, specifically the eyes, forehead, cheeks, and hair. The eyes are brown and large [he *experienced* large, and retrospectively said they were larger than usual (about 25% larger)]. The hair is brown and done without bangs. [After the beep Harrison described the face as belonging to his girlfriend, but the girlfriend-ness was not part of his experience at the moment of the beep.] The eyes are the most salient portion of the inner seeing (eyes 40%, hair 30% cheeks 15% forehead 10%). Also in his experience are the words “passionate eyes”.

There are present in an “inner auditory” [Harrison was not sure if they were innerly spoken or innerly heard]. The words have a “lingering” quality as if they were hanging around from a moment before. [That is, the words “passionate eyes” were at the beginning of a sentence that he had already read to the end, outside of his awareness, but he had continued to somehow see or say the words “passionate eyes” while the reading progressed and the inner seeing took place. Of the total experience Harrison described the face as being 90% of the experience and the words as 10%.]

In this example, the fact that the eyes were his girlfriend’s was not in his experience at the moment of the beep. He was simply seeing the passionate eyes; only in retrospect did he recognize them as his girlfriend’s eyes.

In another example, Maddi was reading a fiction novel in her natural environment, and she innerly saw a character from a television show in place of a character from the book (Maddi 3.5). The following is the description of her experience:

Maddi 3.5: [Maddi was reading the novel *Looking for Alaska*.] At the moment of the beep, she is innerly seeing the character Pudge from the book. He is in profile facing Maddi’s right, holding a lunch tray. He is seen from the waist up, with no background. Pudge is (perhaps) not in motion but looks as if he were walking. [In retrospect, Maddi noticed that the seen Pudge was a visual recreation of the character Henry from the TV show *Once Upon A Time*, although neither this knowledge nor any other aspect of the *Once Upon A Time* show is in her experience at the moment of the beep; at the moment of the beep she is simply

seeing Pudge. Although Maddi is reading, at the moment of the beep reading is not in her experience.]

As with Harrison's seeing passionate eyes that were his girlfriend's only in retrospect, Maddi recognized that Pudge looked like Henry from the television show only in retrospect. Experientially at the moment of the beep, Maddi was seeing the character from the story, Pudge. When the beep directed her to attend to and describe her inner experience, she noticed that her seeing was of Henry from the television show. Although the character in her inner seeing looked like Henry, in Maddi's experience, it was still Pudge.

In another sample, the story somehow evoked a past personal experience that was then seen in place of an illustration of the reading. Georgia was reading the Erotica DES story "Not Her Type," and a description of her experience follows:

Georgia 6.2: [Georgia was reading the words "her breasts."] At the moment of the beep, Georgia is innerly seeing the man and woman from the story in the back seat of a taxi making out and grabbing at each other's heads and faces. She sees this scene as if she is looking back at them from between the two front seats, and can see scattered lights behind them through the back window. [In the reading passage, only the woman (not the man) was in the taxi; The man-woman scene, and visually speaking the people in it, had been in a TV show that Georgia had recently watched, but despite its disparities from the reading and relationship to the TV show, the seeing is understood to be a seeing of the story.] The inner seeing is detailed, realistic, and in motion.

Whereas Georgia's inner seeing was related to the reading, her seeing instead depicted a scene that she had seen on television. However, as far as Georgia's experience is concerned, what she saw did illustrate what was being read, even though the details are technically incorrect. That is, in her experience, she was not seeing a scene from a television show, she was seeing the erotica story unfold in her mind – even though the actual details of the seeing were more aligned with the television show. Hence, in each of these examples, the participants were aware of the importation of their seeings (*girlfriend's eyes*, *Henry* from “Once Upon a Time,” and the television scene) only after they were asked to pay particular attention to that moment. Their in-the-moment of experience did not include recognition of the outside person or event.

Details incongruent with the story. In a similar fashion, some readers had the experience of innerly seeing the story with different or changed details from what was described in the text, although the changed details did not seem to have any particular personal relevance – they were simply incongruent with the story. As with the incorporated personal details above, the changed-ness of the details was typically outside of experience, and the participant only became aware that the details were changed when he or she was prompted by the beep to notice what was in experience. Among the aggregated fiction samples, changing details occurred in perhaps 7 out of 137 samples.

In many fiction reading samples (see “Illustrative inner seeing” section above), the innerly seen details were congruent with the text. However, Maddi 5.6 is an example of innerly seeing details that were *incongruent* with what was described in the story:

Maddi 5.6: [Maddi was reading a passage in the story about Nick tossing a match into the river.] At the moment of the beep, Maddi is innerly seeing Nick from

behind, tossing a match into the river, which ran to his side and ahead of him. Nick is wearing a pair of overalls [which retrospectively seemed strange to her because the story described Nick wearing trousers]. The seeing is in color and is in motion (the tossing motion). [The act of reading, which was ongoing at the moment of this beep, was not in her experience.]

Notably, this deviation from the text (i.e., seeing Nick wearing overalls instead of trousers) was not in Maddi's awareness at the moment of the beep. She did *not* see a seeing with mistaken details – she saw a seeing that included overalls. Only after the beep, when Maddi was recalling her inner experience, did she notice that the details she saw did not match the description in the text.

Another participant, Isobel (sample 5.5), encountered a similar phenomenon in an inner auditory experience that was part of an inner seeing:

Isobel 5.5: [Isobel was reading a passage that said “a mosquito hummed close to his ear.”] At the moment of the beep, she is innerly seeing a mosquito flying close to her ear. She sees her face from the front, but it is indistinct. The mosquito is also a bit indistinct (e.g., wing, legs, etc. are not distinguishable). She also innerly hears the mosquito's buzzing. This is experienced as being heard by her actual ear and not the imaged ear. [The buzz is not the buzz a normal mosquito would give but rather the buzz a *bee* might give, but her experience is of hearing a mosquito.]

At the same time, Isobel is putting her shoe on and is focused on the action of doing that.

In her description, Isobel distinguished what she heard, the buzzing she recognized as that of a bee, from what was being described in the text (i.e., the humming of a

mosquito). Whereas her inner seeing of a mosquito correctly matched the description in the text, her inner auditory experience was of hearing a mosquito, the auditory characteristics of that hearing (buzzing like a bee) were incongruent with the text and her inner seeing. Importantly, as with Maddi's overalls example above, the incongruence between the mosquito humming described in the text and the bee buzzing innerly heard by Isobel was *not* in Isobel's awareness. Only after the fact, when Isobel reflected on the moment, did she identify the noise as a bee buzz instead of a mosquito hum. Experimentally to Isobel at the moment of the beep, the sound was the humming of a mosquito.

Progressively adding details. Another phenomenon that occurred in a few occasions (approximately 3 out of 137 fiction beeps) was the experience of progressively adding details to an inner seeing illustration of the text. Often, the adding of details to an inner seeing was a passive, automatic process while reading and occurred outside of experience. Most experience descriptions do not discuss the adding of details because the adding was likely not in awareness, though the following example infers the adding of details *outside* of experience (and is provided for the sake of comparison, *not* as an example of progressively adding details):

Isobel 5.4: [Isobel was reading about a character named Nick who was lying back and looking at some pine trees.] At the moment of the beep, Isobel is innerly seeing Nick lying down with "pine trees" close around him. This is seen from slightly above. [The pine trees are not the traditional "Christmas tree" kind of pine trees, but were an invented sort that had a tuft of branches on top.] The inner seeing is in black and white except for the tops of the trees, which are green. [It

was Isobel's sense that before the beep she had had a color seeing of Nick. As the text unfolded, it described the pine trees, which Isobel then added to the seeing.

The added trees were green, but the color of Nick had faded to black and white.]

Isobel's "sense" was her retrospective hypothesis about her inner seeing – because some details were in color and some were not, she may have been adding the color as the text unfolded. However, she was not experiencing this process, and formed this hypothesis only after the beep had occurred. Other samples (e.g., Lance 5.4, Lance 5.5) also infer that the inner seeings were being updated outside of experience, due to incompleteness at the moment of the beep.

Two participants, Olivia and Jenny, actually experienced the adding of details. In one example (Olivia 5.1), the adding was a passive experience that simply occurred as she read the text:

Olivia 5.1: [Olivia was skimming a portion of a sentence, “of exaggeration, of thinness, which had made her” which she had already read.] At the moment of the beep, Olivia is innerly seeing a female child's face and is in the process of adding visual details [that were described in the story]. Olivia innerly sees a child's face with curly blonde hair, blue eyes, and a mouth turned downwards with a wonky smile. The child is awkward, as if she has not yet grown into her features. [Olivia explained that she was ultimately trying to visually compare the younger version of the character to the older version, but at the moment of the beep, she was seeing the younger version.] Olivia is also innerly speaking, in her own voice, the words “exaggeration” and “thinness” [as she was skimming over them]. Inner seeing (80%), inner speaking (20%). Here, while the adding of visual details was

still in her experience, Olivia is not adding these details in an intentional, active way. Instead, she sees the changing details unfold as they are described by the text, but she is not doing so in an effortful way. The words simply elaborate the seeing as she reads them.

As with Isobel's experience, Olivia's experience was passively populating details as she read them. However, unlike with Isobel, Olivia was aware of the adding of details as it occurred – the adding was present in her experience. In another example, Olivia was also adding details, though this time the adding was active and intentional:

5.3A: [Olivia was now reading out loud to someone she was talking to on Skype.] Olivia is purposefully, specifically adding rocks to an already existing inner seeing of clear rippling water and a grey trout. [Olivia had just read about these rocks as they were described by the narrator] and she is now specifically adding gravelly, round rocks at the bottom of the river of different sizes and colors – grey, red, and brown. [That is, it was *not* the case that Olivia was simply updating the seeing as she read; she was deliberately, premeditatedly adding the rocks to the seeing.] Olivia's point of view is the same as the character's in the story [who was looking down into the river.] Here, Olivia is purposefully adding details, the rocks, to an innerly seen illustration of the story. It is not simply that Olivia's seeing becomes more details as more details are described – Olivia is intentionally creating an inner seeing experience that aligns with the text.

Here, Olivia was not passively observing the adding of details, she was actively, deliberately adding details to match the text. That is, at the moment of the beep she knew herself to be adding rocks to the seeing of the river, and she was doing so on purpose.

A final example occurred for another participant, Jenni:

Jenni 5.1: [Jenni was scratching her leg. Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is innerly seeing Judy (the female figure in the story) in a blue turtleneck dress from her head to about her knees from the front. Jenni is actively trying to add details from the story to her inner seeing; that is, this is not an automatic process of details appearing in the inner seeing as Jenni reads, but is an active (not difficult) process. Also at the moment of the beep, Jenni is innerly speaking the command “stop scratching your leg” to herself, in her own voice, in a monotone. The inner seeing and the inner speaking are equally present in experience.

In this case, Jenni was also actively adding details. However, unlike in Olivia’s example which included specifically adding rocks, Jenni was not adding anything specific at the moment of the beep – the experience was simply of intentionally trying to add details as the story unfolded.

Thus, the adding of details from the story seems to occur in a variety of ways: sometimes passively and outside of experience, as with Isobel 5.4; sometimes passively in experience, as with Olivia 5.1; sometimes actively in experience with specific details, as with Olivia 5.3A; and sometimes actively in experience with no specific details, as with Jenni 5.1.

Stylized illustration of the story. In some instances of inner seeing, the reader saw a stylized illustration of the story. While reading fiction, this occurred in perhaps 3 out of 137 samples. For example, the following describes Harrison’s experience while reading 5.2:

Harrison 5.2: Harrison innerly sees a visually, crudely constructed picture or image of a man and woman talking to each other. [That is, Harrison was *not* merely innerly seeing a man and woman talking; he was seeing a construction or representation or collage of a man or woman talking, and he saw the details of the construction/representation/collage as much as he saw the people.] The picture is wider than it was tall, has straight vertical and horizontal edges, and has a royal blue background. Against this background are [what looked like] two black paper cutouts or silhouettes. Thus Harrison doesn't see two people talking; he sees undifferentiated silhouettes of people talking. They have outlines, but even those are pretty much undifferentiated (other than tallness of the man and the bustness of the woman). There is no inner definition to these seeings. Furthermore, there is something stuck-on about these figures. That, they were not integrated into the royal blue scene, but were as if created separately and inserted on top of the scene. Harrison also saw the moon in the upper right corner of the picture/image. [As might be the case in a child's drawing of a landscape, the moon was a quarter circle, the rest of the moon not seen because it would be off the edges of the image corner; here again, the moon had a stuck-on quality. The entire picture/image had a crudeness or amateurishness about it, as if it were a collage created by a child. Compare sample 5.6, where there is what seems to be a similar bringing together but not coordinating disparate parts: moving water but still smoke, a sizzle sound that is not connected to the source of the sizzle.]

Hence, although Harrison's inner seeing illustrated the reading, his seeing contains a specific style that his experience has somehow incorporated into the illustration. A

similar phenomenon occurred for Maddi while she was reading a fiction novel in her natural environment:

Maddi 3.6: [Maddi was reading the novel *Looking for Alaska*.] At the moment of the beep, Maddi is innerly seeing Pudge, the character from the novel, who is swimming in a moonlit lake. She sees the lake with Pudge a hundred or so yards away from her swimming toward a sandy shore with pine trees in the distance. The seeing is “cartoony”: although it is in color, the scene is as if drawn in outline. [Although Maddi was reading, the reading was not in her experience. What she was seeing was consistent with what was happening in the story.]

Notably, while the seeing happened to be cartoony, recognizing the cartoony-ness was *not* part of Maddi’s experience – she was seeing the character Pudge swimming in the lake, and the seeing just happened to be cartoony.

Illustrating words, not story. In some cases (approximately 7 out of 137 samples), readers’ inner seeings illustrated specific words in the story but not the story itself. One participant, Felicity, had five out of six Fiction DES samples in which she was illustrating words. These illustrations of the words took a creative form entirely different from the story. In Felicity 5.0B, for example:

Felicity 5.0B [Felicity had just read a sentence that included the name “Mr. McKenna.”] At the moment of the beep, Felicity is innerly seeing her friend McKenna standing still. [The McKenna she was seeing was related to the character in the story only by coincidence of name]. She sees McKenna’s blonde hair and (white) face from a 45 degree angle, and the rest of her body is blurry.

McKenna is standing. [Thus this seeing was parallel to the story, but not illustrative.]

Whereas the story describes a man, Mr. McKenna, Felicity's inner seeing instead illustrated her friend, a girl named McKenna. Her inner illustration was related to the name, not to the story she was reading.

In another example, Felicity 5.3B, Felicity's inner seeing seemed more related to the words she was reading than the content of the story:

Felicity 5.3B: [Felicity had just read a sentence that included the words "heart tightened."] At the moment of the beep, Felicity is innerly seeing (50%) a pink heart being squeezed in a white [Caucasian] hand against a light blue [sky-colored] background. She sees the hand from a side view, and she can see pressure marks from the squeezing. [She thought she saw the motion of squeezing, but she did not seem confident in this. While the inner seeing was not fully illustrative of the story, it was more closely related to the story than the seeing of McKenna in Beep 5.2.] At the same time, Felicity is feeling physically tired along her lower back (50%), which is experienced as a minor pain on the surface and underneath the whole width of her lower back.

In the story, Nick's heart tightened, in a metaphorical sense, as he watched a trout move in the stream. As this sample shows, Felicity's experience illustrated the words "heart tightened" in a way that was not related to the story. She innerly saw a literal depiction of a heart being tightened; this included seeing a hand and the sky blue background, which were not described in the story.

Felicity experienced a similar phenomenon in sample 5.5:

Felicity 5.5: [Felicity had just read “The match went out.”] Felicity is innerly seeing a lit match (about one and one-half feet in front of her face), in an empty unlit room. She knows the match to be held by someone, but she does not know who [and the holder was not herself or the character in the story]. She innerly sees the match go out, and the seeing becomes pitch black. Felicity feels as if she is in the room [which was not true of her other beeps. This experience was at least partially illustrative of the story. [This was the only beep that came on the appropriate slide.]

Once more, Felicity was innerly seeing an illustration of the words, not the text – in the story, the main character, Nick, was killing a mosquito by holding a match against it, at which time the match went out. That is, the match itself was not the main theme of the story at that time, which was more about killing a mosquito. Furthermore, Nick was inside a tent, not inside a dark room. However, Felicity’s seeing did not include Nick or a tent – rather, it included an anonymous person and an empty, unlit room. She illustrated the words “the match went out,” and instead of illustrating the words within the context of the story, Felicity illustrated the words with her own context provided.

In another sample, Felicity’s inner seeing related to a different meaning of the word “pool” that she was reading. The Hemingway passage was:

Nick looked at the burned-over stretch of hillside, where he had expected to find the scattered houses of the town and then walked down the railroad track to the bridge over the river. The river was there. It swirled against the log spires of the bridge. Nick looked down into the clear, brown water, colored from the pebbly bottom, and watched the trout keeping themselves steady in the current

with wavering fins. As he watched them they changed their positions again by quick angles, only to hold steady in the fast water again. Nick watched them a long time.

He watched them holding themselves with their noses into the current, many trout in deep, fast moving water, slightly distorted as he watched far down through the glassy convex surface of the pool its surface pushing and swelling smooth against the resistance of the log-driven piles of the bridge. (Hemingway, 1925)

At the moment of the beep she had read the words “glassy convex surface of the pool”; her experience at that moment was:

Felicity 5.3A: [Felicity had just read a description of the pooling of a river as a “glassy convex surface.”] At the moment of the beep, Felicity is innerly seeing a still swimming pool with a shiny surface. The swimming pool is rectangular, and she is facing the wide side of the rectangle. The water is blue, and Felicity can see the edge of the pool deck, which is peach-colored. At the same moment, Felicity is thinking that “glassy, convex surface” is a perfect description of a pool. This thought does not contain any words, yet the idea of “perfect” is specifically present. [The seeing was tangentially illustrative of the reading.]

Note that Felicity was not imaginarily illustrating the scene in the story, which was about seeing trout beneath the surface of a pool of water in a river. Instead, she was seeing a swimming pool, complete with its peach-colored decking. That is, Felicity’s imaginary illustration is of the *word* “pool,” *not* of the concept *pool* as described in the story.

Two other participants, Harrison and Nina, illustrated words instead of the story. In Harrison 5.1, Harrison was illustrating the words “passionate eyes” by innerly seeing eyes which happened to be his girlfriend’s. In Nina 5.2, Nina was illustrating the words “a man I cared about” by innerly seeing her boyfriend.

Multiple inner seeings. In some cases while reading fiction, participants saw multiple inner seeings that related to the text. This occurred in approximately 5 out of 137 fiction samples. One participant, Deana, had multiple inner seeings in her natural environment (e.g., Deana 3.1, Deana 4.4) and in one instance while reading. Her Fiction DES example follows:

Deana 5.6: [Deana had withdrawn from the reading to consider what Nick (the main character) might do afterward. She created two extreme opposites and saw them both simultaneously.] At the moment of the beep, she is innerly seeing a guy kissing a girl in the city, her leg raised. Simultaneously she is innerly seeing a house in the woods by a river [this scene has been imported from another book Deana had read]. Both of these seeings are seen ahead of her; they are *not* side by side and they are *not* one atop the other. It is as if she has two separate seeings that occupy the same space without confusion or overlap. The two seeings are known to be opposites—one settling down and getting married in the city and the other living free in the country—[It is not clear how much that knowing is present in experience at the moment of the beep.]

In this instance, Deana’s experience presented itself in a way that is impossible in real-life outer seeings – she saw two distinct seeings that seemed to occupy the same space in her imaginary visual field, simultaneously, without any conflict or overlap. In two other

instances while reading (Caitlin 5.1, Felicity 6.0D), participants also experienced multiple inner seeings, simultaneously present, without any conflict or overlap.

Felicity 6.0C is an example of multiple inner seeings that were not simultaneous or overlapping, and instead presented themselves in a series. The description follows:

Felicity 6.0C: [Felicity had just read the words “regular sex”.] At the moment of the beep, Felicity is innerly seeing a series of about 6 different scenes of the characters in the story having sex in different positions, wearing different clothes, and with different backgrounds. The individual scenes are in motion and all scenes are in a horizontal line moving from left to right with no breaks between them. The scenes are organized so that the first scene is of the couple having sex once during a week, the next 2 scenes are of the couple having sex twice during a week, and the next 3 scenes are of the couple having sex 3 times a week. [This inner seeing was representative of the words “regular sex” and was informed by a previous paragraph that stated that the couple had sex once, twice, or three times a week. The words “regular sex” and the previous paragraph were not directly in experience.]

Felicity’s inner seeings presented themselves in a series to her, such that the scenes had some kind of order or sequence to them. However, as far as Felicity’s experience is concerned, the beep did *not* interrupt her in the midst of only *one* of the seeings. Rather, even though the seeings presented themselves in a specific order, Felicity still experienced them as part of the same moment of experience. Specifically, Felicity was seeing *a series* of seeings that had a sequence to them, and *not* seeing one seeing in a series of seeings.

Olivia described an experience in which her multiple inner seeings illustrated an *idea* she had about the text. That is, Olivia was thinking critically about the text, and her experience involved innerly seeing multiple past scenes of the text that illustrated her idea. The description of this sample follows:

Olivia 6.4: [Olivia was laughing about the uselessness of the condom in the current scene—they had had lots of unprotected sex— and about how overly romantic and unrealistic the story is.] At the moment of the beep, Olivia is innerly saying “What was the point of that?” (“that” was emphasized and referred to the condom). [She indicated that the inner saying sounded how she would say it if she said it out loud. Part of this experience was also a chuckling partly innerly and partly out loud—the inner speaking was part of or shaped by the chuckle. She was unable to give further details on how the chuckling was present.] This (the inner speaking and chuckling) occupies about 70% of her experience. Also at the moment of the beep, Olivia is thinking about how overly romantic and unrealistic the story is. This involves multiple flashes of inner seeings including rose petals, candles, and bath water from previous scenes in the story, as if she is flipping through certain aspects of previous scenes including the unrealism of a woman having multiple orgasms with so little stimulation. [The story is present in awareness, and these experiences are directly related to the story.] [There was no experience of arousal.]

Here, Olivia’s experience presented itself as “flashes” to her, which seem to indicate that there was an order or serialization of these seeings, as in Felicity’s example above. Also similar to Felicity’s example, Olivia’s “flashes” were experienced as occurring in the

same experienced moment. Further, Olivia's seeings were related to and perhaps illustrative of her idea that the story was overly romantic and unrealistic. This thinking was present in Olivia's experience alongside the inner seeings.

Olivia's and Felicity's examples are different from Deana's sample above. Whereas Deana's multiple inner seeings were completely simultaneous and in the same (imagined) physical location, Olivia's and Felicity's multiple inner seeings occurred in rapid succession, in a horizontally presented series or as "flashes."

Innerly seeing the physically impossible. In one unique instance while reading fiction, a participant, Kevin, had an inner seeing in which the seeing somehow defied the physics of an actual real-world seeing. The unusualness or the impossibility of the seeing was not in experience at the moment of the beep and was instead noticed only in retrospect when Kevin was responding to the beep. The following is a description of Kevin 5.3:

Kevin 5.3: At the moment of the beep, Kevin is innerly seeing a half-full high ball glass of whiskey being held by Dexter as he sits at a bar. Dexter is a dark silhouette innerly seen from his right side and is holding the glass with his right hand. Dexter's seen hand somehow disappears so that the back of the hand and the fingers do not obscure the view of the whiskey glass. [Kevin reported that when he jotted his notes about the beep (immediately after the beep), he was surprised that he could see the whiskey glass even though it should have been obscured by the hand; this surprise was *not* present at the moment of the beep; that is, the inner seeing was physically impossible, but the sense of impossibility was not present at the moment of the beep.] At the moment of the beep, Kevin is

mostly focused on the glass of whiskey. Around Dexter are out-of-focus or blurry lights and colors representing the rest of the bar. These lights and colors are prominent, even though the bottles, etc., are indistinct. [This scene is related to the story; Kevin had just read “he felt like getting very drunk” and pictured a scene of Dexter drinking. Reading was ongoing, but was not in experience.]

Perhaps similar to Deana’s multiple inner seeings in which the two seeings did not obstruct their view of each other (Deana 5.6), the hand and the whiskey glass, parts of the same inner seeing, are both visible to Kevin even though the hand should be obstructing the glass. To reiterate, Kevin is *not* aware of this impossibility at the moment of the beep – he simply sees a hand and a full view of the glass it is holding. Only in retrospect does he realize the impossibility of this seeing.

Imageless seeing. Imageless seeing occurred in perhaps two instances for two participants, Pamela and Isobel. Imageless seeing is an uncommon visual phenomenon that sometimes occurs in natural environment sampling (see Pamela 3.2 and Pamela 4.4, for example) in which a participant has an inner seeing experience, though the object of the seeing is not seen. That is, the experience explicitly includes the experience of inner seeing, but despite seeing, the individual does not actually innerly or outerly see anything. This phenomenon occurred for Pamela while reading; here is the example:

Pamela 5.4: At the moment of the beep, Pamela is innerly seeing grey-black, although the grey-blackness itself is not innerly or outerly seen. [That is, her experience is of seeing, but not of the thing seen. She is comprehending what she is reading (“He was laying in the shade of a tree”) and visually experiencing

though not (innerly or actually) seeing the grey-black of the scene, which is in some way related to the shade of the tree.]

In this example, Pamela experiences herself to be seeing a grey-blackness – that is, she did not merely cognitively apprehend grey-blackness, she did not merely know that she was considering grey-blackness, she was *seeing* grey-blackness. However, Pamela did not see the grey-blackness itself. Further, it is *not* that Pamela simply has an inner seeing experience that she describes as not seeing because it is imaginary – in two other samples in her natural environment, Pamela 3.2 and Pamela 4.4, Pamela described imageless seeing confidently, and could distinguish this phenomenon from garden-variety inner seeing (e.g., Pamela 2.3, Pamela 4.3).

Isobel’s example of imageless seeing occurred alongside an inner hearing. The description of her sample follows:

Isobel 5.3: [The passage that Isobel was reading at the moment of the beep described a man laughing out loud.] At the moment of the beep, Isobel is innerly seeing laughing; this was a seeing experience, except that there was nothing being seen. She also hears her own laugh, but in a “manly” voice. The laughter is clearly heard, [but even so it was secondary to or a part of the seeing]. At the same time, Isobel is feeling pain in her knee and the pressure caused by her hand as she rubs it. This is a slow throbbing pain. These are experienced as being together rather than separate sensations.

Here, her seeing of laughing was simultaneous to the heard laughter. However, whereas the laughter was innerly heard, the laughing was visual, but with nothing seen.

Importantly, Isobel’s experience was primarily a seeing, and only secondarily a hearing,

even though the laugh was actually innerly heard but not itself innerly seen. This suggests that it is not simply that Isobel was hearing laughter from a person she could not see; there was a seeing quality to the unseen that was actually more prominent than hearing the laughter.

Experiences involving words. We turn now to the second section of the results, experiences involving words. Whereas having an experience that involves words was less frequent than inner seeing, words were still prominent in the inner experience of some participants while reading and occurred in approximately 28 out of 137 fiction samples. We coded our word-related samples into five categories. We turn to those categories now.

Silent speaking of the text. Many psychologists and laypeople believe that reading frequently (or always) involves innerly speaking the text, word by word and sentence by sentence, as if it were being read aloud but silently. *We found only one confident example and one possible example of this phenomenon out of 137 experience samples while reading fiction.* That is, only one or two of our 17 participants had any examples of silent speaking of the text while reading fiction, and this occurred in only one or two instances between them. Here is our confident example of silently speaking the text:

Caitlin 5.3: [Caitlin was reading a sentence that contained the words “Dexter was laughing”.] At the moment of the beep, Caitlin is cognitively anticipating, trying in some cognitive (non-visual, non-worded) way to imagine, what Dexter is laughing at, which is about 60% of her experience. Caitlin is innerly saying the

words of the sentence as she reads them in her own voice and knows that Dexter is laughing, which is about 40% of her experience.

Whereas many participants have brief moments of innerly speaking a word or words from the text, they rarely speak full sentences, word by word, as they read them. This was one such example of a participant innerly speaking the words of the sentence as they are read. Even so, this silent speaking of the text occurs alongside a cognitive anticipation of what the character is laughing at, and Caitlin estimated that the silent speaking occupied less than half (40%) of her direct inner experience.

In the second (possible) example, the participant was not confident whether she was innerly speaking or innerly hearing the text:

Maddi 2.3: [Maddi was reading a novel (the same novel she was reading in Maddi 2.1). She was reading a sentence that ended with the word "articles."] At the moment of the beep, Maddi is innerly speaking/hearing the word "articles" [which was part of an ongoing innerly spoken/heard sentence; the beep happened to catch her on the word "articles" at the end of that sentence.] The word "articles" is spoken/heard in her own voice without any emphasis. [She was unsure if she was innerly speaking it or innerly hearing it.]

This example is from Maddi's second day of Natural Environment DES, so she was relatively new to experience sampling. Notably, Maddi confidently reported innerly hearing the text, but not innerly speaking the text, in later samples during Fiction DES (Maddi 5.2, Maddi 5.4), which suggests that she was likely innerly *hearing* the text rather than speaking it in Maddi 2.3, but she had not yet learned to distinguish inner hearing from inner speaking.

Silent speech while reading nonfiction (primarily textbooks) occurred in 2 out of 23 natural environment, nonfiction reading samples (Harrison 3.1, Felicity 4.4). Here is a straightforward example of silently speaking the text in natural environment, nonfiction reading:

Harrison 3.1: [Harrison was studying and reading his psychology book about conditioning.] At the moment of the beep, he is innerly speaking the sentence he is reading; the beep occurs at the word “conditioning.” The sentence is innerly spoken in a normally declarative tone in his own voice. This may have been experienced as being slightly softer than he speaks normally. He is reading with understanding.

As we will see in the section “Words present, nothing else” below, there was one example in the Kafka DES samples (Alex 4) where all the words of the story were innerly spoken. However, the phenomenon there was *not* of innerly speaking the sentences that were being read; instead, the experience was of speaking individual words, one word at a time, not as part of a meaningful sentence.

Silent hearing of the text. There were two Fiction DES examples, both from the same participant (Maddi), that included the experience of innerly hearing the text while reading fiction. In both of these examples, Maddi was innerly hearing the text rather than innerly speaking it. One example follows:

Maddi 5.2: At the moment of the beep, Maddi is innerly hearing herself reading “I’m afraid.” [Those are words from the passage she is reading. She was reading with comprehension. There was no visual experience even though she was reading.] The reading is heard in her own natural voice.

Here, even though Maddi was hearing the text rather than speaking it, she still hears her own voice. In the story, “I’m afraid” was spoken dialogue of the character Dexter. In this sample, Maddi also happened to be reading with comprehension, although that aspect was not in experience. Her second example, Maddi 5.4, was strikingly similar – hearing her own voice, natural tone, and comprehending outside of experience – except the words read/heard were “sharp at the edge” instead of “I’m afraid.” Additionally, “sharp at the edge” was narration, not dialogue.

Silent hearing of the text occurred in 4 out of 23 natural environment, nonfiction reading samples (Caitlin 2.1, Caitlin 2.5, Maddi 3.4, and Maddi 4.4). Thus, even if one lumps inner hearing and inner speaking together as one category, and even if one lumps reading fiction and reading nonfiction together, our study suggests that innerly speaking/hearing the text as a silent accompaniment of the reading process is rare. Reading does *not* generally involve a silent articulation of the text being read.

Inner speaking in response to the text. In perhaps five instances, participants innerly spoke a phrase in response to what they were reading. The spoken words were not an innerly spoken reading of the text; rather, they were innerly verbalized, novel responses generated by the reader. These occurred on three occasions for Bailey, one occasion for Olivia, and one occasion for Jenny, for a total of 5 samples out of 137 fiction samples. Two of Bailey’s inner experiences were inner speaking only. For example:

Bailey 5.1: [Bailey was engaged in the reading task and the story at the moment of the beep.] At the moment of the beep, Bailey is innerly saying, “Awww, he likes her,” in a sweetly sentimental tone and in her own voice.

This example contains typical inner speaking. Bailey was innerly speaking and innerly hearing her own inner voice; as is common in inner speaking, Bailey's voice had a particular tone or inflection to it. "Awww, he likes her" is a self-generated sentence; that is, those words do *not* appear in the reading. Rather, they are a comment on action in the story.

In another instance, Bailey's inner speaking also involved a coordinated bodily experience:

Bailey 5.3: [A couple seconds before the beep, one of the characters in the story, Dexter, had asked Judy, another character in the story, why she had moved away.] Now, at the moment of the beep, Bailey is innerly saying "why did you leave in the first place?" in her own voice in a blaming tone and is simultaneously experiencing something bodily related to this tone—more or less like rolling her eyes-- but it is not clear exactly how she experiences this. [The speaking paraphrased but did not quote what had been said in the story, and it was said by Bailey, not by Bailey's Dexter.]

The inner speaking had Bailey's own voice and a specific tone. Related to the tone was a bodily experience, though the researchers did not confidently understand what this meant. As in Bailey 5.1, "why did you leave in the first place?" is a self-generated sentence; that is, those words do *not* appear in the reading. Rather, they are a comment on action in the story.

Recall Olivia 6.4, which is shown in the "Multiple Inner Seeings" section above. In this sample, the participant's experience was more complex – her inner speaking occurred alongside a thought and a multiple inner seeing. As in Bailey 5.2, Olivia's

inner speaking involved her own voice and inflection, which included a partially inner, partially outer chuckle. As in the two Bailey examples, the inner speaking was related to but not a recitation of the read text.

In Jenny's example, Jenny's verbal response to the text was not actually innerly spoken, though specific words were present:

Jenni 5.2: [In the story, the main character, Dexter, was talking about the female character, Judy, kissing him. Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is wondering why Dexter wants Judy to kiss him. There are words present, which might be "why would he want to kiss her" or "why did he want to kiss her" [Jenni was confident that specific words were present.]. These words are not spoken, heard, or seen. Also at the moment of the beep, Jenni is feeling irritated; this is a mental feeling that she feels in her head. The thinking about the kissing and the feeling are equally present in experience.

Jenni was questioning the Dexter's desire to kiss Judy, and this questioning involved specific words present. Unlike the previous spoken examples, these words were merely present, not spoken.

Focus on specific word or words. In some instances while reading (approximately 12 out of 137 fiction beeps), participants experienced a particular word or words that stood out to them. They were not simply vocalizing what they were reading – in these cases, the specific word or words were prominent, and were experienced in a variety of ways in addition to inner speaking (i.e., inner seeing, inner hearing, words

present). Even when the words were present as an inner speaking, they were often experienced differently than a straightforward speaking of the word. For example:

Pamela 5.1: At the moment of the beep, Pamela is innerly speaking 3-4 repetitions of the word “gingham” in different ways. The beep catches her somewhere in the middle of the repetitions when she is saying gingham like “ging ham.” The words are spoken in her own voice. [Pamela’s experience had lost contact with the reading task at this moment.]

Here, Pamela had broken off from the reading to focus on this particular word. Her experience was not just of speaking it, but of repeating it – the beep happened to interrupt a particular iteration of her speaking.

In another instance, participant Harrison innerly sees a word he has just read.

This example follows:

Harrison 5.5: [Before the beep Harrison had been reading about the humming of a mosquito.] At the moment of the beep, Harrison is innerly hearing the loud humming of a mosquito near his right ear. This loud humming occupies almost all of Harrison’s experience, perhaps 95%. [In reality there was no mosquito. Harrison noticed after the beep that he had jerked his head away from the imaginary humming mosquito, but the head jerk was not in his experience at the moment of the beep.] Harrison is also innerly seeing the word “Humming,” He sees it with a capital H. This word is written in something like Times New Roman font [similar to what he had seen while reading, though the word “humming” that he read had not been capitalized. The innerly seen word “Humming” also seems to be somewhat larger than the word “humming” that he had read. He does not

experience the seen word as having any location. The inner seeing is not prominent in his experience, perhaps only about 5%.]

Notably, Harrison's inner seeing of the word, "Humming," was visually different from the word he had actually seen (i.e., larger and with a capital "H"). It was also simultaneous to his hearing of the humming of the mosquito.

For another participant, Isobel, the specific word was not innerly spoken or innerly seen – it was simply present. Here is the description of her sample:

Isobel 5.1A: [Isobel was reading about Mr. Hart winking at Dexter.] At the moment of the beep, she is innerly seeing Mr Hart's face with an eye winking. The eye is the most prominent part of the face and the rest of it is indistinct. The face is seen in motion (winking). It is seen in black and white. [At the same time, Isobel is looking at the text that reads "swifterball"], which she experiences as one word, "swifterball", [not two, even though the actually seen words have a space between swifter and ball]. She may have been wondering what "swifterball" means. [Whether the wondering was actually experienced at the moment of the beep we were not sure. Except for the seeing of the wink and the wondering about swifterball, neither the reading itself nor the plot/story was directly experienced at the moment of the beep.]

Here, the word "swifterball" was clearly present to Isobel, but not present in a specific way – it was simply there in her experience. In experience, the word was different from the way it had appeared on the page (i.e., one word rather than two). Also, a wondering about the meaning of "swifterball" may or may not have been present.

Another example involved a participant attending to the vocal qualities of a name in the text compared to her own name. Here is the description:

Nina 5.1: [Nina had noticed that the character in the story was named Judy Jones.]

At the moment of the beep, Nina is innerly saying “Judy Jones Nina Mendoza”

[her own name] repeatedly at a slightly fast pace. She is also innerly hearing the

way these names sounded. [She is somehow comparing the sounds of the two

names, and liked the way these names sounded, but these aspects were not

directly in her experience at the beep. At this moment, she had departed from the

reading task.][Nina’s experience was triggered by what she read in the story

(reading about Judy Jones), but was not consonant with what she read—the story

was not about (or at least not primarily about) the sound of the name Judy Jones.]

Nina was innerly speaking the names, hers and Judy’s, in repetitions, and innerly hearing the sounds of the names. As described in the bracketed text, it may be that the repetitions related to Nina’s liking of the sounds, but the liking was not in experience at that moment.

A final example of a focus on specific words involved a participant experiencing a mental attitude toward the word. Here is the example:

Felicity 5.0A: [Felicity had just read a sentence that included the word

“Mortimer,” which she had innerly said in the midst of reading. The rest of the

sentence was not innerly said.] At the moment of the beep, Felicity is sensing a

stabbing pain on the surface of the front, middle of her left thigh. It occurs at a

particular point on the upper portion of her leg. She is also disliking the word

“Mortimer” [that she had previously innerly said as she read it]. The word is ugly

or negative. The disliking is experienced more as mental than physical or emotional. [Felicity could not provide any additional details of how this disliking was present in her experience.]

Felicity was experiencing a mental dislike for the word “Mortimer” (which was actually a name, though Felicity experienced it as a word). The disliking was not an emotional dislike, simply a mental attitude about, or perhaps a judgment of, the word. The word was not spoken, heard, or seen in experience, either innerly or outwardly. In fact, there was nothing particularly present about the word aside from Felicity’s dislike of it.

Word present, nothing else. A final word-related experience involves the experience of a single word from the text and nothing else. This occurred for one participant in the Kafka DES study, Alex (on all four occasions), and one participant in the Reading Study, Adele (on three out of four Fiction DES samples), for a total of seven samples out of 137 fiction samples. However, the word presented itself in different ways for each participant. On three occasions for Alex, the word was simply present to him, but not innerly seen, spoken, heard, or otherwise represented. For example:

Alex (Kafka DES) 1: Alex is reading the word “swang.” His experience seems wrapped up in the word “swang,” that is, there is nothing else present in his experience. He does not articulate this word, nor does Alex innerly see it or hear it. Alex is of course in reality seeing the word swang on the screen, but he does not attend to any of the visual details of this word as seen. The process seems to be going from word to word to word, and the beep happened to fall on the word swang.

Importantly, whereas the beep caught the word “swang,” Alex’s experience from moment to moment was of one word, then the next word, then the next. He was simply experiencing the words, one word at a time. This unsymbolized quality was present in three of Alex’s four samples. In his fourth sample, the word was innerly spoken:

Alex (pilot study) 4: At the moment of the beep Alex is innerly saying “cleaner.” This saying is in his own voice but at a somewhat higher pitch than his experienced actual voice. He experiences the voice as being rushed [in reality, Alex is coming up on a time deadline]. His experience seems much more a speaking than a hearing, although it is possible that the rushed aspect (but not the higher pitch aspect) is more heard than characteristic of the speaking. It seems that Alex is speaking the word and then the next word and then the next word, and the beep happens to catch “cleaner.” That is, it seems more a word—word—word experience than a speaking-a-sentence experience. [Alex reported retrospectively that if this kind of speaking gets to the end of a sentence, there is no inflective drop or pause for the period—the stream of words continues word/.word/word across a period with no experienced pause or any other acknowledgement of the period.]

Although the word was spoken in this instance, the word-word-word quality was still in effect. Notably, although Alex’s in-the-moment experience of reading was word-word-word in all four samples and likely word-word-word for much of the remaining reading, he still comprehended the text in these moments. When asked questions about the reading after he had completed it, Alex was able to identify details and plot points from the text.

A second participant, Adele, experienced a single word and nothing else in three out of four reading day samples. For example:

Adele 5.4: Adele is seeing the word “rested” [which is present on the screen]. She is simply seeing the word. [There was no experience of reading or comprehending at this moment.]

In Adele’s case, all of her word experiences involved seeing the word on the page, and nothing else. This phenomenon was different from Alex’s word-by-word experience; whereas the word was mentally present to Alex, it was visually present to Adele. In Adele 5.1 and Adele 5.3, her experience was the same, except she was seeing the word “rimmed” and the name “Devlin,” respectively.

Other experiences. Various other experiences occurred while reading that did not relate to inner seeing or words (in approximately 54 out of 137 samples). These included cognitive/analytical experiences, sensory experiences, and feeling experiences, as well as other phenomena that were distinct to reading (e.g., scanning/skimming, just reading with comprehension, etc.). However, because these categories were less thematic and perhaps less central to inner experience while reading than inner seeing or word-related experiences, they will be described in less detail. Nine “other experiences” categories were identified and are described below.

Analyzing/thinking about reading content. In some instances, participants experienced an analytical or otherwise distinct thinking related to the reading. This type of experience occurred in approximately 9 out of 137 fiction samples. These cognitive experiences included analyzing story content (e.g., Olivia 5.3), anticipating what will happen next in the story (e.g., Eden 5.2, Caitlin 5.2), or thinking about the words being

used (e.g., Felicity 5.3A). In some cases, thinking experiences were accompanied by inner seeings that related to or illustrated the thought (e.g., Olivia 5.3, Olivia 6.4, Felicity 6.0A).

Just reading with comprehension. In two instances while reading fiction, the participants were simply reading with comprehension and not otherwise experientially engaged with the reading (see Georgia 5.6, Jenni 6.4). In both instances, the participants were simultaneously experiencing bodily sensations (bodily swaying and feeling the rubbing and tearing of her eye, respectively), though these sensations were unrelated to the reading. It is important to note that comprehension was present in both experiences, not simply an ongoing, automatic process; however, no specific details stood out from the reading, and the reading was not present to either reader as words, seeings, or anything else. In all other reading samples where comprehension was occurring, the participants were simultaneously experiencing the story in a more specific manner, such as having inner seeing, inner speaking, thinking, or feelings experiences.

In contrast, another participant, Nina, had one sample where she comprehended the reading outside of experience, though she did not experience the reading in any other way at this moment (Nina 5.5). In this example, Nina's experience was of deciding whether to take a nap or eat after reading. She was simultaneously comprehending the reading outside of direct experience. Nina's example is similar to Georgia's, such that Nina was also engaged in a non-reading experience and simultaneously reading with comprehension. However, the reading and comprehension were fairly automatic to her – she was not experientially attuned to these aspects in the same way as Georgia or Jenni in the examples above. This was the only example of a participant explicitly

comprehending the reading outside of direct experience while having no other experience of the reading. There are other moments where the comprehension occurred outside of direct experience (e.g., Harrison 5.1, Jenni 5.6), though their ongoing inner experiences were related to an aspect of the story (e.g., innerly seeing “passionate eyes,” innerly seeing her own wiggling toes instead of the character’s wiggling toes).

As if present in story. In a few instances while reading fiction (perhaps 4 or 5 out of 137 fiction samples), readers momentarily felt as if they were somehow present in the story they were reading (see Lance 5.1, Felicity 5.5, Olivia 5.5A, Olivia 6.2, and possibly Deana 5.5). In these examples, it was difficult for readers to explain exactly how they felt present in the story, although they were able to distinguish their feeling of being present in these particular moments from other reading moments where they did not feel present. Further, we do not believe that the feeling of being present was simply an artifact of having a vivid seeing or seeing from the first person perspective of a character; in these instances, the participants experienced a specific presence in the seeing.

To illustrate this present-in-the-story phenomenon, we first present an example in which the participant was illustratively innerly seeing a scene from the story from a first-person point of view, though she did *not* feel present in the story:

Olivia 5.2: At the moment of the beep, Olivia is innerly seeing the Judy Jones (the female character) say something [which Olivia did not recall or write down], which Olivia hears in the character’s sweet sounding, female voice. Olivia innerly sees Judy speaking on a patio/balcony at nighttime from the visual perspective of Dexter (the main character). Judy is to the right, leaning her arm on the bannister,

looking toward Olivia's point of view. Overall, Olivia is more into the tone of Judy's voice than the visualization.

Olivia was seeing from Dexter's point of view, and she essentially saw what Dexter would be seeing. However, though she shared Dexter's visual perspective, she did not feel present in the story.

Here is another example from Olivia in which she did feel present:

Olivia 5.5A: Olivia is innerly seeing the character letting go of a fish in the river, poking the motionless fish, and then seeing the fish swim away. Olivia sees this as if she actually is the character performing the actions [*unlike* in beeps 5.2, 5.3, and 5.4, where she saw from the visual perspective of the character in the story but was not experiencing feeling present]. In addition, Olivia feels the slimy texture of the fish skin as she/the character pokes it [though she had not felt the fish when she saw herself release it and did not feel the water].

Olivia's experience here was different from the previous example; here she experienced being the character in the story, not simply of seeing what the character sees.

Here is an example from another reader:

Lance 5.1: At the moment of the beep, Lance is innerly seeing Judy Jones in a blue dress with a tan. Judy is standing at the top of the hill. Her blue dress is long and has straps. Her face is not elaborated. Lance is seeing Judy from the bottom of the hill where he is standing with the other characters in the story. [This was the only such beep where Lance felt somehow present in the inner seeing]. The inner seeing is clear and in motion. [While the reading was ongoing and being

comprehended, the act of reading was not in his experience. As far as we could tell, the inner seeing was congruent with what was occurring in the story.]

Lance, of course, was actually sitting at his computer; however, as far as his experience was concerned, he was standing with the story's characters, seeing Judy at the top of the hill. Unlike in Olivia's example, Lance was not taking the place of the main character; rather, he was standing among the story's characters in the seeing. As noted in the beep description, Lance distinguished this moment of feeling present in the story from his other moments while reading that did not include the feeling of being present.

Sensation related to the story. Perhaps related to the above phenomenon of feeling as if present in the story, some participants described experiences of sharing a physical sensation with a character. This occurred in perhaps 7 out of 137 fiction samples. Because these experiences had notable and variegated features, they are hereby discussed at greater length.

In this first example, Olivia experienced a tactile sensation related to what she was reading:

Olivia 5.5A: Olivia is innerly seeing the character letting go of a fish in the river, poking the motionless fish, and then seeing the fish swim away. Olivia sees this as if she actually is the character performing the actions [*unlike in beeps 5.2, 5.3, and 5.4, where she saw from the visual perspective of the character in the story but was not experiencing*]. In addition, Olivia feels the slimy texture of the fish skin as she/the character pokes it [though she had not felt the fish when she saw herself release it and did not feel the water].

Olivia, who experienced being the character in the story, felt the slimy texture of the fish skin that the character himself might be feeling. She was not merely thinking about or imagining what the texture might be like – as far as her experience was concerned, she was actually feeling the sliminess.

One reading slide from “Big Two-Hearted River” describes the humming of a mosquito that was heard by the protagonist (sample 5.5). Two participants, Harrison and Isobel, each heard the humming in their experience. Recall Isobel 5.5 above (in the “Details incongruent with the story” section) in which Isobel heard the humming of the mosquito, although in retrospect, the sound she heard resembled the buzz of a bee. Isobel’s shared sensory experience was auditory – the character was hearing the hum of a mosquito, and Isobel was hearing the hum of a mosquito (although it happened to sound like a bee). Harrison’s experience of the humming was similar, although it was very loud, sounded like an actual mosquito to him, and occurred only in his right ear (see Harrison 5.5).

In a final example of this phenomenon, the reader actually initiated a physical action that was congruent to a character’s action in the text. Her experience was not directly about the reading in this moment, it was instead about the action she was performing, which mimicked the character. The example follows:

Pamela 5.6: At the moment of the beep, Pamela is feeling the physical sensation of the movement of her toes as they wiggle [she was wiggling them, but the agency thereof was not in her experience]. At the same time, she is thinking/feeling happy about wiggling her toes, which is perhaps more of a cognitive experience rather than a feeling experience. [She wasn’t confident about

the distinction between thinking and feeling in this regard. While Pamela had just read that the character in the story “wiggled his toes in the water,” her experience at this moment had left the story behind and was focused on her own toes wiggling.]

To reiterate, although Pamela’s action matched what the character was doing, she was not experiencing the reading – she was experiencing the sensations of wiggling her toes, which she was actually doing in reality, and thinking/feeling happy about wiggling her toes.

Feelings related to the text. Another experience phenomenon specific to reading was experiencing an emotional feeling that related to the story. This occurred in perhaps 11 out of 137 fiction samples. As with the last section, examples are provided to illustrate the diversity of feelings phenomena.

In some cases while reading fiction, the participants experienced feelings that were attuned to the characters or tone of the story. For example:

Eden 5.1: At the moment of the beep, Eden is feeling a warm (not temperature, but more like a “warm fuzzy”) feeling as well as a happy feeling at the same time. These feelings are not bodily—that is, Eden’s “warm inside” is referring to a mental positive feeling. They are aimed at the characters Dexter and Judy in the story and at how Dexter was describing Judy in a detailed and romantic way. The story might be present in experience to a greater degree than the feeling. [Thus the feeling was related to the story, aroused by the story.]

Here, Eden’s experienced emotion was congruent with the romantic tone of the story. She felt a warm, fuzzy happiness related to Dexter’s romantic description of Judy.

Another example shows how Nina's experienced a strong feeling that was parallel to the text:

Nina 5.6: [Nina had just read that the character in the story, Nick, had caught a fish.] At the moment of the beep, Nina wants to catch a fish, a strong desire.

[That was parallel to Nick catching the fish in the story]. [Nina was still reading with comprehension at this moment, but neither the reading nor any details of it were not in her experience.]

Nina's feeling in this instance was a desire to participate in the activity she had just read about – catching a fish. This was not merely a fleeting sense, it was a strong desire, which was parallel to the fish-catching in the reading.

Other feeling experiences related to the text were not parallel with the tone of the text, but were perhaps reflective of the reader's attitude toward the text. Felicity's dislike of the word "Mortimer," described in sample Felicity 5.0A above in the "Focus on specific word or words" section, is one such example. The "dislike," or any other similarly negative feeling, was not present in the story – only in Felicity's attitude toward the word "Mortimer." Here is another example:

Pamela 5.2: [Pamela had been reading a conversation between characters in the book and had gotten to the end of the sentence, "I like you."] At the moment of the beep, Pamela is thinking/feeling that the way the characters in the story were talking is weird or unrealistic, that no one would talk like this. [The thinking/feeling seemed both analytical and "slightly repelling" tied somewhat together (but not as tightly tied together as 5.5). She described this experience as

mental, not bodily or physical. She was reading at this time, and the reading content was only slightly in experience].

In this example, Pamela's feeling, being repelled that the dialogue was unrealistic, reflected an attitude about the reading but was not consonant with the tone of the story.

Skimming. A phenomenon that occurred perhaps one time while reading fiction, though it occurred on several occasions while reading nonfiction in the natural environment, was skimming the text. This phenomenon was more frequent in nonfiction reading (see Adele 2.2 and Zelda 4.5 for examples). In the one instance in which this occurred while reading fiction, the participant, Olivia, had deviated from a typical reading procedure:

Olivia 5.4: Olivia is actively skimming the reading for words that indicate a change in the storyline. [She was still Skyping her friend and vocalizing words that stood out to her while filling the other spaces with “Blah blah blah” something like “...blah blah blah fish, blah, blah, blah, burned hills blah blah blah...” – however, the words were not in experience at the moment of the beep, and the beep caught her in a “blah blah blah” moment.]

In this example, the skimming did not seem to be a typical approach to reading a story. Olivia was reading aloud to another person through a webcam and not attending to many of the words on the page; instead, she was skimming over the words so she could detect a change in the storyline. As the above description may suggest, there was not much to say about how this skimming was present in experience – it was simply ongoing at the moment of the beep.

Experience related to elements of the study. In some instances, readers' experiences were not about the story and instead related to their participation in the current study. Such experiences occurred in approximately 4 out of 137 beeps. These included thinking about the beep (Georgia 5.4), thinking about the DES interview the next day (Georgia 5.1, Olivia 6.3), and being annoyed with the reader program (Pamela 5.5). From an ecological validity standpoint, although we consider these to be high fidelity account of inner experience while reading fiction, these particular experiences may not adequately represent fiction reading experiences in a natural, non-research setting.

Unrelated to reading/stopped reading. Occasionally during the study, the participant had experiences unrelated to the reading. In some instances (approximately six), the participant was still reading the text – that is, their eyes were still tracking the text, but they were usually not comprehending the story (with one exception, see Nina 5.5). In other instances (perhaps six), they had stopped reading entirely but were still wearing the DES headphone to hear the beep. Overall, approximately 12 out of 137 fiction beeps did not involve any inner experiences related to the reading (see Bailey 5.4, Nina 5.3, Deana 5.1, etc.).

It may be important to note that most participants who had one experience unrelated to the reading had at least one additional experience unrelated to the reading (two participants were disengaged three times, and two participants were disengaged twice), showing that there were individual differences in regards to this occurrence. It may be that these participants were more distractible, less engaged with the reading, or

approached the reading task in a different way than their peers – however, definitive explanations of these differences are beyond the scope of this current investigation.

Experience of the reading process. Direct experiences of the reading process were virtually absent while reading fiction. Throughout these fiction reading samples, readers were not attending to the process of reading or the mechanics of reading, nor were they experiencing any meta-awareness about reading. For the participants who were actively reading, they were generally immersed in the story – in a seeing of the reading, a thought or analysis of the reading, attending to words in the reading, feeling an emotion about the reading, and so forth. Only one participant, Jenni, directly experienced the process of reading while reading fiction, which occurred for her on multiple occasions (Jenni 5.4, Jenni 6.1, Jenni 6.3). On these occasions, Jenni was specifically attending to the process or mechanics of reading words or the translation of words into meaning. For example:

Jenni 5.4: [Reading was on-going with comprehension.] At the moment of the beep, Jenni is paying attention to what she is doing (reading), but is not particularly engaged in any part of the story at the moment. Jenni is somewhat attending to the mechanics or process of reading, somehow making out words individually as she goes through the sentences.

Jenni's inner experiences in Jenni 6.3 was similar to the example above – her only experience of the reading was of experiencing the process of reading. In Jenni 6.1, she was experiencing the process of reading alongside an illustrative inner seeing of the story.

The experience of the reading process occurred in two instances during nonfiction reading for one participant, Adele. These experiences were not about the

process/mechanics of reading or meta-awareness of reading – rather, they were about the process of comprehending or trying to make meaning of the words (Adele 3.6, Adele 4.5).

Individual Differences in Fiction Reading Styles

In addition to the various phenomena described above, our investigation of inner experience while reading fiction demonstrated that individual differences occur among individuals, even while reading the same selected texts. In some cases, the within-subject experiences of the individual participants were fairly diverse; in other cases, individual participants appeared to have a consistent, specific style of experience across different moments. In this section, we use as examples six participants who had distinct styles of inner experience while reading fiction. In some cases, we relate the participant's inner experience while reading fiction (Kafka DES, Fiction DES, Erotica DES) to their inner experiences in the natural environment (Natural Environment DES) if a similarity or pattern emerged.

Lance. In each of Lance's six Fiction DES samples, he was innerly seeing an illustrative depiction of the story. His seeings were all straightforward, often quite detailed, and not accompanied by other phenomena either related or unrelated to the story--that is, no thoughts, feelings, sensations, inner speakings, or other experiences were present alongside his inner seeings. He was simply seeing an illustration of what he was reading.

Lance also had frequent visual experiences during Natural Environment DES while he was not reading (inner seeing, visual sensory awareness, visual perceptual

awareness, visual scanning; approximately 13 out of 18 total samples). Roughly 72% percent of Lance's inner experiences during Natural Environment DES were visual.

Felicity. Like Lance, Felicity had frequent inner seeings while reading (nine inner seeings among six Fiction DES and five Erotica DES samples). However, in all five of Felicity's inner seeing samples during Fiction DES, Felicity's seeings illustrated certain words she was reading, not the story itself. In fact, the inner seeings had hardly any relation to the story at all. All four of Felicity's Erotica DES inner seeings were related to the story, although her seeings were still closely tied to specific words in two out of four inner seeings (in Felicity 6.0C she illustrated the words "regular sex" using multiple scenes from the story; in Felicity 6.0D she illustrated a "French noble" alongside a separate seeing that illustrated the story). For further descriptions of Felicity's illustration of specific words, see the above section "Illustrating words, not story".

Alex. Alex was one of the participants in the Kafka DES pilot study; therefore, he did not participate in the same Natural Environment DES process as the 17 participants in the current reading study, nor did he read the same stories. He was, however, an experienced DES participant, as well as a trained DES interviewer who was intimately familiar with the DES process. Because his inner experience while reading *The Metamorphosis* by Kafka was notable, we describe it here.

In contrast to Lance's inner experience while reading fiction, Alex did not experience any inner seeings at all. Instead, Alex experienced the story word by word, one word after another, in sequence. He did not experience any inner seeings, outer seeings, feelings, thoughts, or anything else – he was simply experiencing the words. In three out of four instances, his momentary inner experience was of one word at a time:

“swang,” “happy,” and “way,” respectively. In a fourth instance, he was innerly speaking the word (“cleaner”), whereas the words were not spoken in the previous examples, merely present. All four samples had the word by word quality – his experience of the words was one word at a time, *not* of words in a sentence. Furthermore, the words were not experienced as semantic units—that is, he did not understand the word “swang” or “happy” as he experienced. Experientially, those words might as well have been Greek. Furthermore, there was no pause for punctuation in the stream of experienced words—a words on both sides of a period were experienced in the same way as words on both sides of a blank, apparently another example of the lack of semantic meaning of the experienced words.

One might assume that a reader with Alex’s style may struggle with reading comprehension; however, that did not seem to be the case with Alex. Given a brief comprehension quiz after the reading, Alex demonstrated that he comprehended the story. He was able to describe the plot of the story he had read, as well as some details about the reading. Even though his momentary inner experience of reading was word by word, he somehow comprehended the story, perhaps outside of direct inner experience or only in moments not captured by the beep.

As a final consideration regarding Alex’s experience while reading, it may be important to consider that, unlike the other readings across the various reading studies presented here, *The Metamorphosis* is originally written in German, and Alex read an English translation of Kafka’s original work. It is possible that the translated nature of the text may have contributed to Alex’s word experiences. However, the likelihood of this explanation is reduced because Lynn, who read the same translation, did not have the

same word experiences, and because *The Metamorphosis* is well-known and widely read in English translation, and because neither Alex nor Lynn reported any difficulties reading the text or demonstrated comprehension difficulties on a comprehension post-test.

Adele. Perhaps similar to Alex’s word by word experience, Adele sometimes (three out of four samples) experienced one word at a time during Fiction DES; however, Adele’s experience of these words was outerly visual, whereas Alex’s experience of words was mental—simply having the words present. In Adele’s three seeing word experiences, she was just seeing the word and having no other inner experiences. In a fourth sample (Adele 5.2), Adele was seeing a whole sentence (“I’m afraid I’m boring you”), as well as innerly seeing an illustration of the story. Adele was also beeped two times during Erotica DES. In both cases, she did *not* have a seeing of a word experience – instead, she innerly saw detailed illustrations of the story.

During Natural Environment DES, Adele happened to be beeped while reading nonfiction four times. In two out of the four cases, Adele was mentally trying to comprehend the reading (Adele 3.6, Adele 4.5); in a third example, Adele was rereading a textbook passage looking for something to highlight, though the idea she planned to highlight was not directly present to her (Adele 2.2). In a fourth example, Adele was reading an anthropology book, and she had just read about a culture that described women’s sexual behavior that involved lying down, motionless, with their clothes on while having sex (Adele 4.3). In her experience, she was somehow experiencing the motionless, lying down posture described in the text. This experience did not involve any

visualizations, physical sensation, emotions, or any other specific way of feeling like a woman in the culture.

Overall, Adele's inner experience while reading fiction was different from her inner experience while reading nonfiction. While reading fiction, she was innerly seeing illustrations of the story or just seeing a word or sentence she was reading on the screen. While reading nonfiction in the natural environment, she was trying to comprehend, rereading with intent to highlight, or somehow experiencing a bodily posture described in an anthropology text.

Bailley. Bailley's inner experience during Fiction DES often involved words, though not the words from the story. In four out of six Fiction DES samples, Bailley was innerly speaking a novel sentence of her own creation. Three of these sentences responded to the story (e.g., Bailley 5.1: "Aww, he likes her"), whereas one of these sentences did not relate at all to the story (Bailley 5.5: "I need to ask my boss if I can leave early"). In a fifth example, Bailley was innerly hearing the rapper, Drake, rapping, "stay true that's all me, for real, for real" (Bailley 5.4), which was also unrelated to the story. Bailley is the sole participant (out of 17 participants) who did not experience any inner seeings during Fiction DES; she had three inner seeings during Natural Environment DES (out of 18 samples). Her only non-speaking/hearing example during Fiction DES occurred when Bailley had stopped reading, and nothing at all was present in her experience at that moment (Bailley 5.6).

Bailley also had a high rate of verbal experiences during Natural Environment DES. Of the 17 participants in this study, Bailley had the second highest frequency of inner speaking, which occurred in approximately 44% of her Natural Environment DES

samples. Most of her natural environment inner speaking included straightforward examples of self-talk (e.g., Bailey 3.2: “I’m ready to go back inside”).

Pamela. Compared to other readers, Pamela’s inner experience during Fiction DES appeared to reflect less immersion in the story, even though her experiences related to the reading task. Perhaps only one of her six Fiction DES samples (Pamela 5.4) reflected inner experience that was immersed in the reading; in this example, Pamela was imagelessly seeing grey-black, which somehow related to the shade of a tree that was described in the story. Her remaining five samples were somewhat peripheral to the story, which included innerly repeating a novel word, “gingham” (Pamela 5.1), thinking/feeling that the dialogue in the story was weird or unrealistic (Pamela 5.2), remembering a sunset that was related to the story but not directly illustrative of it (Pamela 5.3), feeling annoyed about the story’s choppy sentence structure and the small text on her computer screen (Pamela 5.5), and feeling the physical sensation of wiggling her own toes and thinking/feeling happy about the wiggling, which was parallel to the character in the story wiggling his toes, though her inner experience had departed from the story at this time and was about wiggling her own toes (Pamela 5.6).

Though Pamela had one imagelessly seeing experience (5.4), she did not have any experiences of innerly seeing an illustration of the text. In Natural Environment DES, she experienced two instances of inner seeing and two instances of imageless seeing (approximately 22% of Natural Environment DES samples).

Conclusion. As these examples show, participants differed in the types of experiences that occurred while reading. Lance always had visual experiences whereas Bailey had none (and had frequent verbal experiences instead). In both cases, the

frequent visualizations or frequent inner speaking paralleled their natural environment experiences. Alex's and Adele's experiences demonstrate how words can be present while reading without being straightforward inner speakings of the text. Further, Alex's experiences demonstrate how comprehension of the story may occur outside of direct inner experience, as his momentary inner experiences were of only one word at a time without visualization though he still comprehended the reading. Felicity's experiences show another way of experiencing words and visualizations, as her inner seeings almost always illustrated specific words, not the story. And finally, Pamela's inner experiences display a reading style that often contacted the periphery of the reading, as opposed to directly relating to the plot of the story; this is in contrast to readers like Lance whose experiences were closely tied to the plot. Overall, these six descriptions are only a few examples of the different reading styles that may exist across the population of fiction readers.

CHAPTER 5

DISCUSSION

This study is an initial exploration of the inner experience while reading fiction. We used a high-fidelity experience sampling method, Descriptive Experience Sampling, to investigate the momentary inner experience of 17 readers while reading fiction. We first trained them in DES, using the standard DES procedure of asking the participant to wear the DES beeper in their natural environment, attend to inner experience at the moment the beep interrupted, and describe their inner experiences in the expositional interview (Natural Environment DES). After four days of Natural Environment DES, participants entered the Fiction DES phase, in which they were beeped while reading two classical fiction stories, “Winter Dreams” by F. Scott Fitzgerald and “Big Two-Hearted River” by Ernest Hemingway. The same expositional interview occurred following the reading. Afterwards, six of these original 17 participants agreed to participate in a separate but related study, examining the inner experience of reading erotic fiction (Erotica DES). The Erotica DES study had the same study design as the Fiction DES phase of the current study, though the participants were instead beeped while reading the erotic fiction story “Not Her Type” by an unidentified author. As the Erotica DES study also investigated the inner experience of reading fiction, those samples, as well as experience samples from a pilot reading study in which two participants read *The Metamorphosis* by Franz Kafka (Kafka DES) and fiction reading samples from the Natural Environment DES phase, were also included in the current results.

We approached the task of investigating the inner experience of reading fiction without any specific expectations or hypotheses – we simply sought to find and describe

what phenomena may occur while people read. Throughout our investigation, two prominent categories of inner experience emerged: inner seeing and experiences involving words. We summarize those findings below, then discuss implications and limitations of our findings.

Summary of Findings

Inner seeings. We found, perhaps unsurprisingly, that many readers innerly illustrate the story as they read. However, this occurred in only some moments of reading (81 of 137 sampled moments), and did not occur for all participants (1 participant out of 17 had no visual experiences while reading).

Besides simply seeing the story as described, we also found a wide range of other inner seeing phenomena that occur while reading. We found that readers' inner illustrations often included incorrect details, or included characters' appearances imported from other real-world or media sources.

We found that readers often illustrate the inner seeings passively, adding details from the reading outside of experience as they encounter them as the reading progresses. However, on some occasions the adding of details was present in experience, including being experienced as intentional actions. In some samples, we found that readers are not illustrating the story at all, but are instead illustrating a tangentially-related scene of their own creation.

Overall, we found that inner seeings are sometimes straightforward depictions of the story being read. However, quite frequently the inner seeings are not straightforward and instead involve the idiosyncratic characteristics described above or may not be depictions of the story at all.

Words and inner speaking. We found that most people almost never innerly speak the words they are reading (1 sample out of 97 in Fiction DES). This finding contrasts many researchers' preconceived notions of how reading occurs in experience, as well as many of the findings summarized in the "Literature Review" section above about inner speaking and reading (see Perrone-Bertolotti et al., 2012; Kurby, Magliano, & Rapp, 2009; Alexander & Nygaard, 2008; and Hardyck & Petrinovich, 1970). In those studies, the researchers presumed the presence of inner speaking based on brain imaging data, reading speed, and word recognition.

In the current study, our results are based on a high fidelity experience sampling method that was used to investigate directly experienced reading phenomena in natural or nearly natural circumstances. Our findings indicated that words were present to many of our fiction readers in a variety of ways (in approximately 28 of 137 occasions). These included: words present, seeing a word (on the screen), innerly seeing a word they had read, innerly repeating a word or words they had read, innerly hearing a word or words they had read, or innerly speaking a novel sentence in response to the story.

Implications

This study demonstrates that Descriptive Experience Sampling is an exemplary method for exploring the inner experience of reading. Our 17 DES readers (19 when two Kafka DES participants are included) who were trained in Natural Environment DES capably observed and described inner experience while performing the reading tasks. No participants reported significant difficulties participating in DES while reading.

Due to the non-inferential nature of this study, we do not offer any definitive implications of our findings. Our results simply describe and characterize the inner

experience of 19 readers of fiction. We do not yet know how the reading phenomena described in this study relate to other variables of interest, such as reading comprehension, reading speed, or reading interests. However, future investigations of the inner experience of reading may benefit from measuring these variables and exploring their relationships to reading phenomena, such as the ones reported here. For example, the tendency to visualize the reading, or not, or the way individuals experience words, or not, may relate to important aspects of reading. Further, understanding reading phenomenology may develop insight into reading disorders, and may help direct educators' efforts to improve the reading skills of students.

As such, future studies may also wish to investigate specific groups of readers, such as individuals with dyslexia, speed readers, and readers of various ages and grade levels. Whereas the current study is an initial exploration of what phenomena occur while reading fiction, we hope for this study to pioneer future studies using experience sampling methods to improve the understanding of reading among the scientific and educational communities.

Limitations

Due to various constraints, this study has some limited generalizability when it comes to characterizing the inner experience of reading fiction. First, all participants were enrolled in college and were presumably of a fairly high reading level. Second, there was a fairly limited age range among our readers (18 years to 30 years); perhaps younger or older readers would have different experiences while reading these texts, either due to developmental or generational factors. And third, our sample was

predominantly female (14 females to three males); our sample may have failed to identify any gender differences that may occur in the inner experience of reading.

In order to study the inner experience of reading fiction, we considered multiple study designs; each had various advantages and limitations. Alternative designs included allowing the readers to wear a DES beeper while reading their own selected fiction (in print medium, if preferred), allowing readers to select fiction to read from a reading list, or having readers read pre-selected texts but allowing the beeps to occur at random moments. We adopted the current design because we valued the ability to standardize the stories that were being read, as well as the approximate locations in the story that participants were receiving the beeps. We wanted our study to demonstrate the variety of experience phenomena that occur while reading, even when readers were beeped at approximately the same portions of the same stories.

There are limitations regarding this choice of design. The readers did not choose what stories they read, and this may have influenced their interest or involvement in the reading. Thus, their experiences of the stories may have been different if the readers had chosen the stories themselves. Likewise, different experience phenomena may have emerged if the researchers had chosen different stories or different genres of fiction. Also, standardizing the location of the beep did not assure that all readers received beeps while reading the same text; readers varied in regards to how far down the slide they had read when the beep occurred. Further, due to technical errors, some readers did not receive the beeps on the designated slides, so full standardization of where the beep occurred was not achieved.

For this study, we also considered administering brief comprehension tests after the reading or measuring how long it took the readers to read the stories (reading speed). However, because we wanted readers to read in their own selected natural environments (e.g., at home, in a library, in a coffee house, etc.), we did not have any control of their process of completing the study. Some readers may have read the stories in one sitting, other may have taken frequent breaks. Some may have read while alone, some may have read with other present (in fact, one participant read part of the story out loud to her boyfriend via a webcam). Thus, situational factors would likely have influenced such variables as reading speed or reading comprehension. Future DES investigations may wish to have readers perform the reading in a controlled laboratory environment to minimize situational differences, especially if the researchers want to measure other variables of interest.

On the one hand, we valued allowing readers to read in their natural environments – if they were to read fiction in their personal lives, they would likely have varying levels of interest in the text, varying levels of distraction while reading, varying levels of hunger or tiredness while reading, and so forth, and we wanted the study situation to resemble real-life reading. However, by relinquishing some standardization in this regard, we relinquished the ability to claim that differences in reading phenomena across participants was due to individual factors, not environmental factors. For this particular investigation, we were willing to accept this limitation in order to preserve the natural environment of readers. As stated above, future DES studies of reading may benefit from administering the reading in a controlled environment.

Appendix A

Sample Descriptions and Codings

The descriptions below are labeled based on the participant, the sampling day, and the page in the text. Because Fiction DES took place on the fifth day of experience sampling, all Fiction DES samples begin with the participant's name, the number "5," and a decimal followed by the corresponding beep we are referring to (1 through 6 for the Fiction DES). For example, "Olivia 5.2" refers to a description of Olivia's inner experience on the fifth day of sampling (i.e., Fiction DES day) on the page where we provided the second beep. In some cases, due to technical or human error, participants did not receive the beeps on the designated pages. For these beeps, we named the description based on the beep prior to the moment the participant actually received the beep and added the letter "A" afterward. For example, Felicity received a beep between the third and fourth designated pages; we named it Felicity 5.3A to show its relative position in the reading. A second unplanned beep that came before the fourth page was called Felicity 5.3B, and so forth. And finally, unplanned beeps that occurred before the first designated page were identified by relative position with a "0" following the decimal and then a letter (for example: Kevin 5.0A). Because Natural Environment DES beeps while reading were not planned on specific pages, they are simply named by the participant's name, the number of the sampling day, and the number of beep, in order, as it occurred on that day. For example, "Maddi 2.3" refers to the third beep Maddi responded to on the second day of experience sampling.

Fiction DES Phase

Adele

Adele 5.1: [Adele had just sneezed, which took her eyes off the reading. She then visually searched the text for where she left off.] At the moment of the beep, Adele is seeing the word “rimmed” [which happens to be where she left off, although she had no experience of finding the right place at this moment]. She is simply seeing the word. [There was no experience of reading or comprehending at this moment.]

5FP: None

Idiographic: Word present, nothing else

Adele 5.2: At the moment of the beep, Adele is seeing the sentence “I’m afraid I’m boring you” in text on the screen. She is also innerly seeing two figures, a male figure on the right and a female figure on the left. They are standing and having a conversation, and she knows the male to be saying “I’m afraid I’m boring you” [although she did not innerly hear or speak these words]. The figures are not presented in detail. The background is dark, and Adele knew that the figures are standing outside at night, [consistent with the story]. Seeing the sentence was about 90% of her experience, and the inner seeing was 10%.

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Adele 5.3: Adele is seeing the name “Devlin” [which is present on the screen]. She is simply seeing the name. [There was no experience of reading or comprehending at this moment.]

5FP: None

Idiographic: Word present, nothing else

Adele 5.4: Adele is seeing the word “rested” [which is present on the screen]. She is simply seeing the word. [There was no experience of reading or comprehending at this moment.]

5FP: None

Idiographic: Word present, nothing else

Adele 5.5: [Missing]

Adele 5.6: [Missing]

Bailley

Bailley 5.1: [Bailley was engaged in the reading task and the story at the moment of the beep.] At the moment of the beep, Bailley is innerly saying, “Awww, he likes her,” in a sweetly sentimental tone and in her own voice.

5FP: Inner speaking

Idiographic: Inner speaking in response to text

Bailley 5.2: [Bailley is engaged in the reading task and the story at the moment of the beep.] At the moment of the beep, Bailley is innerly saying, “She does not like him,” with an emphasis on the “not.” She says this in her own voice.

5FP: Inner speaking

Idiographic: Inner speaking in response to text

Bailley 5.3: [A couple seconds before the beep, one of the characters in the story, Dexter, had asked Judy, another character in the story, why she had moved away.] Now, at the moment of the beep, Bailley is innerly saying “why did you leave in the first place?” in her own voice in a blaming tone and is simultaneously experiencing something bodily

related to this tone—more or less like rolling her eyes-- but it is not clear exactly how she experiences this. [The speaking paraphrased but did not quote what had been said in the story, and it was said by Bailey, not by Bailey’s Dexter.]

5FP: Inner speaking

Idiographic: Inner speaking in response to text

Bailey 5.4: [Bailey’s eyes were aimed at the screen and her eyes were tracking across the screen with the words. However, she was not experientially or semantically reading at the moment of the beep. She had listened to a recording of Drake’s song, “All Me,” before the reading.] Bailey is innerly hearing the rapper, Drake, rapping, “stay true that’s all me, for real, for real.” She innerly hears the rap the same way it sounds on the recording (as far as she could tell).

5FP: None

Idiographic: Unrelated to reading/stopped reading

Bailey 5.5: [Bailey’s eyes are pointed at the screen, but the story is not present in her experience in any way.] At the moment of the beep, Bailey is innerly saying to herself, “I need to ask my boss if I can leave early,” in her own voice with a flat tone.

5FP: Inner speaking

Idiographic: Unrelated to reading/stopped reading

Bailey 5.6: [The story is on the screen, but it is not in Bailey’s experience.] At the moment of the beep, Bailey is yawning a tired yawn. There is nothing in her experience, no sensations or thoughts.

5FP: None

Idiographic: Unrelated to reading/stopped reading

Caitlin

Caitlin 5.1: At the moment of the beep, Caitlin is innerly seeing her own tan arm, particularly aimed at her skin tone against the white trim of a dress. Her arm is seen as if she were looking down at her own left arm. Caitlin is simultaneously innerly seeing the less-tan arms of Judy Jones. She sees Judy from the front, her entire body, and wearing a blue dress with white trim, but is primarily focused on the tanness of her arms and she does not see details such as the woman's face or hair color. Both inner seeings are in color. [Caitlin characterized this experience as wondering about Judy Jones's (the story character) tan, as somehow comparing her own tan to that of Judy Jones. But there was no directly experienced comparison at the moment of the beep.] [Reading was not directly present. This inner seeing was related to a description of the tanned Judy Jones in the story.]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Multiple inner seeing

Caitlin 5.2: [Caitlin was reading a sentence about Judy Jones (the female character) having a terrible afternoon.] At the moment of the beep, Caitlin has two simultaneous and distinct wonderings. She is cognitively anticipating why the woman had a terrible afternoon. Caitlin is simultaneously cognitively trying to understand Judy Jones's intentions towards Dexter (the male character)—whether those intentions are romantic or whatever. [Trying to understand the female character's intentions had been “on Caitlin's consciousness” for a few pages.]

5FP: Unsymbolized thinking?

Idiographic: Analyzing/thinking about reading content

Caitlin 5.3: [Caitlin was reading a sentence that contained the words “Dexter was laughing”.] At the moment of the beep, Caitlin is cognitively anticipating, trying in some cognitive (non-visual, non-worded) way to imagine, what Dexter is laughing at, which is about 60% of her experience. Caitlin is innerly saying the words of the sentence as she reads them in her own voice and knows that Dexter is laughing, which is about 40% of her experience.

5FP: Inner speaking; Unsymbolized thinking?

Idiographic: Silent speaking of the text; Analyzing/thinking about reading content

Caitlin 5.4: [Missing]

Caitlin 5.5: At the moment of the beep, Caitlin is innerly seeing a dark, quiet swamp in the distance including a small body of water, trees, and no movement. The inner seeing is not detailed and is about 60% of her experience. [The sentence Caitlin was reading was “the swamp was perfectly quiet.”] The word “quiet” and the words “the swamp was perfectly” are both simultaneously present to her, but not in the same way. “Quiet” is more prominent, experienced as probably spoken or perhaps both spoken and heard. The words “The swamp was perfectly” are somehow “on her mind,” somehow actively/purposefully/specifically being kept alive in memory—holding on to the words— as she processes the remainder of the sentence. That is, this keeping-in-mind is *not* merely that the words are in short-term memory, but rather that she experiences herself as specifically involved in the doing of keeping those words in memory. [It was not clear how those words were experienced: perhaps spoken, perhaps heard, perhaps both, perhaps some other way that was difficult to describe.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Focus on specific word or words

Caitlin 5.6: [Caitlin was reading “into the fast water”.] At the moment of the beep, the “into the fast” and “water” are experienced in two different ways. The beep occurs in the middle of saying/hearing the word “water,” spoken/heard in her voice. The words “into the fast” are lingering, apparently in her voice as she is actively, purposely keeping these words in her experience [apparently the same doing-of-keeping-in-mind phenomenon described in sample 5.4]. The inner speaking of the words is about 70% of her experience. Caitlin is also innerly seeing river water flowing towards her. She sees the flowing water without riverbanks, etc. She sees her right hand in the water so that the flowing water is hitting the back of her fingers.

5FP: Inner speaking; Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing; Focus on specific word or words

Deana

Deana 5.1: At the moment of the beep, Deana is noticing the enjoyable, particularly cheesiness taste of some Doritos chips she is eating. She is also innerly speaking the sound “Mmm.” [She understood this “Mmm” to express how good, how cheesy the chips were.] [While Deana’s eyes were still engaged in the reading task, she was not comprehending what she was reading at this moment.]

5FP: Inner speaking; Sensory awareness

Idiographic: Unrelated to reading/stopped reading

Deana 5.2: [Deana was making herself blink, blinking at a rate of about 3-6 blinks per second.] At the moment of the beep, she feels a raking or scraping moving up and down on the surface of her eyeballs [from her eyelids blinking,] as if her eyelids were raking or sandpapering her eyeballs. The width of the experienced friction roughly matches the width of the section of her eye where her eyelashes are located.

5FP: Sensory awareness

Idiographic: Unrelated to reading/stopped reading

Deana 5.3: At the moment of the beep, Deana is looking at her computer keyboard and is noticing the movie spotlights on the keys, particularly on the *T* key. She moves her head back and forth and the spotlights move back and forth like the spotlights at the bottom of an old movie header. [Actually, she saw the reflections of a lamp or the computer monitor on the keys, and she of course understood this, but experientially she saw spotlights.] At the same time, she has some kind of thoughty or cognitive awareness of the concept of the Hollywood light—that these are Hollywood lights—but there are no words or other symbols that carry this thought. [She had withdrawn from the reading at this time.]

5FP: Sensory awareness; Unsymbolized thinking?

Idiographic: Unrelated to reading/stopped reading

Deana 5.4: At the moment of the beep, Deana is innerly seeing the long nose of a giant cartoon Pinocchio puppet [that is large enough to step on buildings, although it wasn't stepping on buildings as seen]. She is seeing the nose as if she was looking over Pinocchio's right shoulder. She sees the long wooden nose, various holes in the nose where birds had put nests, and some different types of birds flying around it in motion.

In the background, Deana is innerly seeing a rural town with trees and cottages. Her seeing is particularly focused on the holes in Pinocchio's nose with the bird nests inside, of which she can see some sticks poking out of the hole and colorful, decorated rooflets above the holes. This experience includes the sound of the chirping birds. [While Deana was reading with comprehension at this point, the reading was not in her direct inner experience. Earlier in the reading, Deana had read about grasshoppers. Deana was of the opinion that her thought process had gone something like from the grasshoppers to thinking about Jiminy Cricket to thinking about Pinocchio to thinking about Pinocchio's nose to thinking about Pinocchio's lying, but that was a retrospective account not in experience at the moment of the beep.]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing

Deana 5.5: At the moment of the beep, Deana is innerly seeing a peaceful/tranquil scene of a man fishing and smoking a cigarette. The man wears waders and a cool hat with fish ornaments, lures, hooks and so on. [The passage she read described a man fishing, but the hat and the boots were made-up details]. It is almost as if Deana is standing on the riverbank in the midst of the scene, and yet she is not part of the scene. The seeing is quite detailed: she sees grass, a blue sky with the sun out, water with the iridescent reflection of the sun, a fish jumping out of the water. The man is seen standing with his left shoulder facing Deana. In the distance are woods and mountains. [The scene was peaceful/tranquil, and it seemed to some extent that Deana was part of the peaceful/tranquil scene, but Deana did not particularly experience peacefulness/tranquility at the moment of the beep.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; As if present in story?

Deana 5.6: [Deana had withdrawn from the reading to consider what Nick (the main character) might do afterward. She created two extreme opposites and saw them both simultaneously.] At the moment of the beep, she is innerly seeing a guy kissing a girl in the city, her leg raised. Simultaneously she is innerly seeing a house in the woods by a river [this scene has been imported from another book Deana had read]. Both of these seeings are seen ahead of her; they are *not* side by side and they are *not* one atop the other. It is as if she has two separate seeings that occupy the same space without confusion or overlap. The two seeings are known to be opposites—one settling down and getting married in the city and the other living free in the country—[It is not clear how much that knowing is present in experience at the moment of the beep.]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Multiple inner seeings

Eden

Eden 5.1: At the moment of the beep, Eden is feeling a warm (not temperature, but more like a “warm fuzzy”) feeling as well as a happy feeling at the same time. These feelings are not bodily—that is, Eden’s “warm inside” is referring to a mental positive feeling. They are aimed at the characters Dexter and Judy in the story and at how Dexter was describing Judy in a detailed and romantic way. The story might be present in experience to a greater degree than the feeling. [Thus the feeling was related to the story, aroused by the story.]

5FP: Feelings

Idiographic: Feelings related to the text

Eden 5.2: [Eden was reading the sentence "...and this afternoon he told me...."] At the moment of the beep, Eden is explicitly interested in what the character has said—that is, Eden has the experience of knowing that she is about to know what the character says, and is wondering what it is. This is experienced in an unsymbolized way.

5FP: Unsymbolized thinking

Idiographic: Analyzing/thinking about reading content

Eden 5.3: [Eden was reading the passage "he was laughing loudly at something Dexter had said".] At the moment of the beep, Eden is looking at/attracted to the color contrast of the letters, the black against the white of the letters against the screen. The story itself is not in her experience, nor is the act of reading. Only the contrast of the color of the letters is present.

5FP: Sensory awareness

Idiographic: Unrelated to reading/stopped reading

Eden 5.4: [Eden's leg had started to shake.] At the moment of the beep, the sequence of words "my leg started shaking" is present, but it is not clearly spoken or not spoken in experience. The words are, however, clearly present in some way. Also present is the content *right this moment* and *quickly* (referring to the shaking leg), but these are not experienced as words, or in any other symbols—they are a cognitive or unsymbolized extension or amplification of the words that are present. Also present in her experience is the sensation of her leg shaking up and down quickly. [She described her experience as 50% feeling her leg's shaking and 50% the thoughty observation.]

5FP: Unsymbolized thinking; Sensory awareness

Idiographic: Unrelated to reading/stopped reading

Eden 5.5: [Eden was reading the words “and the match went out”.] At the moment of the beep, she is innerly seeing the orangey-red candle-lit glow of the inside of a cabin with a man sitting on a bed. Eden’s experience is mostly focused on the orangey red light of the scene and the feeling that it evoked. This positive/romantic feeling is attached to and not separate from the orangey red color—as if the orangey-red-candle-glow *is* the feeling or is inseparable from the feeling. The man is not very detailed and is not Nick from the story, but is just a man. [That is, Eden was innerly seeing a scene that was related to the reading but was *not* directly illustrative of the reading—she saw a man (not recognized to be Nick) in a candle lit room, not Nick with a match.]

5FP: Inner seeing; Sensory awareness

Idiographic: Semi-illustrative/tangentially-related inner seeing

Eden 5.6: [Eden was reading the words “feeling of disappointment left him.”] At the moment of the beep, the idea that Nick’s mood is going to change is present, but in a purely cognitive way, not associated with any particular experience. That is, Eden is cognitively commenting on the reading, not merely being carried along by the reading. [Eden is not sure but] the act of reading might be present at the moment of the beep.

5FP: Unsymbolized thinking

Idiographic: Analyzing/thinking about reading content

Felicity

Felicity 5.0A (page 5, 6, 7, or 12): [Felicity had just read a sentence that included the word “Mortimer,” which she had innerly said in the midst of reading. The rest of the

sentence was not innerly said.] At the moment of the beep, Felicity is sensing a stabbing pain on the surface of the front, middle of her left thigh. It occurs at a particular point on the upper portion of her leg. She is also disliking the word “Mortimer” [that she had previously innerly said as she read it]. The word is ugly or negative. The disliking is experienced more as mental than physical or emotional. [Felicity could not provide any additional details of how this disliking was present in her experience.]

5FP: Sensory awareness

Idiographic: Focus on specific word or words; Feelings related to the text

Felicity 5.0B (page 14): [Felicity had just read a sentence that included the name “Mr. McKenna.”] At the moment of the beep, Felicity is innerly seeing her friend McKenna standing still. [The McKenna she was seeing was related to the character in the story only by coincidence of name]. She sees McKenna’s blonde hair and (white) face from a 45 degree angle, and the rest of her body is blurry. McKenna is standing. [Thus this seeing was parallel to the story, but not illustrative.]

5FP: Inner seeing

Idiographic: Illustrating words, not story; Semi-illustrative/tangentially-related inner seeing

Felicity 5.3A (page 88): [Felicity had just read a description of the pooling of a river as a “glassy convex surface.”] At the moment of the beep, Felicity is innerly seeing a still swimming pool with a shiny surface. The swimming pool is rectangular, and she is facing the wide side of the rectangle. The water is blue, and Felicity can see the edge of the pool deck, which is peach-colored. At the same moment, Felicity is thinking that “glassy, convex surface” is a perfect description of a pool. This thought does not contain any

words, yet the idea of “perfect” is specifically present. [The seeing was tangentially illustrative of the reading.]

5FP: Inner seeing

Idiographic: Illustrating words, not story; Semi-illustrative/tangentially-related inner seeing

Felicity 5.3B (page 89): [Felicity had just read a sentence that included the words “heart tightened.”] At the moment of the beep, Felicity is innerly seeing (50%) a pink heart being squeezed in a white [Caucasian] hand against a light blue [sky-colored] background. She sees the hand from a side view, and she can see pressure marks from the squeezing. [She thought she saw the motion of squeezing, but she did not seem confident in this. While the inner seeing was not fully illustrative of the story, it was more closely related to the story than the seeing of McKenna in Beep 5.2.] At the same time, Felicity is feeling physically tired along her lower back (50%), which is experienced as a minor pain on the surface and underneath the whole width of her lower back.

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrating words, not story; Semi-illustrative/tangentially-related inner seeing

Felicity 5.5: [Felicity had just read “The match went out.”] Felicity is innerly seeing a lit match (about one and one-half feet in front of her face), in an empty unlit room. She knows the match to be held by someone, but she does not know who [and the holder was not herself or the character in the story]. She innerly sees the match go out, and the seeing becomes pitch black. Felicity feels as if she is in the room [which was not true of her

other beeps. This experience was at least partially illustrative of the story.] [This was the only beep that came on the appropriate page.]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Illustrating words, not story; As if present in story

Felicity 5.5A (page 130): [Felicity had just read “his mouth went dry.”] At the moment of the beep, Felicity is imaginarily feeling dryness in her own mouth. She is also innerly seeing a dry--parched lips and tongue (white [Caucasian]) mouth that is slightly open with pink lips, a pink tongue, and the tops of teeth showing. [The owner of the mouth was not the person in the story.] These two experiences are related to each other but are not one experience with two aspects. That is, the seen mouth is *not* understood to be her own mouth, and the dryness in her own mouth is *not* understood to be a characteristic of the seen mouth [These experiences were parallel to, and not illustrative of, the story.] These two experiences occupy 90% of her awareness, and the feeling of dryness is somewhat more present than the inner seeing. The remaining 10% of Felicity’s experience is of stretching, feeling pain in her back, and feeling sudden pain in her arm.

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrating words, not story; Semi-illustrative/tangentially-related inner seeing

Georgia

Georgia 5.1: [Georgia was reading the passage including the words “exaggeration of thinness”.] At the moment of the beep, Georgia is not paying attention to the story that she is reading, but is innerly seeing the interview that is going to happen [that is, she sees

the DES interview with Dr. Hurlburt and Jason]. She sees it from above on the left side and sees herself from the back quarter talking and gesturing; Dr. Hurlburt and Jason are sitting and responding. There is no sound associated with this. The seeing is clear.

5FP: Inner seeing

Idiographic: Experience related to elements of the study

Georgia 5.2: [Georgia was reading the passage including the words “terrible afternoon”.] At the moment of the beep, Georgia is not paying attention to the story she is reading but wants some coffee and is innerly seeing the Starbucks in the UNLV Student Union—actually she is innerly seeing the Student Union courtyard and entrance by Jamba Juice, but she experiences this as being of Starbucks. At the same time she is thinking *I want coffee*, and *It’s spring break--I wonder if they’re open?.* These thoughts are not experienced as having words or pictures or any other characteristic but their content.

5FP: Inner seeing; Unsymbolized thinking

Idiographic: Unrelated to reading/stopped reading

Georgia 5.3: [Georgia was reading the passage including the words “laughing loudly”.] At the moment of the beep, Georgia is innerly seeing the story’s main character getting drunk in a bar. He is wearing a suit and tie and sitting at a wooden table leaning back in his chair drinking from a bottle. The lights are dim and there are no other people present. The man’s face is not clearly articulated and Georgia’s focus is on the drinking. This is a sort of illustration of something that had been described in the story a few lines earlier.

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Georgia 5.4: [Georgia was reading the passage including the words “lay down in the shade”. Georgia was worried that she had missed the beep; she had turned the computer volume all the way up and was now turning the volume back down.] At the moment of the beep, there is some sort of thought about not missing the beep and a related thought about not wanting the beep too loud when it goes off. There are no words or images in this thinking. [It probably was an unsymbolized thought. The story was not present at the moment of the beep.]

5FP: Unsymbolized thinking?

Idiographic: Experience related to elements of the study

Georgia 5.5: [Georgia was reading the passage including the words “a mosquito hummed”.] At the moment of the beep, Georgia is innerly seeing the story’s two main characters at a campsite, sitting around a fire wearing heavy coats [notably, the story Georgia was reading was about only one character (Nick); Nick is the only character that ever appears in the story, and there is only one tent (Nick’s) that is described in the story]. The men are not detailed but she sees the campsite clearly--the campsite has two tents in it and several tall green trees. She sees the campsite is on a flat spot that drops off sharply. Simultaneously she is directly aware that this campsite is a scene from her childhood and that she is putting the story’s men into it. [That is, the meta-awareness is present at the moment of the beep.]

5FP: Inner seeing; Unsymbolized thinking?

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing

Georgia 5.6: [Georgia was reading the passage including the words “breast pocket”.] At the moment of the beep, Georgia is bodily swaying. Her chin rests on her hands and she is swaying back and forth. She is mostly focused on her swaying (60%). This is experienced as an upper body sort of thing. At the same time she is reading and comprehending the story in her experience (40%).

5FP: Sensory awareness

Idiographic: Just reading with comprehension

Harrison

Harrison 5.1: [Harrison was reading with comprehension but outside of awareness.] At the moment of the beep, he is innerly seeing a face from the cheekbones up, specifically the eyes, forehead, cheeks, and hair. The eyes are brown and large [he *experienced* large, and retrospectively said they were larger than usual (about 25% larger)]. The hair is brown and done without bangs. [After the beep Harrison described the face as belonging to his girlfriend, but the girlfriend-ness was not part of his experience at the moment of the beep.] The eyes are the most salient portion of the inner seeing (eyes 40%, hair 30%, cheeks 15%, forehead 10%). Also in his experience are the words “passionate eyes”. There are present in an “inner auditory” [Harrison was not sure if they were innerly spoken or innerly heard]. The words have a “lingering” quality as if they were hanging around from a moment before. [That is, the words “passionate eyes” were at the beginning of a sentence that he had already read to the end, outside of his awareness, but he had continued to somehow see or say the words “passionate eyes” while the reading progressed and the inner seeing took place. Of the total experience Harrison described the face as being 90% of the experience and the words as 10%.]

5FP: Inner seeing; Inner speaking?; Sensory awareness?

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing; Illustrating words, not story; Focus on specific word or words

Harrison 5.2: Harrison innerly sees a visually, crudely constructed picture or image of a man and woman talking to each other. [That is, Harrison was *not* merely innerly seeing a man and woman talking; he was seeing a construction or representation or collage of a man or woman talking, and he saw the details of the construction/representation/collage as much as he saw the people.] The picture is wider than it was tall, has straight vertical and horizontal edges, and has a royal blue background. Against this background are [what looked like] two black paper cutouts or silhouettes. Thus Harrison doesn't see two people talking; he sees undifferentiated silhouettes of people talking. They have outlines, but even those are pretty much undifferentiated (other than tallness of the man and the bustness of the woman). There is no inner definition to these seeings. Furthermore, there is something stuck-on about these figures. That, they were not integrated into the royal blue scene, but were as if created separately and inserted on top of the scene. Harrison also saw the moon in the upper right corner of the picture/image. [As might be the case in a child's drawing of a landscape, the moon was a quarter circle, the rest of the moon not seen because it would be off the edges of the image corner; here again, the moon had a stuck-on quality. The entire picture/image had a crudeness or amateurishness about it, as if it were a collage created by a child. Compare sample 5.6, where there is what seems to be a similar bringing together but not coordinating disparate parts: moving water but still smoke, a sizzle sound that is not connected to the source of the sizzle.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Stylized illustration of the story

Harrison 5.3: At the moment of the beep, Harrison is innerly seeing the dullish shine of somewhat old-looking eyes. The eyes are a chestnut brown, and he sees just a strip of face that from the eyebrows down to just below the eyes, and which horizontally span the face. The eyes are “less shiny” than his previous inner seeing of the eyes, but he does not see the less-ness of the shine. [The less-ness was available only in retrospect.]

[Retrospectively, Harrison understood these to be the same eyes he was seeing in Beep 5.1—his girlfriend’s eyes. But experientially he was not seeing his girlfriend’s eyes, merely eyes that happened to be his girlfriend’s. At the same time, he had just read the word “laugh”.] He is also internally hearing the sound of laughter. It is the sound of one male voice laughing, and the laughter is in a familiar voice. [However, he could not identify whose voice.] The laugh seems to be located in the back, lower right side of his head, just inside his skull, in a very specific region.

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing; Focus on specific word or words

Harrison 5.4: Harrison is innerly seeing a pine tree as if he were lying on his back underneath the branches, looking up. The branches, the dark green of the needles, and the light blue of the daytime sky are part of his experience, but the most salient aspect is the tree. This is a first person inner seeing. [That is to say, it is not just a view of the tree from underneath the branches; it is experienced as if he were under the tree.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Harrison 5.5: [Before the beep Harrison had been reading about the humming of a mosquito.] At the moment of the beep, Harrison is innerly hearing the loud humming of a mosquito near his right ear. This loud humming occupies almost all of Harrison's experience, perhaps 95%. [In reality there was no mosquito. Harrison noticed after the beep that he had jerked his head away from the imaginary humming mosquito, but the head jerk was not in his experience at the moment of the beep.] Harrison is also innerly seeing the word "Humming," He sees it with a capital H. This word is written in something like Times New Roman font [similar to what he had seen while reading, though the word "humming" that he read had not been capitalized. The innerly seen word "Humming" also seems to be somewhat larger than the word "humming" that he had read. He does not experience the seen word as having any location. The inner seeing is not prominent in his experience, perhaps only about 5%.]

5FP: Inner seeing; Sensory awareness?

Idiographic: Sensation related to the story; Focus on specific word or words

Harrison 5.6: At the moment of the beep, Harrison is innerly seeing an image of a lake with a burnt match in it. This is indeed an image with borders, taller than it is wide [that is, he is not innerly seeing a lake; he is innerly seeing *an image of a lake*]. The water is seen on a vertical plane as if a view of the horizontal water had been tipped up through 90 degrees. The water is clear and moving, and he sees pebbles of dark brownish under and next to the water. There is smoke above the water where the match is, but the smoke is not moving. [This was surprising in retrospect but at the moment of the beep it was simply smoke that happened to be still above water that happened to be moving].

Furthermore, Harrison is innerly hearing a hissing/sizzle. [This sound is *not* temporally connected to the match being placed in the water. It sounds more or less like what a match would sound like put in water, but it is not experienced as the sound of a match—it is a hiss/sizzle heard at the same time as a seen match and water.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Stylized illustration of the story

Isobel

Isobel 5.1: [Isobel was reading a part about Judy Jones and a gingham blue dress she was wearing, with white trim that accentuated her tan.] At the moment of the beep, Isobel is innerly seeing Judy wearing a teal-blue dress and with tan skin. The dress is knee length with short sleeves and flared at the waist. Judy is seen from the front and is standing up. Isobel's experience centers mostly on the blue dress, which is distinct and definite, but the woman's face arms and legs are not very distinct. The tan color of Judy's arms is also clearly seen, but is not as prominent as the blue color. The seen dress is not gingham; the seen dress does not have white trim; the teal-blue of the seen dress is described only as blue in the text. [Other than the inner seeing of the dress, neither the reading itself nor the plot/story was directly experienced at the moment of the beep].

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Details incongruent with the story

Isobel 5.1A (page 25): [Isobel was reading about Mr. Hart winking at Dexter.] At the moment of the beep, she is innerly seeing Mr. Hart's face with an eye winking. The eye is the most prominent part of the face and the rest of it is indistinct. The face is seen in motion (winking). It is seen in black and white. [At the same time, Isobel is looking at the

text that reads “swifterball”), which she experiences as one word, “swifterball”, [not two, even though the actually seen words have a space between swifter and ball]. She may have been wondering what “swifterball” means. [Whether the wondering was actually experienced at the moment of the beep we were not sure. Except for the seeing of the wink and the wondering about swifterball, neither the reading itself nor the plot/story was directly experienced at the moment of the beep.]

5FP: Inner seeing; Unsymbolized thinking

Idiographic: Illustrative inner seeing; Focus on specific word or words

Isobel 5.2: At the moment of the beep, Isobel is looking at the words ‘terrible afternoon’, and is simultaneously feeling the fingernail on her left middle finger with her right thumb. This is experienced in her thumb rather than in her thumbnail. At the same time, she is hearing herself say, in her own voice with a quizzical inflection, “terrible [which she pronounced something like “treble”] afternoon”. [A phrase she had just read]. She is actively trying to create a mental seeing that somehow conveyed “terrible/treble afternoon.” [So far, she had not been successful in creating this seeing; that is, she was waiting for a seeing of “treble afternoon” to come. Except for the seeing of the words “terrible afternoon,” neither the reading itself nor the plot/story was directly experienced at the moment of the beep.]

5FP: Sensory awareness

Idiographic: Focus on specific word or words

Isobel 5.3: [The passage that Isobel was reading at the moment of the beep described a man laughing out loud.] At the moment of the beep, Isobel is innerly seeing laughing; this was a seeing experience, except that there was nothing being seen. She also hears

her own laugh, but in a “manly” voice. The laughter is clearly heard, [but even so it was secondary to or a part of the seeing]. At the same time, Isobel is feeling pain in her knee and the pressure caused by her hand as she rubs it. This is a slow throbbing pain. These are experienced as being together rather than separate sensations.

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrative inner seeing; Imageless seeing; Incorporating personally-relevant details into the seeing

Isobel 5.4: [Isobel was reading about a character named Nick who was lying back and looking at some pine trees.] At the moment of the beep, Isobel is innerly seeing Nick lying down with “pine trees” close around him. This is seen from slightly above. [The pine trees are not the traditional “Christmas tree” kind of pine trees, but were an invented sort that had a tuft of branches on top.] The inner seeing is in black and white except for the tops of the trees, which are green. [It was Isobel’s sense that before the beep she had had a color seeing of Nick. As the text unfolded, it described the pine trees, which Isobel then added to the seeing. The added trees were green, but the color of Nick had faded to black and white.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Isobel 5.5: [Isobel was reading a passage that said “a mosquito hummed close to his ear.”] At the moment of the beep, she is innerly seeing a mosquito flying close to her ear. She sees her face from the front, but it is indistinct. The mosquito is also a bit indistinct (e.g., wing, legs, etc. are not distinguishable). She also innerly hears the mosquito’s buzzing. This is experienced as being heard by her actual ear and not the imaged ear.

[The buzz is not the buzz a normal mosquito would give but rather the buzz a *bee* might give, but her experience is of hearing a mosquito.] At the same time, Isobel is putting her shoe on and is focused on the action of doing that.

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Details incongruent with the story

Isobel 5.6: [Missing]

Jenni

Jenni 5.1: [Jenni was scratching her leg. Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is innerly seeing Judy (the female figure in the story) in a blue turtleneck dress from her head to about her knees from the front. Jenni is actively trying to add details from the story to her inner seeing; that is, this is not an automatic process of details appearing in the inner seeing as Jenni reads, but is an active (not difficult) process. Also at the moment of the beep, Jenni is innerly speaking the command “stop scratching your leg” to herself, in her own voice, in a monotone. The inner seeing and the inner speaking are equally present in experience.

5FP: Inner speaking; Inner seeing

Idiographic: Illustrative inner seeing; Progressively adding details

Jenni 5.2: [In the story, the main character, Dexter, was talking about the female character, Judy, kissing him. Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is wondering why Dexter wants Judy to kiss him. There are words present, which might be “why would he want to kiss her” or “why did he want to kiss her” [Jenni was confident that specific words were present].

These words are not spoken, heard, or seen. Also at the moment of the beep, Jenni is feeling irritated; this is a mental feeling that she feels in her head. The thinking about the kissing and the feeling are equally present in experience.

5FP: Feelings

Idiographic: Feelings related to the text; Inner speaking in response to text

Jenni 5.3: [Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is feeling mildly sad along with Dexter [whose girlfriend had left him]; this is a mental feeling that she felt in her head and is directly related to the plot of the story.

5FP: Feelings

Idiographic: Feelings related to the text

Jenni 5.4: [Reading was on-going with comprehension.] At the moment of the beep, Jenni is paying attention to what she is doing (reading), but is not particularly engaged in any part of the story at the moment. Jenni is somewhat attending to the mechanics or process of reading, somehow making out words individually as she goes through the sentences.

5FP: None

Idiographic: Experience of the reading process

Jenni 5.5: [Jenni had noticed the word “mosquito” and was connecting mosquito bites to feeling itchy. Reading was not on-going at this time.] At the moment of the beep, the word “mosquito” is present in Jenni’s experience, but is not spoken, heard or seen [like in 5.2]. Also at the moment of the beep, Jenni is feeling itchy on the lower calf of her right leg. There is no specific size or shape to the itchiness, no specific quality (it is not a

mosquito-bite itch), and it is more generally there than being particularly located on or under the skin.

5FP: Sensory awareness

Idiographic: Focus on specific word or words; Sensation related to the story

Jenni 5.6: [Jenni was reading about Nick's wriggling his toes in the water. Reading was on-going with comprehension, but was not in experience.] At the moment of the beep, Jenni is innerly seeing her own feet with her own toes wriggling in water as if she is looking down at her legs and feet as she dangles them into water. The inner seeing is clear, in motion, and in color. Nothing specific about the water is seen. [She did not physically feel any sensations of her feet being in water.]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing

Kevin

Kevin 5.0A (page unknown): At the moment of the beep, Kevin is innerly seeing the golf course described in the story through the trees, as if he is seeing what the male main character (Dexter) is seeing at that moment in the story—that is, this is a Dexter's first-person view of the golf course. He innerly sees the vivid blue of the sky and green of the trees and grass; the details of the scene such as the shape of the tree leaves or the hills of the golf course are unimportant. [Kevin was unsure whether or not this was a still image or if there was motion as there were no moving elements in the scene, but he thought it was probably still]. The colors seem to be particularly prominent. [This scene is directly

illustrative of what was occurring in the story at the moment of the beep. Reading was ongoing, but was not in experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Kevin 5.1: At the moment of the beep, Kevin is innerly seeing off-white or ivory lace on the bottom of the female main character's [Judy's] dress. He innerly sees about 3 inches of the lace in great detail including the scalloped shape and design. He can also see the fabric of a white dress attached to the top of the lace, but this is relatively unimportant. This inner seeing is in color; however there simply is little color to be seen as the lace and dress are both close to white. [This inner seeing is illustrative of what was occurring in the story at the moment of the beep. However, in the story, Judy is wearing a "blue gingham" dress that has a white "edging". Kevin's seen dress is not blue and not gingham, and the edging is elaborated into a specific lace. Kevin said in the interview that he had not yet read the word "blue" and so his seeing a white dress- this not a divergence from the story, but based on the information he had gathered thus far; that, however, is likely a confabulation.] [Reading was ongoing, but was not in experience.]

5FP: Inner seeing, Sensory awareness

Idiographic: Illustrative inner seeing; Details incongruent with the story

Kevin 5.2: At the moment of the beep, Kevin is innerly seeing Judy crying with her face in her hands, bent over the porch railing on which she is resting her forearms. He innerly sees her from her right side with Dexter behind her to her left; Dexter is an indistinct, greyish figure and is not in focus. The scene takes place at night and aside from the female character's white dress and the white railing, the scene is very dark. There is no

motion and little color in the scene; the colors seem to be seen somewhat fainter than they would be in the actual scene. [This scene is directly illustrative of what was occurring in the story at the moment of the beep. Reading was ongoing, but was not in experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Kevin 5.3: At the moment of the beep, Kevin is innerly seeing a half-full high ball glass of whiskey being held by Dexter as he sits at a bar. Dexter is a dark silhouette innerly seen from his right side and is holding the glass with his right hand. Dexter's seen hand somehow disappears so that the back of the hand and the fingers do not obscure the view of the whiskey glass. [Kevin reported that when he jotted his notes about the beep (immediately after the beep), he was surprised that he could see the whiskey glass even though it should have been obscured by the hand; this surprise was *not* present at the moment of the beep; that is, the inner seeing was physically impossible, but the sense of impossibility was not present at the moment of the beep.] At the moment of the beep, Kevin is mostly focused on the glass of whiskey. Around Dexter are out-of-focus or blurry lights and colors representing the rest of the bar. These lights and colors are prominent, even though the bottles, etc., are indistinct. [This scene is related to the story; Kevin had just read "he felt like getting very drunk" and pictured a scene of Dexter drinking. Reading was ongoing, but was not in experience.]

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrative inner seeing; Innerly seeing the physically impossible

Kevin 5.4: At the moment of the beep, Kevin is innerly seeing a grey backpack with dangling grey cloth zipper pulls swinging off Nick's (the main character's) back toward

the base of a tree trunk. The backpack and tree are detailed, and the inner seeing is in color and in motion; the zipper pulls were swinging with the movement of the backpack. The Nick who is taking off the backpack is an indistinct, grey figure who is seen from his right and the background is brown with some vague distinctions between different tree trunks. [This scene is directly illustrative of what was occurring in the story at the moment of the beep. Reading was ongoing, but was not in experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Kevin 5.5: At the moment of the beep, Kevin is innerly seeing the movement and change of light coming from the fire as it moves in the wind about 3 feet in front of Nick's tent at night. The fire is in motion, very detailed and clear, and orange and yellow in color. The fire is seen from Nick's first-person perspective looking out of the triangular opening of the tent. He innerly sees the edge of the tent, just a dark triangle with no features. The tent might be a very dark green. [Kevin was unsure if it was green or if everything other than the fire was black. This scene is directly illustrative of what was occurring in the story at the moment of the beep. Reading was ongoing, but was not in experience.]

5FP: Inner seeing; Sensory awareness

Idiographic Characteristics: Illustrative inner seeing

Kevin 5.6: [Missing]

Lance

Lance 5.1: At the moment of the beep, Lance is innerly seeing Judy Jones in a blue dress with a tan. Judy is standing at the top of the hill. Her blue dress is long and has straps. Her face is not elaborated. Lance is seeing Judy from the bottom of the hill where he is

standing with the other characters in the story. [This was the only such beep where Lance felt somehow present in the inner seeing]. The inner seeing is clear and in motion. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. As far as we could tell, the inner seeing was congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; As if present in story

Lance 5.2: At the moment of the beep, Lance is innerly seeing Dexter and Judy outside, sitting in chairs on a patio, talking face to face. He innerly sees Dexter on the right side of his field of vision, and Judy is on the left side. In the background, Lance sees the floor and wall of the house they are at. The seeing is dark, as if it takes place at night, and it is unclear [which was more than just unclear because of the darkness]. This inner seeing is still, as if it were a picture [and unlike sample 5.1, Lance did not feel as if he was present in the scene]. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. As in sample 5.1, the inner seeing was more or less congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lance 5.3: At the moment of the beep, Lance is innerly seeing Dexter sitting at a desk with a nervous/anxious expression on his face. Dexter is also pushing himself forward against the desk with his hands, as if eager to hear what a second, male character in the room has to say. Lance also sees the back of the second character, although the second character is just a black figure [and not in any detail]. Lance's vantage point is as if he

were behind the black figure looking around him at Dexter. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. Again, the inner seeing was more or less congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lance 5.4: At the moment of the beep, Lance is innerly seeing Nick from behind, as he is unshouldering a red backpack, although the rest of Nick is not in color [although perhaps the color would have arrived a few moments later]. Lance is also innerly seeing brown tree roots and green grass, which are also in color. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. As in previous reading-day samples, the inner seeing was more or less congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lance 5.5: At the moment of the beep, Lance is innerly seeing Nick peeking out of the tent at the campfire. Lance can clearly see the tent, which is a triangle shape, as well as the fire, which is sitting on a pile of logs stacked in an X shape, but Nick is not quite as clear/detailed/elaborated [although perhaps he would have been more detailed a few moments later]. Lance is also innerly seeing blackness all around Nick and the fire. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. As in previous reading-day samples, the inner seeing was more or less congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lance 5.6: At the moment of the beep, Lance is innerly seeing Nick sitting at the base of a “mini hill” with his feet in the pond, a cigarette in his mouth that he is about to smoke, and a clearly articulated landscape around Nick that consists of trees. The perspective is above and behind Nick, looking over Nick’s shoulder. [While the reading was ongoing and being comprehended, the act of reading was not in his experience. As in previous reading-day samples, the inner seeing was more or less congruent with what was occurring in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Maddi

Maddi 5.1: At the moment of the beep, Maddi is innerly seeing the girl [who later turns out to be Judy Jones in the story]. The girl is innerly seen from the bottom of the hill looking up. [Maddi did not experience herself as part of the seeing.] The girl is on the top of the hill facing forward. The hill is covered with green grass and the sky is blue above her. Only the top of the hill is seen. The girl is wearing a blue dress with sleeves with white embellishments. This is a still seeing. [Although Maddi was reading at the moment of the beep, reading was not in her experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Maddi 5.2: At the moment of the beep, Maddi is innerly hearing herself reading “I’m afraid.” [Those are words from the passage she is reading. She was reading with

comprehension. There was no visual experience even though she was reading.] The reading is heard in her own natural voice.

5FP: None

Idiographic: Silent hearing of the text

Maddi 5.3: [Missing]

Maddi 5.4: [Maddi was reading the words “sharp at the edge”.] At the moment of the beep, she is innerly hearing those words in her own voice, in a normal tone. [She was reading with comprehension. She could not remember if the actual words on the page were present or not.]

5FP: None

Idiographic: Silent hearing of the text

Maddi 5.5: At the moment of the beep, Maddi is innerly seeing a campfire on the grass. The fire is orange and the grass is green. [She was not paying particular attention to the colors].

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Maddi 5.6: [Maddi was reading a passage in the story about Nick tossing a match into the river.] At the moment of the beep, Maddi is innerly seeing Nick from behind, tossing a match into the river, which ran to his side and ahead of him. Nick is wearing a pair of overalls [which retrospectively seemed strange to her because the story described Nick wearing trousers]. The seeing is in color and is in motion (the tossing motion). [The act of reading, which was ongoing at the moment of this beep, was not in her experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Details incongruent with the story

Nina

Nina 5.1: [Nina had noticed that the character in the story was named Judy Jones.] At the moment of the beep, Nina is innerly saying “Judy Jones Nina Mendoza” [her own name] repeatedly at a slightly fast pace. She is also innerly hearing the way these names sounded. [She is somehow comparing the sounds of the two names, and liked the way these names sounded, but these aspects were not directly in her experience at the beep. At this moment, she had departed from the reading task.][Nina’s experience was triggered by what she read in the story (reading about Judy Jones), but was not consonant with what she read—the story was not about (or at least not primarily about) the sound of the name Judy Jones.]

5FP: Inner speaking; Sensory awareness

Idiographic: Focus on specific word or words

Nina 5.2: [Nina had just read “There was a man I cared about.”] At the moment of the beep, Nina is innerly seeing the sincere eyes of the man she cared about [her boyfriend]; she also saw the rest of his face from his eyes to the top of his spiky hair. She was seeing him clearly and in color. [She was not sure if the reading was ongoing without comprehension, or if she had departed from the reading task at this time.][Nina’s experience was parallel to the reading (the reading was about the man cared about; she saw her own man she cared about, which was not directly illustrative of the reading]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Illustrating words, not story

Nina 5.3: At the moment of the beep, Nina is feeling a physical heaviness in her eyelids and is feeling hungry. The hunger was not a physical feeling, but rather a mental awareness that she was hungry. [Nina was of the opinion that she was still going through the motions of reading, but she was not comprehending what she read.]

5FP: Sensory awareness; Unsymbolized thinking?

Idiographic: Unrelated to reading/stopped reading

Nina 5.4: [Nina had just read that the character in the story, Nick, was lying down in the forest.] At the moment of the beep, Nina is innerly seeing a scene from the movie *Evil Dead*. She saw a perspective speeding through a dark forest and stopping; where this stopped could be seen the dark forest and the outline/shape/hair of a standing girl. [Nina was not sure if the reading was ongoing without comprehension, or if she had departed from the reading task at this time.] [Nina's experience was related to the reading (the reading was about a man in a forest; she saw a more-or-less-parallel scene from a movie about a forest.)]

5FP: Inner seeing

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing

Nina 5.5: Nina is deciding if, after the reading, she should take a nap or eat. This is a mental experience, and is not represented in words, images, feelings, etc. [Nina understood herself to have been reading with comprehension at this moment, but neither the reading nor any details of it were in her experience.]

5FP: Unsymbolized thinking

Idiographic: Unrelated to reading/stopped reading

Nina 5.6: [Nina had just read that the character in the story, Nick, had caught a fish.] At the moment of the beep, Nina wants to catch a fish, a strong desire. [That was parallel to Nick catching the fish in the story]. [Nina was still reading with comprehension at this moment, but neither the reading nor any details of it were not in her experience.]

5FP: Feelings

Idiographic: Feelings related to the text

Olivia

Olivia 5.1: [Olivia was skimming a portion of a sentence, “of exaggeration, of thinness, which had made her” which she had already read.] At the moment of the beep, Olivia is innerly seeing a female child’s face and is in the process of adding visual details [that were described in the story]. Olivia innerly sees a child’s face with curly blonde hair, blue eyes, and a mouth turned downwards with a wonky smile. The child is awkward, as if she has not yet grown into her features. [Olivia explained that she was ultimately trying to visually compare the younger version of the character to the older version, but at the moment of the beep, she was seeing the younger version.] Olivia is also innerly speaking, in her own voice, the words “exaggeration” and “thinness” [as she was skimming over them]. Inner seeing (80%), inner speaking (20%).

5FP: Inner speaking; Inner seeing

Idiographic: Illustrative inner seeing; Progressively adding details

Olivia 5.2: At the moment of the beep, Olivia is innerly seeing the Judy Jones (the female character) say something [which Olivia did not recall or write down], which Olivia hears in the character’s sweet sounding, female voice. Olivia innerly sees Judy speaking on a patio/balcony at nighttime from the visual perspective of Dexter (the main character).

Judy is to the right, leaning her arm on the bannister, looking toward Olivia's point of view. Overall, Olivia is more into the tone of Judy's voice than the visualization.

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrative inner seeing

Olivia 5.3: At the moment of the beep, Olivia is considering how the title of the story ["Winter Dreams"] ties into the story, which involves an inner seeing and an analytical component that compares the winter weather to the cold nature of the woman. Olivia is innerly seeing a snow-covered golf course at night time, which involves pine trees and open hills. The seeing is tinted blue [which Olivia explained was not unusual, just her description of night lighting] and in the point of view of the character standing on the golf course. The analytical component involves a complex cognition, including mentally comparing/contrasting the female character to the winter scene, which involves themes of coldness, that the woman is emotionally cold, but that the woman is also seen positively, so Olivia is trying to recall a positive element to the winter scene, and also wondering if she has missed any other similarity. [Olivia was no longer actively reading, and she was not sure if her eyes were still tracking the text.]

5FP: Inner seeing; Unsymbolized thinking; Sensory awareness?

Idiographic: Semi-illustrative/tangentially-related inner seeing; Analyzing/thinking about reading content

Olivia 5.3A (page 88): [Olivia was now reading out loud to someone she was talking to on Skype.] Olivia is purposefully, specifically adding rocks to an already existing inner seeing of clear rippling water and a grey trout. [Olivia had just read about these rocks as they were described by the narrator] and she is now specifically adding gravelly, round

rocks at the bottom of the river of different sizes and colors – grey, red, and brown. [That is, it was *not* the case that Olivia was simply updating the seeing as she read; she was deliberately, premeditatedly adding the rocks to the seeing.] Olivia’s point of view is the same as the character’s in the story [who was looking down into the river.]

5FP: Inner seeing; Sensory awareness?

Idiographic: Illustrative inner seeing; Progressively adding details

Olivia 5.4: Olivia is actively skimming the reading for words that indicate a change in the storyline. [She was still Skyping her friend and vocalizing words that stood out to her while filling the other spaces with “Blah blah blah” something like “...blah blah blah fish, blah, blah, blah, burned hills blah blah blah...” – however, the words were not in experience at the moment of the beep, and the beep caught her in a “blah blah blah” moment.]

5FP: None

Idiographic: Skimming

Olivia 5.5: [Skype was still active, but she was now reading silently and not interacting with the person on the line. Olivia had just read about the character in the story pitching a tent.] At the moment of the beep, Olivia is innerly seeing Katniss [from *The Hunger Games* movie] surviving in the woods. Katniss is facing Olivia’s point of view and is wearing a jacket; there is some orangeness perhaps as a stripe on dark colored clothing, and a backpack, and her brown hair is in a braid. Katniss is surrounded by trees and green foliage. [While the “surviving in the woods” theme was consistent with the story, Olivia had left the story in favor of the Katniss seeing.]

5FP: Inner seeing; Sensory awareness?

Idiographic: Semi-illustrative/tangentially-related inner seeing; Incorporating personally-relevant details into the seeing

Olivia 5.5A (Page 126): Olivia is innerly seeing the character letting go of a fish in the river, poking the motionless fish, and then seeing the fish swim away. Olivia sees this as if she actually is the character performing the actions [*unlike* in beeps 5.2, 5.3, and 5.4, where she saw from the visual perspective of the character in the story but was not experiencing feeling present]. In addition, Olivia feels the slimy texture of the fish skin as she/the character pokes it [though she had not felt the fish when she saw herself release it and did not feel the water].

5FP: Inner seeing; Sensory awareness

Idiographic: Illustrative inner seeing; As if present; Sensation related to the story

Pamela

Pamela 5.1: At the moment of the beep, Pamela is innerly speaking 3-4 repetitions of the word “gingham” in different ways. The beep catches her somewhere in the middle of the repetitions when she is saying gingham like “ging ham.” The words are spoken in her own voice. [Pamela’s experience had lost contact with the reading task at this moment.]

5FP: Inner speaking

Idiographic: Focus on specific word or words

Pamela 5.2: [Pamela had been reading a conversation between characters in the book and had gotten to the end of the sentence, “I like you.”] At the moment of the beep, Pamela is thinking/feeling that the way the characters in the story were talking is weird or unrealistic, that no one would talk like this. [The thinking/feeling seemed both analytical and “slightly repelling” tied somewhat together (but not as tightly tied together as 5.5).

She described this experience as mental, not bodily or physical. She was reading at this time, and the reading content was only slightly in experience].

5FP: Unsymbolized thinking?; Feelings?

Idiographic: Analyzing/thinking about reading content; Feelings related to the text

Pamela 5.3: [The story was describing a sunset.] At the moment of the beep Pamela is remembering a sunset that was she had seen a few days ago at the beach. [There may have been a hint of visualness in this remembering, but she was not actually innerly seeing the sunset or seeing it in reality. There were no particular details of the sunset that stand out to her. Thus she is remembering something that is related to the story, but not a direct illustration of the story. While she was still reading, the read content itself was not in experience.]

5FP: Unsymbolized thinking

Idiographic: None

Pamela 5.4: At the moment of the beep, Pamela is innerly seeing grey-black, although the grey-blackness itself is not innerly or outerly seen. [That is, her experience is of seeing, but not of the thing seen. She is comprehending what she is reading (“He was laying in the shade of a tree”) and visually experiencing though not (innerly or actually) seeing the grey-black of the scene, which is in some way related to the shade of the tree.]

5FP: None

Idiographic: Semi-illustrative/tangentially-related inner seeing; Imageless seeing

Pamela 5.5: At the moment of the beep, Pamela is mildly annoyed [which she later rated as a 4/10 in intensity], which is a mental feeling. About 60% of her annoyance relates to

the ongoing choppiness of the sentence structure of the story, and 40% of her annoyance relates to the tininess of the window on the screen that displays the story she is trying to read. This experience is a unitary thought/feeling (more unitary than the thought/feeling of sample 5.2, although both are somewhat unitary), in that the sources of the annoyance are present to her and are tied up with the annoyance itself. She is also seeing the text she is reading.

5FP: Feelings

Idiographic: Feelings related to the text; Experience related to elements of the study

Pamela 5.6: At the moment of the beep, Pamela is feeling the physical sensation of the movement of her toes as they wiggle [she was wiggling them, but the agency thereof was not in her experience]. At the same time, she is thinking/feeling happy about wiggling her toes, which is perhaps more of a cognitive experience rather than a feeling experience. [She wasn't confident about the distinction between thinking and feeling in this regard. While Pamela had just read that the character in the story "wiggled his toes in the water," her experience at this moment had left the story behind and was focused on her own toes wiggling.]

5FP: Sensory awareness; Unsymbolized thinking?; Feelings?

Idiographic: Sensation related to the story

Zelda

Zelda 5.1: At the moment of the beep, Zelda is rereading part of the text that describes a dress. [She may have been on the word "gingham," but she was uncertain of this; she did not know what "gingham" meant]. She is trying to create an image of the dress, and this

act of trying is in her experience. She is innerly seeing a woman in her early 20's who is thin, fragile, attractive, and tanned. Zelda sees the woman's face, but it is lacking detail and/or not in focus. The woman's dress is in focus. Zelda sees the dress from the front. It has straps with a white ribbon trim that stops in the upper chest region where the horizontal section of the dress begins. The dress extends to the woman's knees. The dress appears gray, [but Zelda did not know if the dress was gray in color or was itself colorful but seen in black and white; she did not know whether if she knew what gingham meant she would have created a dress that appeared to be gingham]. The woman's arms and legs are also present in the image. [Zelda said that she was trying to understand the words she was reading, but it is unclear if this was present in her experience].

5FP: Inner seeing

Idiographic Characteristics: Illustrative inner seeing

Zelda 5.2: [At the moment of the beep, Zelda is reading the words, "you're not. I like you" in a part of the story that said that the woman wanted to weep. Zelda's perspective and reported experience change as she describes the scene.] At the outset, Zelda reports that she is following the two characters as they walk onto the porch; later Zelda reports that she is innerly seeing a thin woman with blond hair, facing towards Zelda. The woman is looking down. The image is moving from right to left across Zelda's point of view. Zelda is also seeing the woman and hearing her say the phrase "you're not. I like you." [But Zelda also reported that she was seeing the man more clearly than she was seeing the woman. Zelda also stated that she was wondering what motivated the woman to want to weep, and that this wondering involved imagining herself in situations where she herself might weep and then feeling that for the imagined character, and seeing the

man the woman was talking to, but it was unclear how much of this was present at the moment of beep.]

5FP: Inner seeing; Feelings

Idiographic Characteristics: Illustrative inner seeing

Zelda 5.3: [Zelda reported that she was on the word “drunk” at the moment of the beep.] She is innerly seeing two men facing each other, wearing business suits. The main character is clearer; the secondary character is less clear. She is “pulling feelings that she has felt in the past,” feeling tense, sad, and sorry for the main character because of his selfless love for a woman who made a bad decision. Zelda feels these feelings simultaneously for him. Her feelings emanate from her own experience and are modified by his situation. [She did not experience these feelings as being located anywhere in her body.] [She experiences the beep as being soft at first and she wonders what the sound is and where it is coming from (she may have initially apprehended it as a car horn in the scene she was seeing). The beep gradually becomes louder over the course of a few seconds. Her understanding was that the beep gradually took her out of her immersion in her feelings.]

5FP: Inner seeing; Feelings

Idiographic Characteristics: Illustrative inner seeing; Feelings related to the text

Zelda 5.4: [Zelda was looking at the words “and laid down.”] At the moment of the beep, Zelda is experiencing the trying to read the text, but neither the reading nor its meaning is in her experience. She might be thinking that she should try harder to read the story, that she’s making a big effort, that she’s being negative about the story that she considers

boring, but it is unclear how or whether any of this is present in her experience at the moment of the beep.

5FP: None

Idiographic Characteristics: None (uncertain)

Zelda 5.5: [Missing]

Zelda 5.6: [Missing]

Fiction in Natural Environment DES Phase

Maddi

Maddi 2.1: At the moment of the beep, Maddi is reading a novel, reading a sentence that included the words “even though,” but most of her attention is aimed at the inner seeing of a crummy hotel room with Barbara standing in it holding her nose. Barbara is seen as a blond hefty lady, somewhat more illuminated than the room, which is dark and run down. Maddi sees the bed (head to right), the walls, the window on the other side of the bed. [Somewhat surprisingly it seems that] she is seeing the dark hotel room more than the brighter Barbara.

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Maddi 2.3: [Maddi was reading a novel (the same novel she was reading in Maddi 2.1). She was reading a sentence that ended with the word "articles."] At the moment of the beep, Maddi is innerly speaking/hearing the word “articles” [which was part of an ongoing innerly spoken/heard sentence; the beep happened to catch her on the word “articles” at the end of that sentence.] The word “articles” is spoken/heard in her own

voice without any emphasis. [She was unsure if she was innerly speaking it or innerly hearing it.]

5FP: Inner speaking?

Idiographic: Silent speaking of the text?; Silent hearing of the text?

Maddi 3.5: [Maddi was reading the novel *Looking for Alaska*.] At the moment of the beep, she is innerly seeing the character Pudge from the book. He is in profile facing Maddi's right, holding a lunch tray. He is seen from the waist up, with no background. Pudge is (perhaps) not in motion but looks as if he were walking. [In retrospect, Maddi noticed that the seen Pudge was a visual recreation of the character Henry from the TV show *Once Upon A Time*, although neither this knowledge nor any other aspect of the *Once Upon A Time* show is in her experience at the moment of the beep; at the moment of the beep she is simply seeing Pudge. Although Maddi is reading, at the moment of the beep reading is not in her experience.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Incorporating personally-relevant details into the seeing

Maddi 3.6: [Maddi was reading the novel *Looking for Alaska*.] At the moment of the beep, Maddi is innerly seeing Pudge, the character from the novel, who is swimming in a moonlit lake. She sees the lake with Pudge a hundred or so yards away from her swimming toward a sandy shore with pine trees in the distance. The seeing is "cartoony": although it is in color, the scene is as if drawn in outline. [Although Maddi was reading, the reading was not in her experience. What she was seeing was consistent with what was happening in the story.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Stylized illustration of the story

Maddi 4.5: At the moment of the beep, Maddi is reading *The Fault in Our Stars*, a scene in which “Hazel Grace” is watching America’s Top Model on TV. Hazel, with a pixie haircut, is seen sitting on a couch watching TV. The seeing is quite detailed, including (in what was retrospectively surprising but at the moment of the beep unremarkable) the fact that the seen TV screen is blank, a gray screen. [Maddi was confident that she explicitly saw a gray screen, *not* that she simply was not paying attention to that detail of her seeing.] The seen TV is an old style square TV with a rabbit ears antenna sitting on top of it [the type of TV was not specified in the reading]. Although Maddi is reading, that is not in her experience.

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Details incongruent with the story

Kafka DES Pilot Study

Alex

Alex 1: At the moment of the beep, Alex is reading the word “swang.” His experience seems wrapped up in the word “swang,” that is, there is nothing else present in his experience. He does not articulate this word, nor does Alex innerly see it or hear it. Alex is of course in reality seeing the word swang on the screen, but he does not attend to any of the visual details of this word as seen. The process seems to be going from word to word to word, and the beep happened to fall on the word swang.

5FP: None

Idiographic: Word present, nothing else

Alex 2: At the moment of the beep, Alex is reading the word “happy.” It’s just him and the word—he’s moving word by word by word. There is no speaking or hearing or imaging in any other way. This experience is the same as sample 1 except that the word is different. Other than that different word, the experience seems identical.

5FP: None

Idiographic: Word present, nothing else

Alex 3: Same as sample 1 and sample 2 except that the word is “way.” [When asked whether there was any experienced difference in emotional tone or meaningful comprehension of the words, Alex denied that. The word could be common or rare, emotionally laden or neutral, and the experience would be the same, he thought.]

5FP: None

Idiographic: Word present, nothing else

Alex 4: At the moment of the beep Alex is innerly saying “cleaner.” This saying is in his own voice but at a somewhat higher pitch than his experienced actual voice. He experiences the voice as being rushed [in reality, Alex is coming up on a time deadline]. His experience seems much more a speaking than a hearing, although it is possible that the rushed aspect (but not the higher pitch aspect) is more heard than characteristic of the speaking. It seems that Alex is speaking the word and then the next word and then the next word, and the beep happens to catch “cleaner.” That is, it seems more a word—word—word experience than a speaking-a-sentence experience. [Alex reported retrospectively that if this kind of speaking gets to the end of a sentence, there is no

inflective drop or pause for the period—the stream of words continues word/.word/word across a period with no experienced pause or any other acknowledgement of the period.]

5FP: Inner speaking

Idiographic: Word present, nothing else

Lynn

Lynn 1: [Lynn is reading about the chief clerk going to look for Gregor.] At the moment of the beep, Lynn innerly sees an open brown door with a circular glass window, opening inward from the right, revealing a bright white light outside the door, as if opening into bright sunlight. This is seen from the perspective as if she had just opened the door. In the doorway is a man; the details of the man are not clear, as if the brightness behind him make it hard to see his details. [This seeing was taken to be a still image of a moving scene, a congruent illustration of the scene she was reading about.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lynn 2: [Lynn was reading about Gregor, who is talking about liking to hang down from the ceiling.] At the moment of the beep, Lynn innerly sees a dimly lit room with a bat (perhaps a foot tall) hanging from the ceiling over a bed with white sheets. She doesn't see much else about the room (no furniture, etc.), but she knows there is a window off to the right that supplies the light for the room. [The bat was somewhat a misrepresentation of the scene—Gregor is really a spider—but Lynn felt no incongruence—she was simply illustrating the story she was reading.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Details incongruent with the story

Lynn 3: At the moment of the beep, Lynn is innerly seeing an illustration of a scene she had read about on the previous page. That is, the beep occurs on page 92, but her inner seeing pertains to page 91, where Gregor had been crawling toward where his sister was playing the violin. Lynn innerly sees a spider crawling on the floor, from left to right, as if coming from one room into another. The sister is seen to be sitting at a table in the kitchen; the violin may have been seen [Lynn wasn't sure]. The focus of her seeing is on the spider crawling. [Lynn was reading the new page apparently without comprehension—her understanding was that in a parallel universe where the beep had not occurred, she would have had to go back and read that page again. (Whether that is true is unknown.)]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Lynn 4: Lynn had broken off from reading and at the moment of the beep is occupied by noticing the pressure on the wooden arm of the chair against her left forearm. She has stopped reading and is leaning to the left, putting some weight on her left forearm. She has taken her eyes off the computer screen and looks to her right, although Lynn is not seeing what her eyes were aimed at. She feels the pressure of the chair on her arm, a narrow strip that conforms to the flat wooden arm of the chair.

5FP: Sensory awareness

Idiographic: Unrelated to reading/stopped reading

Nonfiction in Natural Environment DES Phase

Adele

Adele 2.2: [Adele was rereading a passage in an anthropology reading with the intent to highlight part of it; she was looking for a passage that she had decided was worth highlighting.] In her experience at the moment of the beep, Adele is just rereading with the expectation that she will recognize the passage to highlight when she comes to it [that is, she did not have any direct experience of the target passage, not in inner or outer words, not in gist, not in any way—she would recognize it when she got to it]. It is unclear whether she is reading with comprehension at the moment of the beep.

5FP: None

Idiographic: None

Adele 3.6: [Adele was reading an anthropology book with comprehension, although she was unable to recall what she was reading about]. At the moment of the beep, Adele's experience is of making a mental effort to grasp the concepts and being absorbed in the text. She described this effort as mental [and also not a feeling, and it did not have any physical aspects.]

5FP: None

Idiographic: Experience of the reading process

Adele 4.3: [Adele was reading from an anthropology book. She had just read about a culture that described women's sexual behavior that involved lying down, motionless, with their clothes on while having sex.] At the moment of the beep, Adele is somehow mentally experiencing herself in the motionless, lying down posture, with her arms limp to her sides. However, this experience is not visual and is not about her imagining the physical sensations/posture. [It is unclear how exactly this was experienced. Adele described that she was mentally placing herself in the story.]

5FP: None

Idiographic: None

Adele 4.5: [Adele had just read the word “anrongbunting” in her anthropology book.] At the moment of the beep, Adele is trying to recall what the word meant and is also seeing the word printed in her book. [We were unable to determine how she experienced trying to recall what the word meant except that it somehow involved a mental effort of trying to match the word to meaning.] She might also be aware of her inability to match the word to meaning at this time. Her experience is 75% about trying to match the word to meaning and 25% about just seeing the word on the page.

5FP: None

Idiographic: Focus on specific word or words; Experience of the reading process

Caitlin

Caitlin 2.1: [Caitlin was reading her developmental psychology book.] At the moment of the beep, she is innerly hearing “Babies do not attend closely”. This is experienced as being in her own voice [but she was not sure if the voice that she heard was the same as her external voice]. The hearing is experienced as being a whole phrase rather than a sequential one-word-after-another reading.

5FP: None

Idiographic: Silent hearing of the text

Caitlin 2.2: [Caitlin was in an “attentional break” while reading—that is, she had broken off reading but had not noticed that she had broken off.] At the moment of the beep, she innerly hears [perhaps the third repetition of] the word “momentous” in her own voice. There might be some experience of this happening separately from herself, as if her brain

is doing the repetition, not her whole being. As she hears “momentous,” her eyes flit aimlessly around the page—[that is, not in the organized eye movements while reading—but this was likely not in awareness at the moment of the beep.]

5FP: None

Idiographic: Focus on specific word or words

Caitlin 2.5: [Caitlin was reading the phrase “simple floating objects” in her psychology book.] At the moment of the beep, she is innerly hearing the words “simple floating objects”. This is experienced in her own voice (although there she was not sure if this actually matched her outer audible voice), but the voice is somewhat delayed after the visual reading. Also, she innerly sees a yellow rubber duck floating in a bathtub. The duck’s head is pointed to the left. The whole bathtub is seen but mostly the portion on the left end of the tub, near where the seen duck is floating. Also in awareness is some sense of connection—that is, the reading and the visualizing are directly experienced as being connected—as if this is her way of understanding what “simple floating objects” meant [but she could give no specific details].

5FP: Inner seeing

Idiographic: Illustrative inner seeing; Focus on specific word or words

Eden

Eden 2.1: [Eden was reading an ethnography and highlighting text. Neither the mechanics of reading nor the highlighting was experienced.] At the moment of the beep, Eden is innerly seeing a nighttime scene with three Native Americans: a woman with her child beside her and, a few feet over, a man in a headdress. In the background is a teepee style

tent. They are dressed in beige clothing, and the scene is experienced in dark nighttime colors.

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Eden 2.3: [Eden was looking at her notes for a class and was having difficulty answering a question.] At the moment of the beep, Eden is feeling inadequate- a bodily exhaustion that is also (although less so) a mental experience. The inadequacy is a specific reaction to the difficulty of the problem—that it is taking a long time, not a general feeling of inadequacy. At the same time, she is trying to find the answer to the question, a mental trying that is in her experience. She describes her experience as 60% trying to find the answer, 40% feeling inadequate.

5FP: Feelings?

Idiographic: Feelings related to the text

Felicity

Felicity 4.4: [Felicity was reading a chemistry textbook.] At the moment of the beep, Felicity is reading a phrase which ended with the words “oxidant identification,” which equally involves seeing the words on her computer screen and innerly saying them quietly and slowly (90%). [We did not fully clarify whether she was innerly saying “oxidant identification” or whether she was saying the sentence, which included the words “oxidant identification.”] She is also feeling the pressure on the left, lower portion of her lip (10%) [produced by the side of her left index finger, but that was not experienced] . She is comprehending what she was reading.

5FP: Inner speaking

Idiographic: Silent speaking of the text?; Focus on specific word or words?

Harrison

Harrison 3.1: [Harrison was studying and reading his psychology book about conditioning.] At the moment of the beep, he is innerly speaking the sentence he is reading; the beep occurs at the word “conditioning.” The sentence is innerly spoken in a normally declarative tone in his own voice. This may have been experienced as being slightly softer than he speaks normally. He is reading with understanding.

5FP: Inner speaking

Idiographic: Silent speaking of the text

Harrison 4.5: [Harrison was reading the sentence “an Asian culture of success”]. At the moment of the beep, Harrison is reading the word “culture”. At the same time, he experiences himself as simultaneously innerly speaking the word “culture” in a voice that he describes as his own, but at 75% of his natural volume. The process that the beep interrupts is of him reading and innerly speaking the sentence as a unit. He is not going from word to word to word. [Harrison described this reading as “see/say”: that he was reading a sentence without experientially processing the meaning of the sentence. That is, his understanding was that he was experiencing something like the input into the reading process, rather than experiencing a reading with understanding. The words and sentence structure were understood to be familiar—that is, he was reading an English sentence and English was his native tongue, and the words had a familiarity to them. But his sense was that the meaning would come later; the meaning was not inherently a part of the saying of the words.]

5FP: Inner speaking

Idiographic: None

Isobel

Isobel 3.4: At the moment of the beep, Isobel is reading a textbook, reading aloud although she is by herself. Her experience is not on the material, but on her aloud reading of the material—that is, she is listening to herself read. [At least part of the intention behind this listening to herself was to ascertain whether she understood what she was reading—that this would somehow be made evident to her by the act of listening to her aloud reading. That understanding was more the context of the reading than a direct experience.]

5FP: Sensory awareness?

Idiographic: Reading aloud

Isobel 3.6: At the moment of the beep, Isobel is reading a post on Facebook. The post said “I will find you and kill you”. At the same time as seeing the post Isobel is innerly hearing the actor from the movie Taken say “I will find you and kill you” into a telephone. She is more focused on the hearing of the words than the visual scene of the movie, but she is innerly seeing it as well. [She described the experience as being 60% the hearing and seeing of the actor, and 50% the post on Facebook.]

5FP: Inner seeing

Idiographic: Illustrative inner seeing

Jenni

Jenni 3.1: [Jenni was reading an article on the benefits of drinking lemon water.] At the moment of the beep, Jenni is understanding the general idea of warm lemon water being good for you as she is reading. There is no specific benefit in experience and no

experience of the reading. [It seemed that she must have been reading about some specific advantage of warm lemon water, but she did not or could not say what that was. We did not (or could not) separate out the general from the specific, even though we tried. The experience was more vague and passive than an unsymbolized thought. It was more in the realm of reading with comprehension, though the lack of specificity was concerning in terms of the believability of her report.]

5FP: None

Idiographic: Just reading with comprehension?

Lance

Lance 3.1: [Lance was reviewing his notes on his laptop in class before an exam started.]

At the moment of the beep, Lance is reading/scanning his notes for main points. At this particular moment, he is not focused on any particular points; he is simply scanning his eyes over the material. Although this occupied all of Lance's experience, there is little if anything actually present in experience.

5FP: None

Idiographic: Skimming

Maddi

Maddi 3.4: [Maddi was reading a math textbook.] At the moment of the beep, Maddi is innerly hearing "find X and Y intercept" in her own voice, slightly slower than usual, and without accent or emphasis. This is a hearing experience rather than a speaking experience. Furthermore, at the same time, she is reading the line on the page, but her experience is not of the reading, it is of the hearing. She does not know exactly when the beep occurred during her inner hearing.

5FP: None

Idiographic: Silent hearing of the text

Maddi 4.1: [Maddi was studying for a chemistry test.] At the moment of the beep, she is re-reading a sentence aloud. [Although she could not recall the words she was speaking at the time of the interview, she was confident that at the moment of the beep she was reading them aloud in her direct experience.] She is re-reading the sentence to try to understand it, but that intention was not her experience.

5FP: None

Idiographic: Reading aloud

Maddi 4.4: [Maddi was reading posts on Facebook. She had read a particular line.] At the moment of the beep, she is hearing her own voice speaking the line. She is confident that she was experiencing this as hearing rather than speaking.

5FP: None

Idiographic: Silent hearing of the text

Nina

Nina 3.5: [Nina had been reading an article.] At the moment of the beep, she internally hears the word “Bay-ee-sian” in her own voice. [She had internally said the word a moment earlier as a way to figure out its pronunciation, and then she had changed the sound of the word so she hears it in her voice pronounced a few different ways, like: “Bay-ee-sian <spoken> Baysh-un <heard> Baz-in <heard> Bay-ee-sian <heard>”.]

5FP: None

Idiographic: Focus on specific word or words

Nina 4.3: Nina is reading, with comprehension, an electronic sign over the highway that reads “Accident on Charleston Left Lane Blocked.” The reading is occurring without particular effort or attention to specific details, and it is not innerly or outerly spoken or heard, nor does it have other symbols.

5FP: None

Idiographic: Just reading with comprehension

Olivia

Olivia 3.5: [Olivia was on her phone, skimming through Google search results of the alchemical symbol for time.] At the moment of the beep, Olivia is skimming the text to find an article that includes a list or a chart. The notion of a chart or list is vaguely present to her, and [rather than actively looking for something], she is waiting for some indication that a chart or list will show up if she clicks on one of the results she is looking at.

5FP: None

Idiographic: Skimming

Zelda

Zelda 4.4: [Zelda was skimming a journal article about bipolar disorder looking for information relevant to her topic (bipolar and polycystic ovary syndrome)]. At the moment of the beep, Zelda’s experience is one of skimming the words looking for something to be relevant. [The interview ran out of time here.]

5FP: None

Idiographic: Skimming

Appendix B

Fiction DES Beep Locations

“Winter Dreams” by F. Scott Fitzgerald

5.1

As she took her stance for a short mashie shot, Dexter looked at her closely. She wore a blue gingham dress, rimmed at throat and shoulders with a white edging that accentuated her tan. The quality of exaggeration, of thinness, which had made her passionate eyes and down-turning mouth absurd at eleven, was gone now. She was arrestingly beautiful. The color in her cheeks was centered like the color in a picture—it was not a “high” color, but a sort of fluctuating and feverish warmth, so shaded that it seemed at any moment it would recede and disappear. This color and the mobility of her mouth gave a continual impression of flux, of intense life, of passionate vitality—balanced only partially by the sad luxury of her eyes.

5.2

“Do you mind if I weep a little?” she said.

“I’m afraid I’m boring you,” he responded quickly.

“You’re not. I like you. But I’ve just had a terrible afternoon. There was a man I cared about, and this afternoon he told me out of a clear sky that he was poor as a church-mouse. He’d never even hinted it before. Does this sound horribly mundane?”

“Perhaps he was afraid to tell you.”

5.3

A sort of dullness settled down upon Dexter. For the first time in his life he felt like getting very drunk. He knew that he was laughing loudly at something Devlin had said, but he did not know what it was or why it was funny. When, in a few minutes, Devlin went he lay down on his lounge and looked out the window at the New York skyline into which the sun was sinking in dull lovely shades of pink and gold.

He had thought that having nothing else to lose he was invulnerable at last—but he knew that he had just lost something more, as surely as if he had married Judy Jones and seen her fade away before his eyes.

“Big Two-Hearted River” by Ernest Hemingway

5.4

tall and the branches moved high, leaving in the sun this bare space they had once covered with shadow. Sharp at the edge of this extension of the forest floor commenced the sweet fern.

Nick slipped off his pack and lay down in the shade. He lay on his back and looked up into the pine trees. His neck and back and the small of his back rested as he stretched. The earth felt good against his back. He looked up at the sky, through the branches, and then shut his eyes. He opened them and looked up again. There was a wind high up in the branches. He shut his eyes again and went to sleep.

Nick woke stiff and cramped. The sun was nearly down. His pack was heavy and the straps painful as he lifted it on. He leaned over with the pack on and picked up the

leather rod-case and started out from the pine trees across the sweet fern swale, toward the river. He knew it could not be more than a mile.

5.5

Out through the front of the tent he watched the glow of the fire when the night wind blew. It was a quiet night. The swamp was perfectly quiet. Nick stretched under the blanket comfortably. A mosquito hummed close to his ear. Nick sat up and lit a match. The mosquito was on the canvas, over his head Nick moved the match quickly up to it. The mosquito made a satisfactory hiss in the flame. The match went out. Nick lay down again under the blanket. He turned on his side and shut his eyes. He was sleepy. He felt sleep coming. He curled up under the blanket and went to sleep.

5.6

He wiggled his toes in the water, in his shoes, and got out a cigarette from his breast pocket. He lit it and tossed the match into the fast water below the logs. A tiny trout rose at the match, as it swung around in the fast current. Nick laughed. He would finish the cigarette.

He sat on the logs, smoking, drying in the sun, the sun warm on his back, the river shallow ahead entering the woods, curving into the woods, shallows, light glittering, big water-smooth rocks, cedars along the bank and white birches, the logs warm in the sun, smooth to sit on, without bark, gray to the touch; slowly the feeling of disappointment left him. It went away slowly, the feeling of disappointment that came sharply after the thrill that made his shoulders itch. It was all right now. His rod lying out on the logs,

Nick tied a new hook on the leader, pulling the gut tight until it crimped into itself in a hard knot.

Appendix C

Table 1

Demographic Data

Participant	Age	Sex	Ethnicity
Adele	30	Female	Black
Bailley	18	Female	NP
Caitlin	21	Female	Mixed
Deana	18	Female	Black
Eden	19	Female	White
Felicity	18	Female	African American
Georgia	NP	Female	NP
Harrison	18	Male	Hispanic
Isobel	21	Female	NP
Jenni	18	Female	Hawaiian/Multiracial
Kevin	18	Male	Hispanic/American
Lance	19	Male	Hispanic/Mexican
Maddi	NP	Female	NP
Nina	20	Female	Hispanic/Pacific Islander
Olivia	20	Female	Filipina
Pamela	19	Female	White
Zelda	22	Female	White

Notes. Ethnicity data is quoted the demographic form.
 NP = Not provided.

Table 2

STS Total Scores and NIEQ Scores

Participant	STS	NIEQ				
		<u>in. sp.</u>	<u>in. see</u>	<u>uns.</u>	<u>feel.</u>	<u>sen. a.</u>
Adele	80	9.8	0.2	9.0	9.5	5.0
Bailley	80	7.5	4.5	1.0	9.5	5.5
Caitlin	74	8.4	7.6	2.4	6.6	7.0
Deana	71	9.5	9.1	6.5	9.6	9.5
Eden	70	8.7	9.9	2.1	9.4	6.1
Felicity	68	7.9	7.2	3.7	8.8	10.0
Georgia	68	7.0	8.6	5.2	9.0	8.0
Harrison	68	7.6	8.5	0.0	6.0	6.5
Isobel	68	8.1	8.5	2.0	10.0	4.5
Jenni	67	7.0	8.0	3.5	9.1	8.5
Kevin	48	6.6	8.8	7.0	7.0	9.4
Lance	48	4.3	3.6	4.1	6.9	5.8
Maddi	45	7.6	6.6	3.0	8.0	7.0
Nina	39	2.5	6.8	2.2	8.3	7.4
Olivia	39	0.8	9.8	2.7	7.2	6.0
Pamela	33	3.5	3.0	7.6	2.0	3.5
Zelda	61	9.5	7.5	0.0	7.5	6.5

Notes. in. sp. = inner speaking; in. see = inner seeing;
 uns. = unsymbolized thinking; feel. = feelings;
 sen. a. = sensory awareness.

Table 3

Reading Phenomena and BLRQ

Participant	Reading Phenomena		BLRQ		
	<u>% Imagery</u>	<u>% Words</u>	<u>Question 1</u>	<u>Question 2</u>	<u>Question 3</u>
Adele	50	50	NP	NP	NP
Bailley	0	50	NP	NP	NP
Caitlin	60	60	1 or 2	Rarely	Occasionally
Deana	50	0	NP	NP	NP
Eden	17	0	3 to 5	Occasionally	Never
Felicity	82	55	6 to 7	Often	Never
Georgia	60	0	NP	NP	NP
Harrison	90	40	NP	NP	NP
Isobel	83	33	NP	NP	NP
Jenni	40	20	NP	NP	NP
Kevin	100	0	3 to 5	Rarely	Never
Lance	100	0	NP	NP	NP
Maddi	70	30	NP	NP	NP
Nina	30	20	1 or 2	Rarely	Never
Olivia	82	18	1 or 2	Occasionally	Rarely
Pamela	17	17	NP	NP	NP
Zelda	75	0	1 or 2	Rarely	Rarely

Note. NP = Not provided.

Table 4

% of 5FP in Natural Environment DES

Participant	in. sp.	in. see.	uns.	feel.	sen. a.
Adele	8	18	13	3	16
Bailley	44	17	14	8	22
Caitlin	9	9	12	15	21
Deana	3	60	10	60	40
Eden	0	24	12	26	76
Felicity	53	19	0	9	38
Georgia	18	6	12	41	32
Harrison	28	6	3	22	67
Isobel	14	11	3	0	44
Jenni	6	13	0	16	6
Kevin	6	50	13	0	31
Lance	0	17	17	6	22
Maddi	9	29	0	18	0
Nina	17	6	44	17	17
Olivia	6	25	19	13	44
Pamela	22	11	17	28	36
Zelda	0	5	0	35	40

Notes. in. sp. = inner speaking; in. see. = inner seeing;
 uns. = unsymbolized thinking; feel. = feelings;
 sen. a. = sensory awareness.

Table 5

% of 5FP while Reading Fiction

Participant	in. sp.	in. see.	uns.	feel.	sen. a.
Adele	0	50	0	0	0
Bailley	67	0	0	0	0
Caitlin	50	60	20	0	0
Deana	17	50	8	0	50
Eden	0	17	67	0	33
Felicity	0	82	27	0	36
Georgia	0	80	20	5	10
Harrison	5	100	0	10	20
Isobel	0	83	8	0	33
Jenni	10	40	0	20	20
Kevin	0	100	0	0	50
Lance	0	100	0	0	0
Maddi	5	80	0	0	0
Nina	10	30	15	20	30
Olivia	18	82	27	9	32
Pamela	17	0	33	33	17
Zelda	0	75	0	50	0

Notes. in. sp. = inner speaking; in. see. = inner seeing;
 uns. = unsymbolized thinking; feel. = feelings;
 sen. a. = sensory awareness.

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Curriculum Vitae

Vincent Peter Brouwers, B.A.

Education

- University of Nevada, Las Vegas (UNLV) – Las Vegas, NV (2011-present)
Clinical Psychology Doctoral Candidate
Current GPA: 3.95
- Loyola Marymount University (LMU) – Los Angeles, CA (2006-2010)
Graduated Magna Cum Laude in May 2010
University Honors Program
Overall GPA: 3.83; Psychology GPA: 3.97; English GPA: 3.84
Bachelor of Arts Degree in Psychology and English (Writing); Minor:
Theatre Arts

Psychology Research Experience/Presentations/Publications

- Ongoing research project: Reliability and Power – Manuscript in submission for publication. First author – Dr. Kimberly Barchard
 - Barchard, K. A., & Brouwers, V. (2014, May) *Increasing Statistical Power for Group Comparisons*. Poster presented at the Association for Psychological Science annual convention in San Francisco, May 2014.
- Ongoing research project: Developing the Intermediate Psychopathy Measure (IMP). Measure is in item-writing phase. First author – Dr. Stephen Benning
- 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 in San Francisco, May 2014.
- 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, April 2014.
- UNLV Experience Sampling Lab (Fall 2011-present)
Supervisors: Dr. Russell Hurlburt, Dr. Chris Heavey
Duties: Participate in Descriptive Experience Sampling interview procedure
- UNLV Achievement Center – Research Assistant (Summer 2010)
Supervisor: Dr. Bradley Donohue
Duties: Quality assurance, grant literature research, writing scripts of treatment protocols for dissemination
- LMU HeadsUp Lab – Research Assistant (Spring 2010)
Supervisor: Dr. Joseph LaBrie
Duties: Database management, subject pool management, formatting APA reports

- LMU Honors Program Thesis/Psychology Honors Thesis (Fall 2009 – Spring 2010)
Mentor: Dr. Joseph LaBrie, Ph.D.
Project Title: Identity Factors and Identity Self-Esteem in College vs. Non-College Emerging Adults
 - Brouwers, V., & LaBrie, J. (April, 2011). *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.
- LMU Motivation Lab – Research Assistant (Fall 2008 – Spring 2010)
Supervisor: Dr. Larry Bernard
Duties: Instructing research participants, critiquing/validating measures of motivation

Teaching Experience

- Part-Time Instructor, UNLV – PSY 451, Basics of Psychotherapy (Spring 2015)
- Part-Time Instructor, UNLV – PSY 101, Introduction to Psychology (Fall 2013-Fall 2014)
- Teaching Assistant, UNLV – PSY 210, Behavioral Statistics (Fall 2011-Summer 2013)
- Substitute Teacher, Bishop Gorman High School – Mathematics, English (Spring 2011 – Spring 2012)

Clinical Experience

- Individual Therapy, Group Therapy, Assessment – PRACTICE clinic at UNLV (Fall 2012 – Summer 2013)
 - Clinical Supervisors: Dr. Jason Holland, Ph.D.; Dr. Michelle Paul, Ph.D.
- Individual Therapy, Group Therapy, Forensic Assessment – Innovative Psychological Solutions (Fall 2013 – Summer 2014)
 - Clinical Supervisors: Dr. Shera Bradley, Ph.D. (Primary); Dr. Gary Lenkeit, Ph.D.; Dr. Danielle Bello, Ph.D.; Dr. Carla Perlotto, Ph.D.
- Student Supervisor – PRACTICE clinic at UNLV (Summer 2014; Summer 2015)
 - Clinical Supervisors: Dr. Michelle Paul, Ph.D.; Dr. Noelle Lefforge, Ph.D.
- Forensic Assessment, Psychological Assessment, Individual Therapy – Desert Psychological Services (Fall 2014 – Summer 2015)
 - Clinical Supervisors: Dr. Bree Mullin, Psy.D.; Dr. Stephanie Holland, Psy. D.; Dr. Sarah Ahmad, Psy. D.

Extra-curricular Didactic Clinical Training

- Working with Bereaved Clients in Clinical Practice, December 3, 2014
Speaker: Jason M. Holland, Ph.D.
- TF-CBT Web-An online training course for Trauma-Focused Cognitive-Behavioral Therapy, October 8, 2014
Course Director: Daniel W. Smith, Ph.D.
- Spirit of Motivational Interviewing, June 13, 2014
Speaker: Billy Arndt, MFT, LADC
- Dialectical Behavioral Therapy Part 1, 2, 3, November 2012 - April, 2013, Las Vegas.
Speaker: Alan Fruzzetti, Ph.D.

- Ethics and Ethical Decision-Making for Nevada Psychologists, November 17, 2012, Las Vegas
Speaker: Stephen Behnke, J.D, Ph.D.