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REM Dreams

**Testing the Notion of Continuity Between Waking Experience
and REM Dream Content**

Francine Roussy

Thesis submitted to the School of Graduate Studies and Research of the University
of Ottawa in partial fulfilment of the requirements for the Degree of
Doctor of Philosophy in Clinical Psychology

 Francine Roussy, Ottawa, Canada, 1998



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"The future belongs to those who believe in the beauty of their dreams."

- Eleanor Roosevelt -

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Curriculum Studiorum

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Abstract

In 1996, Roussy et al. reported a study which failed to demonstrate the predictability of REM dream content from presleep ideation. The current study was designed to further test this predictability by using a larger sample of REM dream content and waking ideation.

Thirteen young-adult female university students reported three REM dreams on each of four laboratory nights spaced at weekly intervals. On two of the study days, waking Thought Samples (TS) were recorded by participants at five randomly selected times. On the two other days, participants recorded their five most Significant Concerns (SC) prior to going to sleep at the laboratory.

In a within-participant ranking task, two student peers had to read each item which consisted of the waking ideation sample for one night (WI) for one participant and the four dream sets (DS) for this same participant. Their task for each of these items was to rank the 4 DS from 1 to 4 as they believed them to be most likely related to the WI (rank 1) or least likely related to the WI (rank 4). For this task, there were two items for each of 12 participants. It was hypothesized that a dream set would receive a rank closer to 1 when it was the target than when it served as a foil. In a within-participant matching task, ten student peers were given the 4 dream sets and 4 waking ideation samples separately for each participant. Judges were asked to match each DS with one of the WI, thus making

4 pairs. In the between-participant matching task, these same ten judges were given 12 items. For each item, they were asked to match 4 dream sets from different participants with their corresponding waking ideation samples.

For the ranking task, a three-way mixed ANOVA (2 judges - between, 2 waking ideation conditions: TS & SC - within, 2 dream conditions: target & non-target - within) revealed that there were no significant differences between ranks given to target or foil dreams, and this in both the TS and SC conditions, as well as by both judges. Chi-square values for both the within- and between-participant matching task were not significant (.047 and .096 respectively, $p < .99$). The observed number of matches was therefore not significantly different from what was expected by chance. These results are consistent with those of our earlier study and suggest that it is not possible for non-clinically trained judges to match REM dream content with waking ideation. Further analyses conducted with a clinical psychologist serving as judge demonstrated that she was also unable to complete the tasks at greater than chance levels.

It therefore seems that the relationship between waking and dreaming is not as obvious and predictable as has been believed. Rather, this study supports the cognitive position that dreams appear to randomly integrate elements from waking life and do not seem to give priority to immediately preceding experiences and concerns.

Review of the Literature

Ancient Times

Dreams have been of interest to humans for many centuries. Even in ancient times, attempts were made to unravel their many mysteries, their possible meanings, functions, and interpretations. A first essential question concerning dreams, however, has always been "what are they made of"? In other words, what are the sources of dream elaboration? Centuries ago, certain civilizations held the view that dreams were messages from gods. For example, the Mesopotamians (3 000 B.C.) wrote the Gilgamesh epic which represents "a remarkable chronicle of dream events, among them, the first known references to sequential dreams from the same dreamer" (Van de Castle, 1994, p.48). From these scriptures, we learn that these people regarded dreams as divine messages which could lead to fortune or misfortune depending on their interpretation. Mesopotamians also believed in "dream-seeking" and therefore slept in special temples and prayed in order to induce the divine dreams that could possibly foretell their future.

The ancient Egyptians also felt that dreams were messages from their gods. They were of the opinion that dreams gave them access to a world unknown to them via waking life. Surrogate dreaming (sending someone to dream in one's place) was also possible if one could not go to dream temples in person (Van de

Castle, 1994, p.55). Orientals also maintained that dreams gave access to another world, but thought that the soul needed to leave the body in order to do so (MacKenzie, 1965).

One civilization with a particularly rich legacy of dream interest is that of ancient Greece. The early Greeks held beliefs which strongly resembled those of the Mesopotamians. They maintained the notion that the gods could communicate with them through dreams as a sort of oracle (Caillois & Von Grunebaum, 1967). In fact, dreams or "oneiros" were defined as "a god or an agent sent by a god, bearing a message to the dreamer" (Gallop, 1990, p.4). They therefore built temples where they could "await help from the gods while (they) slept" (Robbins, 1988, p.6). In later Greek times, however, the focus of dreams was as a means of obtaining possible cures to illness. Dreams therefore seemed to use physiological or "natural" as opposed to "divine" stimuli as sources. Many Greek scholars voiced their opinions on dreams at this time. According to Van de Castle (1994), Hippocrates (469 - 399 B.C.) believed that the soul produced images and impressions during sleep rather than receiving them as it did during wakefulness. Dreams were therefore created from these "soul images". For him, dreams could be prophetic, diagnostic, or psychologically revealing. Plato, however, saw dreams as expressions of a wish and therefore as having many emotional implications. He claimed that "the virtuous man is content to *dream* what a

wicked man really *does*" (Freud, 1900/1991, p.782). He therefore maintained that dreams had psychological stimuli as sources. His views were a partial basis for Freud's later works.

Aristotle, the foremost Greek scholar, devoted at least three complete essays to questions concerning sleep and dreams. These essays were included in one of Aristotle's collections of works, *Parva Naturalia*. As interpreted by Gallop (1990), Aristotle claimed that dreams are natural occurrences attributable to the movement of bodily fluids. When such movement occurs, sense-experience residues form dreams. The main source for dream formation was therefore considered to be waking perception which created these residual sensory impressions, and subsequently this residue became a dream via physiological processes. Aristotle considered that dreams had no function and that therefore they could not be part of any prophetic design. Hence, he clearly rejected the notion of a divine provenance for dreams. On the contrary, he claimed that dreams were "daemonic" in the sense that they could appear to predict events in waking life, but that in fact they were purely coincidental. In the *Poetics* (145 2a 4-11), Aristotle cites the case of a man who had caused the death of a certain Mityls, and who was subsequently killed by the statue of Mityls falling upon him. The statue did not fall in order to kill the murderer. Yet in a grimly ironical way, it gave the appearance of design (Gallop, 1990, p.41).

Aristotle's views, although systemic and original, were not universally recognized. For example, in the second century of our times, Artemidorus published Oneirocritica, a dream interpretation book containing more than 3,000 dreams. Dreams remained in the realm of prophetic function for many years after the publication of this manual.

Pre-Freudian Scientists

It was not until the 19th century that the true scientific study of dreams began. At this time, many authors voiced their opinions regarding dream sources. The central question was whether or not waking ideation was the principal source for dream formation. As Freud (1900/1991) noted in his review of scientific literature concerning dreams, some authors theorized that there was a clear discontinuity between dreams and waking life. For example, Burdach (as cited in Freud, 1900/1991, p.64), said that:

In dreams, daily life, with its labours and pleasures, its joys and pains, is never repeated. On the contrary, dreams have as their very aim to free us from it. Even when our whole mind has been filled with something, when we are torn by some deep sorrow or when all our intellectual power is absorbed in some problem, a dream will do no more than enter into the tone of our mood and represent reality in symbols.

Many more researchers, however, held the opposite view. Weygandt (as cited in

Freud, 1900/1991, p.65) contradicted Burdach directly and stated that dreams "actually lead us back to ordinary life, instead of freeing us from it".

According to Webb (1979), Maury and Strümpell, two of the authors reviewed by Freud, shared the Aristotelian position that "dreams are essentially residue of earlier or concurrent sensory impression" (p.8). For example, Maury (as cited in Freud, 1900/1991, p.65) said "Nous rêvons de ce que nous avons vu, dit, désiré ou fait".

Although the waking-dreaming continuity hypothesis was shared by many authors, a not so clear agreement was held as to which part of waking life played a greater role in dream formation. One such area of disagreement arose when authors became aware that it was not necessarily the most poignant or urgent concerns of waking life that were incorporated into our nightly theatre.

Hildebrandt (as cited in Freud, 1900/1991, p.78) observed that:

For the remarkable thing is that dreams derive their elements not from major and stirring events nor the powerful and compelling interests of the preceding day, but from incidental details, from the worthless fragments, one might say, of what has been recently experienced or of the remoter past.

Many authors were also amazed by "hypermnesic dreams" which Freud defined as dreams which have at their disposal recollections which are inaccessible

to the waking state. An example of such dreams are childhood reminiscences which are remembered through dreams. Volkelt (as cited in Freud 1900/1991, p.75) noted "how readily memories of childhood and youth make their way into dreams. Dreams are continually reminding us of things which we have ceased to think of and which have long ceased to be important to us". Other authors such as Haffner (as cited in Freud 1900/1991, p.65), however, saw previous day experiences as the main content for dream formation:

In the first place, dreams carry on waking life. Our dreams regularly attach themselves to the ideas that have been in our consciousness shortly before. Accurate observation will almost always find a thread which connects a dream with the experiences of the previous day.

Attempts to solve these dilemmas through experimentation were rare in the 1800's. Maury was one author, however, who did conduct experiments. He found that dreams were caused by external stimulations. Although these stimulations entered the dreams in an indirect fashion, i.e., when he smelt eau de cologne in his sleep, he dreamt of a perfumery in Cairo (MacKenzie, 1965, pp.108-110), Maury felt that dreams had to be physiological in nature. The indirect nature of the incorporation, however, led him to conclude that there had to be factors other than purely physiological ones involved in determining the actual dream representation. A frequently cited example of Maury's experiments illustrates a dream where the

physiological and personal knowledge sources of the dreamer's life are combined into an elaborate scenario.

Il était souffrant et couché, sa mère était assise près de lui. Il rêvait près de la Terreur, traversait d'effroyables scènes de meurtre et était enfin cité devant le Tribunal Révolutionnaire. Il voyait là Robespierre, Marat, Fouquier-Tinville et tous les tristes héros de cette effroyable époque, leur parlait, était condamné, après divers incidents qu'il ne pouvait se rappeler, et ensuite conduit au lieu d'exécution, accompagné d'une foule innombrable. Il monte sur l'échafaud, le bourreau l'attache sur la planche, elle bascule, le couteau de la guillotine tombe, il sent la tête séparée du tronc, s'éveille dans une angoisse épouvantable - et s'aperçoit que le ciel de lit était tombé et que son cou avait été réellement atteint comme par le couteau d'une guillotine. (As cited in Freud, 1900/1971, pp.32-33)

Mary W. Calkins (1893) also noted "that problems causing concern in the ordinary thoughts of the dreamer were seldom directly represented in the dream...." (p.140).

Freudian Times

It is with all of these questions in mind that Freud began his studies on dreams. It was largely agreed that dreams were somehow linked to the waking life of humans but the main sources of dream formation remained a mystery.

In 1900, Freud published his theory of dream formation in *The Interpretation of Dreams*. For Freud (1900/1991), there was no doubt that there was a direct link between what occurred in our daily life and those elements that constructed the manifest content (what is remembered by the dreamer) of our dreams. He maintained that in every dream there was some point of contact with the previous day. This observation was known as the "day residue" effect. Freud, however, had a distinctly different opinion about the continuity between waking and dreaming at the latent level of dream content. He claimed that day residues were not incorporated because they were meaningful to the dreamer. Rather, they were used as the symbolic expression for more deeply rooted concerns which most often included sexual or aggressive impulses which stemmed from the dreamer's childhood (latent content). He believed that this disguised means of expressing childhood impulses was necessary because direct expression would likely have awoken the dreamer due to the unacceptable nature of their content. The dream was therefore seen as the Guardian of sleep. An example of such a function was to prevent the dreamer from awakening due to internal stimuli such as hunger or external stimuli such as noise. Koulack (1991) interprets Freud and explains that since we cannot satisfy these needs (such as eating) "in the ordinary manner of waking life, (...) Our only recourse, if we are to continue sleeping is to substitute a memory of a previous satisfaction for the real thing" (p.21). Freud did feel,

however, that the fulfilment of such needs in dreams was by far secondary to the satisfaction of latent concerns. He also noted that conscious wishes alone (i.e., an important concern during the previous day) were unlikely to produce a dream unless they triggered an unconscious impulse which would then create the dream. Freud therefore felt that waking and dreaming ideation were indirectly linked by the unconscious. Freud proposed that dream sources were twofold. They emanated partly from the previous day for manifest content but from one's childhood for their latent content.

Freud also formulated theories regarding the functions of dreams. He saw dreams as having a cathartic function, giving repressed infantile wishes "periodic opportunities for partial fulfilment in the safety of sleep, thus preventing them from building up intolerable states of psychological tension in waking life" (Jones, 1979, pp.279-280).

Many of Freud's disciples continued to show interest in the sources of dreams. For example, Adler (1931/1960) saw dreams as an active means of coping or working through daily concerns in waking life. In *What Life Should Mean to You* (1931/1960), he spoke of a continuity between waking and dreaming life. Adler (1930/1961) proposed that the main goal of dreams is the feelings that they leave within the dreamer: "Dans la cendre du rêve persiste un état émotionnel, affectif, en concordance avec le style de vie" (p.225). The dream's

task is "to meet the difficulties with which we are confronted and to provide a solution" (Adler 1931/1960, p.99). More specifically, Adler stated that dreams were a product of the style of life and therefore of the personality of the dreamer. He added that dreams were not a solution to problems in any direct way but simply offered a less complex environment in which the dreamer could approach his or her problems. "We would approach problems in the same way whether we dreamed or not; but the dream offers a support and justification for the style of life" (Adler 1931/1960, p.101). In stating this, Adler claimed that the function of dreams was to enforce one's style of life or means of coping. It is clear, however, that for this to be so, dream sources must stem from the contemporary life of the dreamer and therefore from waking ideation.

Modern Times

Modern scientific dream research was initiated in 1953 when Aserinsky & Kleitman discovered the existence of rapid eye movements (REM) during certain periods of sleep. In fact, it was observed that when participants were awakened during these REM periods, they were much more likely to report elaborate mental activity, considered to be a dream, than when they were awakened in other sleep phases (Aserinsky & Kleitman, 1953). The belief that dreaming occurred only during REM sleep held for some time. Since then, however, many studies have demonstrated that dreaming occurs at least to some degree during the entirety of

the night (Foulkes, 1964; Cavallero, Cicogna, Natale, Occhionero, & Zito, 1992).

Since the discovery of REM sleep, research has focussed mainly on three different areas: the neurobiological aspects of dream formation, the adaptive functions of dreams and the cognitive aspects of dreaming. Theories concerning the sources of dreams vary depending on each of these three different approaches.

Neurobiological Approach

Despite the discovery that dreams can occur throughout the various sleep phases, some researchers such as Hobson (1988) and Crick & Mitchison (1983) nevertheless focus their research mainly on the psychophysiology of dreaming in REM sleep. In fact, in the 1970's, Hobson & McCarley (1977) elaborated a neurobiological theory of REM dream formation. They postulated that dream sources originate "from the pontine brain stem and not in cognitive areas of the cerebrum. These stimuli, whose generation appears to depend upon a largely random or reflex process, may provide spatially specific information which can be used in constructing dream imagery" (Hobson & McCarley, 1977, p. 1347). More recently, Hobson (1992) proposed "a new model of brain-mind state" where the combination of three factors (activation, input source, and mode of processing) offers an estimate of the brain state changes from waking to NREM to REM sleep. For example, REM sleep is characterized by a high discharge rate of neurons in the reticular activating system (activation) but low external world orientation (input

source) and low levels of noradrenergic and serotonergic modulation of the cortex (mode of processing). According to Hobson (1992), the person will thus experience vivid percepts, disoriented, bizarre and illogical thoughts but without self-reflected awareness. This updated theory also includes an account of the "dream-like mentation occurring outside of REM sleep". Such occurrences would be due to a transition from NREM to REM sleep which could "begin as early as midway through the first NREM period." (Hobson, 1992, p.243)

Crick & Mitchison (1983) propose another neurobiological theory in which REM dreams serve to forget "parasitic" modes of neural interaction. This theory, known as the "reverse learning mechanism", suggests that cerebral activity is "promoted by rather nonspecific signals from the brain stem and reflected in the unconscious equivalent of dreaming, which only reaches normal consciousness if the sleeper awakes"(p.112). Dreams are therefore seen as a means to forget useless thoughts and associations in order for the brain to prepare for the incoming of new information during waking life.

Overall, neurobiological theories of dreaming postulate that dream sources are products of neurophysiological activity and do not have a particular function in and of themselves.

Psychological Adjustment Approach

Research in this area has focussed on the meaning of dreams as a form of

psychological adaptation and therefore on the relationship of dreams with waking life. For example, Cartwright (1991) used a problem-solving approach similar to that proposed by Adler in order to study the dreams of people experiencing divorce. She found that those who were depressed and incorporated the ex-spouse into their dreams at the time of the break-up were significantly less depressed and better adjusted to their new life at the follow-up point than those who did not. It seems that those who incorporated the stressor directly into their dreams were able to "work through" their depression more successfully than those who did not. Apparently, dreams would therefore serve an adaptive function. Other researchers such as Blagrove (1992), however, assert that Cartwright's (1991) results simply reflect the waking environment in which they lived in rather than a means of problem-solving (i.e., those who dreamt of their ex-spouse were reflecting adaptive changes in their waking lives). It is therefore not clear if dreams serve a function as such or if they simply reflect the dreamer's waking life.

In studying the dreams of trauma survivors, Belicki & Cuddy (1996) state that dreams can be conceptualized as particularly suited to the information processing of emotions and psychologically important events. They note, for example, that sexual abuse victims have been found to suffer from more nightmares, more repetitive nightmares and more sleep terrors (Cuddy & Belicki, 1992), as well as more explicit violence in their nightmares (Garfield, 1987), and

the presence of shadow like figures (Robinson, 1982). Siegel (1996) also noted that series of dreams in trauma patients often show a progression toward mastery as the trauma is resolved. The author suggests that this illustrates an adaptive process of dreams but as noted earlier, the change in dream content could simply be a reflection of cognitive changes during waking.

Many studies have been centred on attempts to show that waking concerns could serve to predict dream content. For example, Baekeland (1966), Baekeland, Resch, & Katz (1968), and Kramer, Roth, & Cisco (1976) posited that dreams are meaningful and that they can be inserted into the chain of intelligible waking mental acts. Roth, Kramer, & Arand (1976) further concluded that dreams could be useful in the clinical setting in order to better understand the patient since dreams are meaningful in the sense that they are linked with the waking preoccupations of the dreamer. Piccione, Jacobs, Kramer, & Roth (1977) found that dreams were more linked to waking activities with high emotional tone. Piccione, Thomas, Roth, & Kramer (1976) observed that the laboratory situation was often incorporated into participants' dreams. These studies, however, generally either lacked appropriate controls, inferred rather than directly assessed waking concerns, or were largely unsuccessful in outcome. For example, Roth et al. (1976) found that the content of verbal samples was significantly correlated with REM dream reports. These verbal samples, however, were collected both

before going to sleep and after rising in the morning. The content of the morning samples could very well have been influenced by the recalled dream reports. In the Kramer et al. (1976) study, judges were unsuccessful at placing dreams in their correct night of occurrence in either the within or between matching tasks.

Piccione et al. (1977) found that their judges were unable to match the dreams of various nights with reports of the participants daily activities of the corresponding days.

Cognitive Approach

Cognitive dream theories such as those of Foulkes (1990) and Antrobus (1991) have proposed that waking and dreaming information processing are interrelated and therefore that it would perhaps be possible to predict dream mentation from presleep mentation. The cognitive approach proposes that dreaming is a cognitive process that follows the general schema of cognitive processes which take place during waking (Cavallero & Foulkes, 1993).

Researchers such as Cavallero & Foulkes (1993) explore the question of dream sources by asking how are dreams generated by the mind? In order to do so, they suggest the use of an information processing model which has three main components: input, processing, and output. In the case of dreaming, outputs are the dream reports and inputs are the sources for dream formation. Cavallero (1993) states that the bulk of dream sources is constituted by memories and

therefore that dreaming is the act of recombining what has previously been stored in long-term memory. Cavallero & Cicogna (1993) further propose that dreaming is a process that puts together bits and pieces of memories activated, and reorganizes them in such a way that the various components of a dream image are not always traceable back to particular episodes in our past life. Foulkes (1985) views such instances where there is discontinuity between waking and dreaming as a product (as for many other characteristic features of dreaming) of the dissociation of mental activity during sleep, when both environmental and deliberate self-regulation of cognition are lacking. The cognitive approach therefore sees sources for dream formation as stemming from all of human experience which is put into memory, but does not believe that these experiences will enter the dreaming process in a predictable fashion.

Recent Studies

The following is a review of three specific studies which focussed on the examination of dream sources and were particularly designed to test the relationship between waking and dreaming.

In 1982, Rados & Cartwright reported successful blind matches of reports of presleep mentation with subsequent REM dream reports. They studied nine persons for a single night each. Preceding the sleep period, participants had their thoughts sampled following the method of Foulkes & Scott (1973) and Foulkes &

Fleisher (1975). In this method, participants lie in their beds, but with the instruction to stay awake and relaxed (EEG recordings are used to verify wakefulness) and with periodic random arousals for the solicitation of reports of presleep mentation. Rados & Cartwright's volunteers ("Ten females, medical students, technicians, or secretaries 20 to 30 years of age" [Rados & Cartwright, 1982, p. 434]) next were instructed to go to sleep, and were awakened from all subsequent REM-sleep episodes of the night for solicitation of dream reports. At the end of each night, each participant was questioned regarding current concerns in her waking life. Rados & Cartwright proposed that presleep thought samples reflect relatively nondeliberate or "preconscious" waking ideation, while the postsleep-elicited concerns are more the product of deliberate and consciously-mediated thought processes. They asked six judges (4 clinically naive sleep technicians and 2 psychodynamically oriented psychologists) to complete a forced matching task which consisted of the 9 presleep sets and 9 REM dream sets. They then asked these same judges to match the current concern interviews to these nine pairs of matched reports. They found that their judges, particularly the "clinically sophisticated" ones, were able to match presleep thought samples but not postsleep-elicited concerns with a night's REM reports at better than chance levels. These authors concluded that "cognition is organized along similar thematic dimensions in presleep relaxed wakefulness and REM sleep" (p. 435).

Rados & Cartwright did control for the possible influence of similarities in style, rather than content, of reports across occasions, by having all reports edited and rephrased by an experimental confederate. However, they left at least two important questions unanswered, namely: Are waking-dreaming matches really possible based on presleep state within a given individual, as Rados & Cartwright imply, or are such matches possible only on the basis of trait differences between individuals? In their design, it is impossible to choose between these possibilities: and, Are less consciously-mediated samples of presleep ideation genuinely more predictive of dream content than more consciously-mediated statements of current concern?

In an attempt to answer these questions, Roussy et al. (1996) conducted a study in which they explored whether it is possible to predict which waking experiences are incorporated into dreams. Their study replicated some of the components of the Rados & Cartwright (1982) study, with certain methodological changes. Overall, there were 4 important changes which should be noted. First, they increased the number of nights per participant and ensured that the participant sample was more homogeneous. Since Rados & Cartwright's (1982) participants only slept a single night in the laboratory, analyses were limited to a between-participant design. Roussy et al. (1996) had their participants spend 8 nonconsecutive nights each in the laboratory over a period of ten weeks. These

repeated measures consequently allowed them to perform both within and between-participant analyses. Furthermore, since Rados & Cartwright's participants were of different professions (students, technicians, & secretaries), it was felt that their finding of the influence of presleep state (TS) on waking ideation might actually be due to matches based on trait differences between these very different individuals. Roussy et al. (1996) therefore selected a participant sample which consisted of undergraduate students who were similar in age, education and daily routines. This more homogeneous group would make it more difficult for judge matches to be due to differences between individuals. Significant matches could therefore more easily be attributed to the influence of presleep TS or SC.

The second change involved performing both the TS and SC interviews prior to sleep onset rather than eliciting waking ideation samples at two different times as did the Rados & Cartwright (1982) study. This modification was felt to be necessary to determine whether both types of waking ideation were predictive of dream content. It was also useful in determining if any differences between these two conditions actually existed or whether the Rados & Cartwright finding that thought samples were more predictive of dream content than significant concerns simply reflected their different time of elicitation vis à vis dream collection. On each night, preparation for standard sleep-laboratory recordings of EEG and eye movements (EOG) was therefore followed by the collection of

waking ideation. The Significant Concern (SC) condition was a variant of Klinger's Concern Dimension Questionnaire (e.g., Klinger, Barta, & Maxeiner, 1981). Participants were asked, immediately before lights out while lying in bed (as in the TS condition below), to name and describe in order of importance the five significant concerns about which they had been thinking the most in the past two days. They would also briefly describe the nature and status of each concern. In the Thought Sample (TS) condition, previously described by Foulkes & Scott (1973), participants were signalled five times at randomly predetermined intervals to report presignal ideation.

The third modification was to follow the technique of Cavallero et al. (1992) and schedule only one awakening per night, providing that this awakening generated a dream report. This decision was based on Foulkes, Bradley, Cavallero, & Hollifield's (1989) finding of a higher correspondence of dream content to participant-identified dream sources for shorter rather than longer reports and the suggestion that increasing amounts of REM sleep might distance dream content from its presleep sources. Since shorter reports are more typical of the first REM period, it was believed that the waking-dreaming relationship might be more easily demonstrated with dream reports collected from this period. In addition, Roussy et al. (1996) examined the difference between awakenings made at either 30" or 4' after the first REM burst of the first REM period of the night to

evaluate whether the first seconds of dreaming are initiated by concerns of waking experience or if more lengthy reports (i.e., 4 minutes) might be more elaborate and related to problems or concerns.

Lastly, Roussy et al.'s (1996) judges were female peers of the study's participants rather than clinically trained judges since it was felt that they would be more familiar with the problems and concerns faced by their colleagues and could examine the waking-dreaming relationship at the manifest level at which it first must be broached. The data were therefore analysed by two sets of seven young-adult female judges. One set of judges was used in a within-participant design, the other in a between-participant design. The judges were given, in random order, each of the 64 dreams of the study, along with the presleep ideation collected on that same night from the same participant (the target) and as foils, the presleep ideation collected on the other seven nights from the same participant for the within design and from the other participants in the same experimental night for the between design. For each dream, the judges were to rank the presleep target and the seven foils from 1 (most clearly related to the dream) to 8 (least clearly related to the dream).

In each design, targets were assigned, as a single judge score, the median rank assigned by the seven judges. Following methods developed in the Maimonides dream telepathy studies (Ullman, Krippner, & Vaughan, 1973), a

median rank of 1 to 4 for the target was considered a "hit" and a median rank of 1 a "direct hit". From the binomial distribution for $n = 8$, each participant required at least 7 hits ($p = .5$) or 4 direct hits ($p = .125$) to show a significant association of her dreams with their targets. Likewise, across participants, at least 7 of 8 participants would have to achieve significant dream-target matches for there to be a significant group effect.

Roussy et al. (1996) found that no participants in either the within or the between-participant analyses had direct hits in excess of chance. Two participants in the within-participant analysis and three in the between-participant analysis had successful target-dream matches (hits) in excess of chance. Overall, however, the authors concluded that "neither the within-participant or between-participant analysis produced a significant trend across participants for successful dream-target matches" (p.126). They also found that judge matching was not significantly different in the two different waking ideation conditions (TS vs SC) nor were they significantly different for the 30" vs 4' awakening conditions. They were therefore unable to replicate the Rados & Cartwright (1982) finding that Thought Samples allowed significant case by case matching with REM dream content. They also were unable to observe a significant general trend toward the successful matching of presleep samples with dreams.

Roussy et al. (1996) conducted a content analysis of participants' presleep

ideation and of their REM dreams, in the hopes of supplying a possible explanation for the judges' failure in the matching tasks. Results indicated that over half of the presleep samples (50.9%) were classified as day-to-day living concerns such as academics and finances whereas only a quarter of the dreams (25%) fell into this same category. Two interpersonal themes categories (female/general and male), on the other hand, were less common in presleep ideation (22.5%) than in dreams (43.8%). They concluded that although dreams reflect waking life experience, they do so on a different basis, or following a different agenda, than do presleep concerns or random thoughts. Main dream themes revolved around interpersonal situations whereas those for presleep were mostly day-to-day living concerns.

They were therefore unable to replicate, either within a participant across occasions or across participants, the suggestion from the data of Rados & Cartwright (1982) that dreams continue the processing of thematic material that occurs in presleep relaxed wakefulness. Nor did they find that dreams systematically dealt with waking concerns identified by the dreamer as having been salient in recent days. "Our dream data, which are confined to early moments of the night's first REM period, suggest that the nightly REM-dream process does not accord initial priority to either sort of waking ideation. REM dreams may, sooner or later, come to reflect current waking situations or preoccupations, but they don't seem to be initiated specifically to work them through" (Roussy et al.,

1996, p.129). This study simply failed to show that one can predict, from presleep mentation/concerns, which particular waking life events will appear in 1st REM dreams. It is more likely that dreams are composed of elements that come from waking life in a much more general and unpredictable fashion.

In light of these findings, concerns were raised as to the feasibility of finding a predictable relationship between dreams and waking ideation with such a design. One particular concern was whether the ranking task was structured in such a way that would allow the judges a reasonable chance for making successful matches. As a result of this particular critique, Roussy, Brunette, Grenier, Lortie-Lussier, & De Koninck (in press) conducted a dream diary study with a refined ranking task as well as two exploratory matching tasks. It was believed that those dreams remembered by participants in the morning could be those dreams that have content which resembles daily waking concerns. It was also thought that shorter, less complex judging tasks would facilitate waking-dream matches.

Roussy et al. (in press) collected six daily event descriptions (DE) and six corresponding morning dream reports (DR) from each of 13 young-adults. In a within-participant matching task, 14 untrained undergraduate student judges attempted to pair 6 DEs to 6 corresponding DRs for each of six participants. In a between-participant matching task, the same judges attempted to match 6 DEs from different participants to their respective DRs. In both these tasks, judges

were unable to make correct matches at a level significantly better than chance. In a ranking task, two different judges read one DE and 6 DRs and then ranked the dreams from 1 to 6, 1 being most likely to be related to the DE and 6 being the least likely. Rather than using the "direct hit" and "hit" method of their first study (Roussy et al., 1996) to analyse the data, Roussy et al. (in press) performed t-tests to examine whether dreams would be given better ranks (a rank closer to 1) when they were the correct match than when they were not. Results of these analyses indicated that dreams did not receive better ranks when they were the target match. These data seem to demonstrate that there is no clear resemblance between daily events and the manifest content of dreams, casting doubts on the notion that they are closely related. This study suggests that continuity is not necessarily based on immediate waking experience. It does not, however, rule out the possibility that continuity is present but in a more general and broad fashion than has typically been portrayed.

Current Study

The current study was designed to further explore the relationship of waking life to dreams. From the literature, one discovers that it is widely accepted that waking experience and ideation serve as the material for dream construction. There is, however, disagreement as to which aspects are incorporated and whether it is possible to predict which elements will enter the dream when one has prior

knowledge of the dreamer's waking life. The goal of this study, therefore, was to examine whether it is possible to predict which elements or events of waking mentation become part of the dream. This study was designed similarly to Roussy et al. (1996)'s study but with certain important modifications. The most important changes included the expansion of the Thought Sampling procedure in order to cover the entire day rather than only the few minutes before sleep onset as in both the Rados & Cartwright (1982) and the Roussy et al. (1996) studies. Also, since this last study did not find significant results using only dreams from the first REM period, the current study used dreams which were collected from all REM periods in order to provide the judges with a more diverse sample of dreams upon which they could base their matches.

Taking into account the observation of the Roussy et al. (1996) study that matches between presleep ideation and dreams were successful for some participants but not for others, it was decided to add a personality measure to explore the possibility that certain characteristics or traits may explain why some persons' dreams may be more easily matched to their waking lives than others'. The Hartmann Boundary Questionnaire (HBQ; Hartmann, 1989) is a personality measure which helps describe the type of boundaries a person maintains. Hartmann's Boundary theory describes two extreme types of personalities. Thickness of boundaries is measured by the degree to which mental processes are

kept separate or distinct from one another. Thinness on the other hand is measured by the degree of overlap or blending between mental processes (Cowen & Levin, 1995). When linked to personality, the thick or solid boundary type is a person who is said to be thick-skinned, rigid, and well-defended. This type of person does not disclose easily to others and tends to see things as black or white. At the opposite end of the spectrum is the thin or permeable boundary type. Such people tend to be very sensitive, open and therefore vulnerable. They tend to experience various thoughts and/or feelings at the same time and see most things as being a shade of grey.

Thickness of boundaries would therefore encourage a strong distinction between waking and dreaming cognition. The thick boundary types would be those who tend to daydream very little and to keep their waking life very separate from their dreaming life. On the other hand, thinness of boundaries would imply a much more fluid distinction between waking and dreaming cognition. The thin boundary types would be those who daydream a lot, who often engage in fantasy and who often recall their dreams. In fact, Hartmann (1991) reports that thinness is strongly correlated to a high frequency of dream recall ($r = .40, p < .0001$). He explains this phenomenon as being due to the fact that dream recall requires crossing a boundary. It is like transporting an experience from one state into another, and thinness of boundaries would favour this type of activity. Hartmann

(1991) also found that dreams of those considered to have thin boundaries tend to be significantly more vivid, detailed, emotional, as well as to involve more interaction between characters. If, in fact, dream recall requires crossing a boundary, perhaps incorporating waking life into dreams also requires crossing a boundary. If this is so, one would expect thin boundary types to demonstrate a greater relationship between waking ideation and dreams.

Another exploratory modification from the earlier study was the addition of a morning interview based on those performed by Cavallero (1987). These interviews were added to compare the ability to predict which elements get into dreams (i.e., from the day interviews) with the dreamer's ability to explain the dream sources after the fact, and thus to provide supplementary information for the evaluation of waking-dreaming relationships.

Hypothesis and Predictions

The study was designed to contribute to our understanding of the relationship between waking and dreaming. Based on the hypothesis that dream construction relies mainly on the preceding day's psychological content, it follows that it should be possible to match dream reports to a broad sample of waking ideation and concerns from the preceding day. More specifically, it can be predicted that:

1. judges will attribute, in a ranking paradigm, significantly better ranks

(closer to 1) to dreams when they are compared to their preceding day waking ideation descriptions than to foil descriptions;

2. judges will attribute significantly better ranks (closer to 1) to dreams when they are compared to thought samples than to significant concerns; and,

3. judges will match waking ideation interviews to corresponding groups of dreams at better than chance levels.

Methodology

Participants

Sixteen young-adult women were recruited to participate in the study. All were French-speaking University of Ottawa undergraduates, and had been previously screened to ensure vivid and frequent dream recall (see Appendix A). As in Roussy et al.'s study in 1996, women were chosen rather than men on the basis of their greater introspection and conscientiousness (Pagel & Vann, 1992). The group was homogeneous in terms of age, education and daily routine. Participants were initially given a tour of the laboratory facilities and were offered detailed information about the study before signing consent documents. Once consenting to participating in the study, each participant was required to spend 4 nights in the laboratory. These nights were spaced at weekly intervals. Monetary compensation consisted of a standard sum per night with a bonus for completion of the entire study.

Participants were asked to complete a french version of the Hartmann Boundary Questionnaire (Hartmann, 1991) which was translated by Roussy, Lortie-Lussier, & De Koninck (1998) before commencing their first experimental night and once again after having completed all four nights (see Appendix B). This test-retest format was used to establish the reliability of this measure.

It should be noted that only 13 participants completed the study. Two participants experienced difficulty sleeping on their first two nights, spending most of their sleep time awake or in stage 1. They were therefore unable to provide adequate opportunity for dream sampling. The third participant successfully completed two nights but had difficulty sleeping on the third night due to illness. She withdrew from the study after this third incomplete night.

Data Collection and Measures

Standard polysomnographic EEG, EOG, and EMG measures were taken with the use of Grass gold cup electrodes. A Nihon Koden (EEG-431B) polygraph calibrated to 7mm/50uV, with paper speed at 10mm/sec. recorded all polysomnographic data. EEG was recorded using the 10/20 electrode placement system (Nuwer, 1987) from sites C3 and C4 referenced to mastoid sites. EOG and EMG were recorded as recommended in the Rechtschaffen and Kales (1968) standardization manual, i.e., EOG from electrodes placed in infra-orbital and supra-orbital positions, and EMG recorded from electrodes placed under the

participant's chin. One electrode was also placed on the forehead to serve as ground.

On two of the four nights, preparation for standard polysomnographic recordings was followed by the collection of waking ideation. The Significant Concern condition was similar to the Roussy et al. (1996) study, however, the experimenter did not conduct the SC interview as in the previous study. Rather, participants were asked to go into their individual sleep rooms by themselves to privately record on micro-cassette the five significant concerns about which they had been thinking the most in the past two days. They also described the nature and status of each of these concerns. After completing this private interview, they placed their micro-cassette into a sealed transcription box. The cassette was therefore heard only by the transcriber at a later date, and experimenters conducting REM awakenings had no knowledge of the content of the interview. To ensure that the interview was done correctly, however, the experimenter went through the procedure once with each participant on a practice basis. These modifications from the methodology used in Roussy et al.'s (1996) study were intended to reduce the self-consciousness felt by participants when revealing intimate information concerning their waking lives to experimenters who would then be awaking them during the night.

On the other two nights, the Thought Sampling procedure was used. In

the Roussy et al. (1996) study, participants had their thoughts sampled before bedtime following the methods of Foulkes & Scott (1973). Here, participants had their waking ideation sampled throughout the day following methods similar to those of Brewer (1988). From the time participants awoke at home, they wore a small pager and carried a micro-cassette recorder with them at all times. The experimenter signalled the participant at random, five times throughout the day, avoiding, however, any exceptionally inconvenient times which had been previously agreed upon. When the participant received a pager beep, she recorded on micro-cassette what thoughts were going through her mind and what activities she was engaged in at the time of the signal. Upon her arrival at the laboratory in the evening, she was asked to place her micro-cassette in a sealed transcription box. Again, this cassette was only heard by the transcriber at a later date and, therefore, participants were ensured that experimenters were blind to the content of this cassette while performing the REM awakenings.

The modifications of the earlier study's TS procedure served two purposes. The major modification of sampling the entire day rather than the moments before sleep onset, as in the Roussy et al. (1996) study, was designed to capture a greater array of the waking ideation that may enter dreaming life. One disadvantage of this change is that the SC and TS interviews were no longer done at the same time of day. This disadvantage, however, was believed to be compensated for by the

fact that both the SC and TS interview now covered waking activity occurring in much more similar lengths of time (i.e., SC covers the last two days and TS covers the past day rather than only the last 20 minutes of the day as in the earlier study). It should therefore be possible to compare the two. A second modification was that participants were assured that the experimenters were blind to their waking ideation when awakening them in REM sleep. This was believed to ensure a lower level of defensive self-consciousness.

Participants were awakened from all REM periods to obtain a wider variety and greater number of dreams which may have used waking ideation as sources. Also, the awakenings were not made at 30" and 4' minutes into the REM period, since no significant difference was found between these variables in the past study. Rather, awakenings for REM dream reports were made at 5, 5, 10, 15 and 20 minutes after the first REM burst of each successive REM period. Criteria for determining the start of a REM period were consistent with those described by Rechtschaffen & Kales (1968): a sudden drop in EMG, low voltage mixed frequency EEG resembling stage 1 as well as the appearance of REMs. Participants were awakened by speaking their name into an intercom and were asked to describe what was going through their minds before the signal. The dream report was tape recorded for later transcription and edited to eliminate extraneous material (i.e. sighs, commentary on the report) and stylistic clues to

personal identity. After the collection of three REM dream reports, participants were no longer awakened.

Upon rising in the morning, participants were allowed to shower and dress before being interviewed. The morning interview, which is based on similar night-time interviews by Cavallero (1987), consisted in playing each dream reported during the night by the participant in order for her to identify if any of the objects, persons, events or locations in the dream could be related to her waking life. If waking temporal references were made, the participant was asked to specify when she last experienced or thought of this event, location, person or object. This procedure was repeated for each major component (event, location, person or object) of a dream and for every dream of the night. The morning interview was also tape recorded for later analysis.

Overall Recall Data

Data collection yielded 12 dream reports for each participant, for a grand total of 156 dreams. The overall dream recall rate was of 88%, with the lowest rate being for awakenings in the first REM period (64%), and all other REM periods being 94% or higher. Recall rates varied from 71% to 100% for individual participants and from 85% to 93% for the various nights.

Each waking ideation sample (TS or SC) was composed of five separate samples or concerns and, therefore, should have yielded a total of 260 waking

ideation samples (130 TS and 130 SC). A total of 124 Thought Samples was obtained, however, due to participants occasionally ignoring their pages. A total of 129 Significant Concerns were collected (1 participant only recorded 4 concerns on one of her nights). The total number of waking ideation samples was, therefore, 253.

Data Analysis

Three judging methods were used, namely: a within-participant ranking task, a within-participant matching task and a between-participant matching task. For all three tasks, student peers served as judges. It should be noted, however, that they were not aware of the identity of the dreamers, nor were the dreamers aware of the identity of the judges.

Ranking Task

The within-participant ranking task was developed based on those used in the Roussy et al. (1996); and Roussy et al. (in press) studies. As will be described below, the current study's ranking task combined the structure used by Roussy et al. (1996) (having judges rank dreams as they believe them to be related to waking ideation) but the analysis method for the ranks used by Roussy et al. (in press) (examining whether targets received ranks closer to 1). In addition, the current study also looked at the ranks attributed to foil dreams in order to establish a contrast between ranks given when a dream is the target and when it is not.

In the current study's within-participant ranking task, two female student peers served as untrained judges. They were presented with 24 items (12 based on TS and 12 based on SC). To have an even number of participants in each condition, one of the 13 participants was randomly eliminated from this analysis. There were, therefore, 6 participants for whom the items were created from their TS data (2 items each) and 6 for whom the items were constructed from their SC condition (2 items each). For each item, judges had to read the waking ideation sample for one night (WI) for one participant and the four dream sets (DS) for this same participant. The judges then had to rank these 4 DS from 1 to 4 as they believed them to be most likely related to the WI (1) or least likely related to the WI (4). Since there were only two nights in the study for each waking ideation condition, there were two items per participant (2 TS items for 6 participants and 2 SC items for the other 6 participants). It was therefore possible to look at the rank given to a particular dream set when it was the target and when it was not. It was hypothesized that a DS would receive a rank closer to 1 when it was the target. It was further believed that target dreams would be attributed significantly better ranks (closer to 1) when they were compared to thought samples than to significant concerns. The instructions for judges and sample items for the ranking task are included in Appendix C (see Appendix C).

Matching Tasks

The matching tasks were used by Roussy et al. (in press) as an alternate method of analysis. It was felt that perhaps it would be easier to match waking and dreaming samples together in a forced matching composition rather than simply having them rank dreams in comparison to a single waking ideation sample. As will be further described below, the within-participant matching task presents the waking ideation and dreams of one participant across her four nights. It was hoped that the variety of the waking and dreaming samples across the four weeks of the study would be sufficiently varied to allow for significant pairing of the waking ideation to the dream reports. Similarly, the between-participant matching task used waking samples and dream reports from different participants. This design was theoretically believed to be the easiest of the judging duties since the individual differences of each participant might permit a more obvious waking-dreaming match. Further, a similar between-participant matching paradigm was used by Rados & Cartwright (1982) in their study which found successful waking-dreaming matches.

In a within-participant matching task, ten student peers served as judges for 13 items (1 per participant). Each item was composed of the 4 dream sets and 4 waking ideation samples of one participant. Judges were asked to match each DS with one of the WI, thus making 4 pairs for each item. Appendix D contains a

copy of the instructions for judges and a sample item for the within-participant matching task (see Appendix D).

These same ten students served as judges in the between-participant matching task. Since an even number of participants was required for construction of the between-participant items, one of the 13 participants was again randomly dropped from this analysis. The judges were, therefore, presented with 12 items which were composed of 4 dream sets from different participants and the corresponding waking ideation samples. Their task once again was to make 4 pairs for each item.

Content Analysis and Bizarreness Analysis

In the Roussy et al. (1996), two post hoc analyses were conducted to obtain further information as to why the judging tasks were unsuccessful. Their finding that presleep ideation and dreams were thematically different was used as an explanation for their lack of significant results. Further, they assessed the bizarreness of their dream reports to examine whether the dreams were so bizarre that it would cloud the relationship with waking life. These same analyses were conducted for the current study with the aim of providing supplementary information on the waking and dream samples. It was felt that these analyses would be helpful in explaining either significant or nonsignificant results. Firstly, all waking ideation interviews and REM dreams were content analysed to

determine if waking ideation and REM dreams share similar content or if they differ in certain thematic areas. Secondly, a bizarreness analysis was done on the dreams and waking data, using a modified version of Hobson, Hoffman, Helfand, & Kostner's (1987) method.

Word Count

The word count analysis served two purposes. Firstly, it was performed to establish the comparative value of our dream report sample. Secondly, it was used to assess whether dream length changes as a function of the different REM periods. As mentioned earlier, the dream reports were edited to eliminate extraneous material (i.e., sighs, ums..). The length of the dream reports was then calculated by counting the total amount of words. A total word count was done for all REM dreams using the word processing word count function.

Hartmann Boundary Questionnaire

The Hartmann Boundary Questionnaires were scored using the Boundary Questionnaire Score Sheet (Hartmann, 1991, pp.94-95). The scores on the HBQ were calculated to describe our participant sample in terms of this personality variable. The test-retest comparison was calculated to establish the reliability of this measure across time.

Morning Interview

As mentioned previously, the morning interview was included as an

exploratory measure to assess the temporal references in the dream reports. It was felt that this additional information could help illustrate the waking-dreaming relationship. The morning interviews were transcribed, and each identified temporal reference was coded based on a preliminary version of the Grenier Temporal Reference Scale (GTRS) which has now been modified by Grenier et al. (1998) (see Appendix E). Since this was a preliminary version, no validation data were available on this measure.

Results

Dream Recall by Awakening Position

Table 1 shows the distribution of REM periods from which dreams were reported. In general, approximately 60% of the ordinally-arranged dream reports were collected from the corresponding REM period (see Table 1). Alternately, Table 2 depicts the number of dreams reports collected from each REM period (see Table 2). Overall, 85.3% of the dreams were collected from the first three REM periods. Subsequent analyses were conducted using REM periods rather than REM reports.

Ranking Task

For the ranking task, the data were analysed with a three-way mixed ANOVA (2 judges - between, 2 waking ideation conditions: SC & TS - within, 2 dream conditions: target & non-target - within). Using an alpha level of .05, all

three main effects and interactions were found to be nonsignificant. The analysis therefore revealed that there were no significant differences between ranks given to dreams when they served as targets and ranks given when these same dreams served as foils, and this in both the TS and the SC conditions, as well as by both judges. Figure 1 illustrates the three-way interaction of Dream x Waking x Judges (see Figure 1).

Within-Participant Matching Task

In the within-participant matching task, a chi-square test on the observed vs expected frequencies for matching 0, 1, 2, or 4 out of the possible 4 matches revealed that the results were not significantly different from those expected by chance (see Table 3). Table 3 also shows that separate chi-square tests revealed that none of the 10 judges taken individually was able to match at better than chance levels. As shown in Table 3, multiple chi-square tests were also conducted on each of the 4 separate matching possibilities. Once again, the tests indicate that the results are no different from those expected by chance. Figure 2 illustrates these findings (see Figure 2).

Descriptively, only 143 of the possible 520 items (4 per task * 13 tasks * 10 judges) were correctly matched, giving a global matching rate of 28%. Table 3 also shows that on average, judges paired from .92 to 1.46 items per participant. Of the 10 judges, the average number to correctly match any one item was 2.75

(approximately a quarter). Interestingly, only 5 items were matched by 5 judges, 2 by 6 judges and 3 by 7 judges. No items were correctly matched by more than 7 judges. Overall, only 10 of the 52 items were correctly matched by half or more of the judges, which makes it seem unlikely that many of the dreams were easily matched to their presleep target.

A correlation coefficient of $r = .08$ reveals that on average the judges were not in agreement on their within-participant matching decisions, corroborating the fact that very few of the items were matched by more than half the judges.

Between-Participant Matching Task

The results are quite similar for the between-participant matching task. A chi-square test on the observed vs expected frequencies for matching 0, 1, 2, or 4 out of the possible 4 matches revealed that results were similar to those expected by chance (see Table 4). As shown in Table 4, separate chi-square tests once again revealed that none of the 10 judges taken individually was able to match at better than expected levels. The results of multiple chi-square tests conducted on each of the 4 separate matching possibilities indicated results no different from those expected by chance. Figure 3 illustrates these findings (see Figure 3).

Descriptively, only 157 of the possible 480 items (4 per task * 12 tasks * 10 judges) were correctly matched, providing a global matching rate of 33% which is only slightly better than the within-participant matching rate. Table 4 also shows

that, on average, judges paired from .75 to 1.83 items per task. The average number of judges to correctly match any one item was 3.27 (approximately 33%). Overall, 7 items were matched by 5 judges, 3 by 6 judges, 3 by 7 judges, 2 by 8 judges and 1 by all 10 judges. In sum, 16 of the 48 items (33%) were correctly matched by half or more of the judges.

A correlation coefficient of $r = .14$ reveals once again that, on average, the judges were not in agreement on their between-participant matching decisions.

Clinical Psychologist Judging

Due to the failure of the non-clinically trained judges at these tasks, and considering the significant results established by Rados & Cartwright (1982) with clinical psychologists serving as judges, post hoc analyses were performed with a clinical psychologist (involved in dream research) serving as judge. For the ranking task, the data were analysed with a three-way mixed ANOVA (3 judges: 2 naive & 1 clinical - between, 2 waking ideation conditions: SC & TS - within, 2 dream conditions: target & non-target - within). Using an alpha level of .05, all three main effects and interactions were found to be nonsignificant. The analysis therefore once again revealed that there were no significant differences between ranks given to dreams when they served as targets and ranks given when these same dreams served as foils, and this in both the TS and the SC conditions, as well as when evaluated by naive and clinical judges. Figure 4 illustrates the three-way

interaction of Dream x Waking x Judges (see Figure 4).

In the within-participant matching task, a chi-square test on the observed vs expected frequencies for matching 0, 1, 2, or 4 out of the possible 4 matches revealed that the clinical psychologist did not obtain significantly more matches than would be expected by chance $\chi^2(3) = .68, p = .88$. Descriptively, the clinical psychologist was able to match 21 of the possible 52 matches (4 * 13 participants) for a matching rate of 40%. She was able to complete 4 matches for 2 of the participants, and make 2 for another 6 participants. For one other participant, only 1 match was made and no matches were completed for the remaining 4 participants.

In the between-participant matching task, the observed number of matches by the clinical psychologist was once again not significantly different from that expected by chance, $\chi^2(3) = 1.59, p = .66$. Descriptively, the clinical judge was able to combine 26 or 50% of the possible 52 matches, was able to make at least one match for all participants, and completed 2 matches for 8 of the participants. For two other participants, she was able to complete all 4 matches.

Content Analysis

One judge first sorted participants' 253 thought samples or significant concerns into 14 life-experience categories (i.e., academics, jobs, family) modified from the Roussy et. al (1996) study. A second judge agreed with 232, or 83% of

these placements; the remaining discrepancies were reconciled. The two judges also classified the 156 dream reports into these same thematic categories. Initial agreement on 138, or 89% was achieved, and once again remaining discrepancies were reconciled. Figure 5 presents the overall distribution of presleep and dream reports into the 14 content categories (see Figure 5).

Table 5 illustrates in italics how day-to-day living concerns, which included academics, finances, jobs, and living arrangements, were scored for nearly half of the waking ideation samples (45%), but much less often in dreams (20%). The two interpersonal theme categories combined with the family category (in bold) were, however, more common in dreams (40%) than in presleep ideation (29%) (see Table 5).

Temporal References

During the morning interviews, participants were able to identify temporal references for at least one of their dream elements for 150, or 96%, of their 156 dreams. It should be noted that although participants were asked to identify when they last experienced or thought of the events, persons or objects in their dreams, no further distinction was made between these two aspects. The temporal references given by the participant therefore refer to either the last time they experienced or thought of the elements in the dream. The participants identified 49% of their dreams as containing at least one source which stemmed from earlier

than the previous day. As shown in Figure 6, the "earlier this evening" and "past day" categories represented 17.8% and 47.4%, respectively, of all identified temporal references. The "day before" category represented 9.8% and the "past week" represented 17% of temporal references. The other 7 categories represented less than 3% each of all remaining references. (see Figure 6).

Bizarreness Analysis

Two judges scored participants' 156 dreams for "bizarreness" (impossibility, improbability, incongruity, and discontinuity) following criteria modified from Hobson et al. (1987). Two original raters were in complete agreement in scoring 155 of the dreams. The one discrepancy was resolved by a third blind judge. Overall, 239 bizarre elements were identified in the dreams. The vast majority of these elements, however, were classified as either improbabilities (59%) or discontinuities (23%), which are considered to be a lesser degree of bizarreness than the two other categories, incongruity (9%) and impossibility (9%). Overall, 52 (33%) of the dreams contained no bizarreness whatsoever and 106 (70%) had either no bizarre elements or only improbable or discontinuous elements. An ANOVA revealed that dream reports from the three first REM periods (REM1, REM2, and REM3) differed significantly in terms of the average number of bizarre elements, $F(2, 24) = 10.50, p = .001$. Post Hoc analyses showed that REM1 dream reports ($M = .61$) were significantly less bizarre than

both REM2 dream reports ($\underline{M} = 1.44$), and REM3 reports ($\underline{M} = 1.90$). No significant differences in bizarreness were found between REM2 and REM3 dream reports. However, planned comparisons did indicate a linear trend of increasing bizarreness as the night progressed, $\underline{F} (1, 12) = 15.02, p = .002$.

The waking ideation samples were examined by one of the two previous judges. No bizarreness was found in any of the Significant Concerns or Thought Samples.

Word Count

Average dream report length was found to be 92.9 words with the shortest dream report having only 7 words and the longest 419 words.

An ANOVA was performed to determine whether the length of dream reports varied as a function of REM period. Only the data from the three first REM periods was considered in this analysis since only 15% of the dreams were from REM 4 or REM 5. Dream report length was found to be significantly differentiated among the three first REM periods, $\underline{F} (2, 24) = 9.10, p = .001$. Post hoc analyses revealed that REM1 dream reports ($\underline{M} = 54.02$) were significantly ($p < .01$) shorter than REM3 dream reports ($\underline{M} = 111.67$) but not shorter than REM2 dream reports ($\underline{M} = 86.88$). No significant differences were found between REM2 and REM3 reports. Planned comparisons, however, did indicate a significant linear trend with length of dreams increasing as the night progressed, $\underline{F} (1, 12) =$

15.61, $p = .002$.

A comparison was made between the results of the word count and bizarreness analyses. Table 6 illustrates how both the average number of bizarre elements and the average number of words per dream report increase linearly as a function of REM period (see Table 6). In order to examine if these two variables were related with one another, correlations were computed. Results indicate that bizarreness and dream report length are significantly correlated at $p < .05$ in REM1 $r = .70$ and REM3 $r = .74$, but not in REM2 $r = .12$.

Hartmann Boundary Questionnaire

Initial administration of the HBQ revealed that 7 of the 13 participants could be classified as having overall boundary scores (SumBound) in the thin range of the HBQ norms, 5 out of the 13 as being in the average, and only one of the 13 as having thicker boundaries. A retest administration at the end of the experiment showed that 9 of the 13 participants were in the thin range, 2 were in the average and 2 were in the thick norm range. As shown in Table 7, a t-test comparing the initial SumBound scores and retest SumBound scores was non-significant (see Table 7). Category 1 scores (sleep related boundaries) also did not differ from initial testing to retest.

Overall, more than half of the participants can be described as having thin boundaries. One participant (S3) had particularly low (thick) scores on both

occasions (232 and 220) and another (S10) had particularly high (thin) scores (438 and 446). Interestingly however, such a difference did not seem to have any impact on judge matching since in the between-participant matching task, judges paired 14 of the 40 items for S3 and 10 of the 40 for S10. In the within-participant task, which should have been particularly difficult for S3, judges were able to match almost as many (10 of the 40) for S3 as for S10 (11 of the 40). Thinness or thickness of boundaries therefore does not seem to have had any effect on judge matches.

Discussion

Summary and Integration of Results

Prediction 1

Judges will attribute, in a ranking paradigm, significantly better ranks (closer to 1) to dreams when they are compared to their preceding day waking ideation descriptions than to foil descriptions.

Prediction 1 was not confirmed. The results indicated that judges were unable to attribute ranks closer to 1 to the target dreams than to the foil descriptions.

Prediction 2

Judges will attribute significantly better ranks (closer to 1) to dreams when they are compared to thought samples than to significant concerns.

Prediction 2 was not confirmed. There were no differences in the judges'

ability to rank dreams when their judgement was based on the Thought Sample condition than on the Significant Concern condition. Although this prediction was not confirmed, it was thought initially (Prediction 1) that there would be successful ranking of dreams on the basis of the waking ideation samples. Since this was not the case, the current finding illustrates that neither the SC nor the TS allowed for better ranks for target dreams.

Prediction 3

Judges will match waking ideation interviews to corresponding groups of dreams at better than chance levels.

Prediction 3 was not confirmed. Judges in both the within and between-participant matching tasks were unable to match waking ideation samples to dreams at levels significantly different from those expected by chance. In both cases, only about a third of the items were correctly matched, and few items were correctly matched by the majority of the judges. Furthermore, the correlations between judge scores indicate little agreement in their matching decisions. It therefore seems likely that most of the correct matches were a result of random processes. In fact, it appears that the dreams were particularly difficult to pair with their respective waking ideation conditions since very few of the items were obviously and easily matched.

Integration of Main Findings with Past Literature

Overall, these findings are consistent with the Roussy et al. (1996) as well as with the Roussy et al. (in press) study and provide further evidence that it is not possible for non-clinically trained judges to match REM dream content with the preceding day's waking ideation. Furthermore, they once again are inconsistent with Rados & Cartwright's (1982) finding of successful blind matches of reports of presleep mentation with subsequent REM dream reports.

Additional Findings

Clinical Psychologist Judging

The clinically trained psychologist was also not able to attribute better ranks to target dreams or make matches at better than chance levels. It does not seem that her expertise was of any help in the judging tasks. In fact, the clinical judge spontaneously commented that she found the tasks extremely difficult and exhausting as she tried in vain to find some means of linking the waking ideation samples with the dreams. This finding is in contrast with the Rados & Cartwright (1982) report that clinically sophisticated judges were better able to make waking-dreaming matches. In the current study, it was found that a clinically-trained judge had slightly better matching rates (40-50%) than the "naive" judges (28-33%), yet she was not significantly successful in her attempts to rank or match dreams with the daily events, thoughts or concerns.

Content Analysis

Although waking ideation samples and dream reports can be classified into the same 14 life-experience categories, the content analysis clearly illustrates that the waking samples are quite different from the dream reports. The waking ideation themes are overwhelmingly centred on day-to-day living concerns such as academics, finances, jobs and living arrangements, whereas these same themes are only present in one fifth of the dreams. On the other hand, dreams often include interpersonal situations and family themes which are less often found in the waking ideation reports. It therefore seems that although dreams are just as likely to reflect waking life experience as are waking ideation samples, they are not necessarily focussed on the same life experience themes. This finding is useful in explaining the failure of the judges to succeed at the matching and ranking tasks. One cannot expect matches of samples with very different content.

The results of the current study's content analysis are quite similar to the Roussy et al. (1996) findings. In both cases, dreams were more likely to be filled with interpersonal situations and waking ideation samples were more representative of day-to-day concerns. Although the distribution of waking ideation and dreams in the various categories is very similar to the past study, some differences are worth mentioning. Firstly, the jobs theme was twice as likely to appear in both the waking ideation and dreams of the present study as compared

to the earlier study. Also, the academics theme was less present in the waking samples and dreams of the current study. These differences could be due to the fact that the first study was conducted mostly during the academic year whereas the present study was held during the summer. It is therefore evident that the types of activities or lifestyle of participants directly influence one's waking concerns but perhaps also have an impact on the content of dreams. Such an influence, however, was not sufficient to permit successful waking-dreaming matches in either study. Also, the first study found no differences between dreams and presleep reports for the interpersonal male category, whereas the present research found twice as many interpersonal male themes in the waking ideation samples than in the dreams. Although the presleep rates are similar (13% and 11.2%), the current dreams had half as many incorporations (6%) of interpersonal male themes than the past study (12.5%).

The content analysis of the waking ideation samples and dreams is also quite similar to a study by Saredi, Baylor, Meier, & Strauch (1997). Although Saredi et al.'s 11 content categories are slightly different from those of the current study, some comparisons can still be made. For example, the combination of family and living arrangements categories of the present study can be compared to the family and home category of Saredi et al. Overall, when the various categories are compared, only a few differences emerge. In the present sample, the

interpersonal(female/general) category was a theme in 24% of the dream reports whereas the comparable friends category from the previous study represented only 16% of their dreams. It also seems that the participants in the current study were much more concerned with jobs and finances (27% of waking ideation samples) than were those of the past study (10% of current concerns). Such differences, however, are sufficient to account for the fact that Saredi et al. (1997) did not find any important differences between dreams and presleep concerns in terms of content. Day-to-day living concerns (employment, money and education) were just as evident in presleep (20%) as in dream samples (21%), and interpersonal situations (family, home, friends, love and sex) were found as often in presleep reports (33%) as in dreams (36%). These differences could perhaps be explained, however, by a sampling difference. The dreams in the current study were collected from females, whereas those in the Saredi et al. study were from males. Research has demonstrated that there are some differences in dream content between males and females. For example, Winget, Kramer, & Whitman (1972) found that women's dreams contained more home and family themes, as well as more friendly interactions. Strauch & Meier (1996) found that women "preferred a more familiar social environment than did the men, who were more frequently alone or associated only with strangers"(p.196). Such differences could possibly explain why dreams in the present study contained more interpersonal themes than those

of Saredi et al. (1997).

As for the laboratory/sleep concerns category, the current study found over six times more laboratory incorporations in the dream reports compared to the waking ideation samples. Apparently, the participants were not frequently voicing concerns about the laboratory situation in the waking ideation samples (3%) but were incorporating such elements into one sixth (17%) of their dreams. This rate of laboratory incorporation seems quite high when compared to the Roussy et al. study (6.2%) and the Saredi et al. study (8%) but is quite similar to the laboratory incorporation rate (16.1%) reported by Strauch & Meier (1996).

Overall, it seems that the content analysis findings of the present study are consistent with those of the Roussy et al. (1996) study, but differ slightly from that of Saredi et al. (1997). The development of a standardized content analysis system would be useful in drawing more precise comparisons between studies. The current study found important differences between dreams and waking ideation samples, and these differences may in fact help to explain why the waking ideation samples are difficult to match to their respective dream reports.

Temporal References

The fact that participants were able to identify temporal references to the great majority of their dreams indicates that many dream elements are in reality linked to the dreamer's waking life. Furthermore, the finding that 64.2% of all

elements were identified temporal references stemming from the "earlier this evening" or past day" categories, is consistent with the existing literature on day residues. For example, Botman & Crovitz (1990) found that about half of their dream reports contained day residues. As summarized by Nielsen & Powell (1992), relative proportions of incorporations for days 1 and 2 prior to the dream were 64% and 36%, respectively, for the Jouvett (1979) study; 65% and 35%, respectively, for the Epstein (1985) study; and 70% and 30% for the Verdone (1965) study. Nielsen & Powell concluded that "dreams are about twice as likely to incorporate events that occurred the day before the dream (65-70%) as they are to incorporate events that originated two days before the dream (30-35%)" (p.70). In their own study, Nielsen & Powell (1992) found similar rates of relative incorporations: 65% for day 1 and 35% for day 2. In the current study, however, relative incorporations from the "day before" or day 2 category were only 13.6% of all identified temporal references. This rate is much lower than the 30-35% which is reported in the above literature.

In the present study, the "past week" category represented 17% of all temporal references. This is consistent with the Verdone (1965) study where 23% of dream reports contained temporal references from the "past week". This finding adds support to what is known as the "dream-lag effect" - the incorporation of events occurring 6 or 7 days prior to the dream which was first

noted by Jouvett (1979). Nielsen & Powell (1988, 1989, 1992, 1995) have conducted several dream-diary studies to test delayed incorporations. In general, they have found support for the "day residue" effect as well as some support for the dream-lag effect. The current findings offer continued support for the notion that day residues are incorporated into dreams and that there is a dream-lag effect for another proportion of dream elements. The present data further extend the Nielsen & Powell findings to include rates for laboratory REM dreams.

Bizarreness Analysis & Word Count

Overall, 70% of the dream sample contained no bizarre elements or only improbable or discontinuous elements. This rate is slightly higher than what was reported by Roussy et al. (1996) and Strauch & Meier (1996). Since the dreams cannot be qualified as overwhelmingly bizarre, however, it is unlikely that it was their bizarreness that made the participants' dreams difficult to match to the non-bizarre waking ideation samples.

The length of dream reports in the current study's sample is consistent with that reported by Foulkes, Spear, & Symonds (1966). The fact that the average number of bizarre elements and average number of words per dream report increase linearly as a function of REM period is quite similar to the previous finding of Hobson et al. (1987) that the number of bizarre items increases linearly as a function of dream length. The present data simply further describe that as the

night progresses, dream reports lengthen and include more bizarre elements.

Hartmann Boundary Questionnaire

It does not seem that thinness or thickness of boundaries had any influence on the matching or ranking by judges. One must then conclude that this personality variable does not offer significant information as to why judges are unsuccessful in such tasks. The test-retest component, however, offers some evidence regarding the reliability of this measure across a few months time.

Theoretical Implications of Findings

The present findings have implications for the existing literature. The question of continuity between waking and dreaming has long been the subject of debate. Although the current study does not demonstrate that there is no relationship between dreams and waking life, it does, however, illustrate that this relationship is not clear and predictable. One does not necessarily dream of one's daily activities or concerns in a predictable fashion although it may occur that dreams contain waking thoughts or problems.

In a recent study which supports this position, Hartmann (1996) found that although we spend a substantial amount of time during the day on activities such as reading, writing and counting, these activities are only rarely found in our dreams. Critiques of such findings and those of the present study may claim that dreams focus more on emotionality and that they will incorporate the dominating emotion

in the dreamer's life. They would posit that in order to demonstrate the waking-dreaming relationship, one would need to be studying events or activities which have emotional value for the dreamer. For example, Cartwright (1996) claims that "It is easier to demonstrate a direct influence of some presleep event on the dream when subjects are in a naturally occurring emotional situation..." (p.180).

However, there is no clear evidence that this is so. While victims of sexual abuse often experience dreams which incorporate themes of the abuse or the negative tone (violence, nightmare) of their trauma, the fact of having such dreams does not necessarily lead to the conclusion that someone was sexually abused.

More specifically, Belicki, Cuddy, Pariak, & Weir (1992) found that raters were not very accurate in trying to identify which dreams belonged to individuals with a history of sexual abuse (psychologists and students were raters). The authors concluded that "In general it would appear that when we shift from careful content analyses to global judgments of nightmare content, there is considerable loss of information. Although nightmare content yields clues to a history of abuse, at present no simple formula exists that will confidently point to such a history" (p.53). Similarly, very complex content analyses or identification of specific temporal references by the dreamer may reveal a relationship between dreams and waking life, but more global judgments cannot be made. Even in the case of traumatic, emotional experiences such as sexual abuse, the relationship between

waking and dreaming is not clear or highly evident. Furthermore, some authors have found that a repressive coping style in some trauma survivors (ie., they do not discuss the subject and consciously avoid the negative sensations of the past) is linked to a lower level of dream recall and better psychological adjustment (Lavie & Kaminer, 1996). How can one then speak of dreams as processing traumatic material in order to attain better psychological adjustment if there is also evidence that the opposite can be the case for other victims? Lavie & Kaminer claim that the dream repression guards sleep, but another option to consider is that the dreams are mirroring waking cognition in the same way Blagrove (1992) discussed Cartwright's (1991) results on divorce - they simply reflect the waking environment in which they live rather than an actual problem solving function. In this sense, dreams may represent the waking life of the dreamer but in some very random, general and non-specific fashion. In this same venue, Siegel (1996) reports that a series of dreams often shows a progression toward mastery as a trauma is resolved. Yet once again, this mastery may simply be a reflection of cognition during waking in a very general sense and may not be due to an adaptive process of dreams. There is no clear evidence that dreams are needed to resolve trauma, and indeed, some traumatized victims do not have traumatic dreams and still adjust psychologically. To what extent are current concerns, activities and emotions incorporated into our dreams and to what extent are these incorporations

meaningful? The current study offers further evidence that there is not necessarily predictable incorporation of waking life into dreams.

One might claim that the incorporations might be transformed and therefore difficult to identify. However, Saredi et al. (1997) found that the majority of their incorporations were in fact direct. Specifically, they found that direct (70.7%) or transformed (26.3%) reference to at least one concern category occurred in 98.1% of dream reports. They also examined whether trying to link presleep thoughts to participants' active current concerns would increase this incorporation. They created a presleep incubation condition where the presleep thoughts were of a specific concern. They found that this presleep incubation (or "activated presleep concern") did not have a significant effect on the number of dreams containing a reference to the incubated concern category. They concluded that "one will dream about one's current concern regardless of whether the dream is preceded by incubation of that concern" (p.206) They noted, however, that only 17.3% of dream texts were references to concern categories. It is therefore evident that a large proportion of the dreams was not centred on the current concerns of the participant. It seems that incorporation of waking life into dreams has its own agenda which is not easily influenced by presleep manipulations.

As far back as Aristotle (Gallop, 1990) the relationship between waking and dreaming was questioned. "Apart from noticing that our waking actions or

intentions commonly feature in dreams, Aristotle barely recognized any connection between our dreams and our emotional preoccupations" (p.9). Rather, he saw dreams as the "work of the imagination" (p.18). He therefore viewed dreams as "a sort of replay of previous waking experience sometimes bizarrely scrambled as a result of physiological disturbance" (p.19). In Hall's (1953) "A cognitive theory of dreams", the author views dreaming as a cognitive process in which "cognition is transformed into a form that can be perceived". He thus illustrates dreaming as a form of thinking that occurs during sleep, a generating of ideas. In 1966, Hall further elaborated that dreams are a projection of the mind. He posited that since one puts one's own feelings and thoughts into the dream story, this projection was not one of reality but rather of "creative expressions of the human mind" (p.9).

More recently, Foulkes (1985) described dreams as involuntary organized mental acts which are similar to thinking. In attempting to illustrate how dreaming is similar to thinking, he compared dream imagery to "the waking situation when thoughts just pop into our (conscious) minds, rather than one in which we deliberately try to organize our thoughts to express some meaning" (p.196). He stated that dream sources consist of memories and knowledge which are acquired through experience. These sources may include information from the prior day or from earlier periods and may at times be important and emotionally impressive knowledge or events, as well as more trivial waking events. In this sense, the

unknown process which is responsible for the construction of dreams uses the various mnemonic elements in a seemingly random and unpredictable manner. It is therefore not possible to predict that we will dream of the dominating emotion in our life or of a particularly stressful event.

Foulkes' view offers an explanation for the inability of judges in the present study to identify dreams with their waking counterparts. He states that "Once we acknowledge that the sources of dreams are mnemonic rather than behavioural, however, the prediction of dream content becomes much more complex. We need to know not just what happened to people, but how they interpreted it, what other knowledge they related to it, and so on. We have to know a lot of their "minds", rather than just a piece of their behaviour or presleep environment" (Foulkes, 1985, p. 198).

Future Directions

The current study provides a replication of the Roussy et al. (1996) and the Roussy et al. (in preparation) studies. The three studies combined have varied dream source (laboratory versus home setting, first REM period versus all REM periods), waking ideation source and method of analyses. These findings suggest that further refinements or replications would likely lead to similar results. If this study were to be replicated, however, some methodological refinements could be proposed. For example, the judging tasks could once again be simplified perhaps

by adding the main themes to both the waking ideation samples and dream reports. However, based on the results from the content analyses, such changes might simplify the judging tasks but would not necessarily produce better results.

The temporal reference interviews were only exploratory and therefore the method used by the interviewers was not standardized. The interviews could be more structured, i.e., having the interviewer use a structured or semi-structured questionnaire such as the Grenier Temporal Reference Scale to obtain more consistent and specific information concerning temporal references. This would allow, for example, the independent identification of references for people, settings and objects.

One could also choose to conduct a similar study with a different age group or with males to make these findings more generalizable within the population. The replication with males would be useful to see if the content analysis differences between the current study and that of Saredi et al. (1997) might be due to sampling differences. Beyond such methodological concerns, however, it is quite likely that attempts to replicate the current study would yield comparable results.

At this point, it would seem more useful to redirect research questions to go beyond predictability. It would be interesting to begin identifying which elements of knowledge and experience are selected to be used as dream sources,

and to describe when, how and at what frequency various elements are used. For example, there may be a difference in the rate at which more recent elements are incorporated as compared with more remote temporal elements. Perhaps temporal references follow a different selection pattern depending on whether they refer to people, objects or situations. It is also possible that individual differences exist as to what elements are allowed to enter the dreaming process.

An example of such a study which could also lead to clinical implications would be to explore further the proportion of dreams and dream elements which incorporate highly stressful or traumatic experiences. It would be interesting to conduct a laboratory dream study of trauma survivors to determine the proportion of their dreams or of their dream elements that actually incorporate their stressful experience. Perhaps trauma survivors do incorporate some aspects of their experience in some of their dreams. However, if the cognitive viewpoint holds true, it is possible that although some of their dreams incorporate the trauma, many of their other dreams may be constructed from the vast number of non-trauma elements available in their memory. Such a study could illustrate that trauma victims spontaneously recall their traumatic dreams, yet do not remember numerous others. Furthermore, morning interviews could be used to ask trauma survivors if they related elements of their dreams to their particular experiences and if so, examine what percentage of elements represent this life experience.

As Foulkes (1985) stated "The particular mnemonic focus with which the dream begins, or upon which it settles, is largely unpredictable. (But randomness is not entirely present here: nagging, central concerns of our waking consciousness are probably more likely to be activated during dreaming than are other mnemonic units.)" (p.151). Various sets of rules or patterns for the activation of particular elements may exist and detailed exploration of the dream sources may help in discovering how these might work.

Conclusion

It seems that the relationship between waking and dreaming cognition is not as obvious and predictable as many theorists have believed. This study supports the cognitive position that dreams seem to randomly integrate elements from waking life (past or recent events, concerns, trivialities). This process does not seem to be systematized and therefore one cannot expect to be able to identify dream sources based on limited knowledge of the previous day's events, thoughts and concerns of a dreamer's life. Rather, dreaming seems to be a form of thinking in sleep, or perhaps as Strauch & Meier (1996) reported, "Dream consciousness might well create a unique experience, a self-contained world of its own, quite apart from the daily flow of thoughts and images" (p. 205).

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Table 1

Distribution of REM periods from which dreams were reported

REM period of Awakening	Awakening condition		
	1st Report	2nd Report	3rd Report
1st REM	57.7%	--	--
2nd REM	38.5%	59.6%	--
3rd REM	3.8%	32.7%	57.7%
4th REM	--	7.7%	34.6%
5th REM	--	--	7.7%

Table 2

Distribution of dreams reports by REM period

REM period	<u>n</u>	Percentage
1st REM	32	20.5%
2nd REM	50	32.1%
3rd REM	51	32.7%
4th REM	20	12.8%
5th REM	3	1.9%
Total	156	100%

Table 3

Chi-square values for the within-participant matching task

	<u>M</u>	<u>SD</u>	df	χ^2
All judges / All matching situations	1.09	1.16	3	.05
Judge 1	1.08	1.19	3	.11
Judge 2	.92	1.26	3	1.25
Judge 3	1.00	1.22	3	.60
Judge 4	1.08	1.19	3	.24
Judge 5	.92	.76	3	.47
Judge 6	1.08	1.19	3	.24
Judge 7	1.46	1.33	3	.52
Judge 8	1.23	1.24	3	.52
Judge 9	1.00	1.29	3	.51
Judge 10	1.08	.95	3	.35
All Judges / 0 Matches	-	--	9	.22
All Judges / 1 Match	-	--	9	.58
All Judges / 2 Matches	-	--	9	.27
All Judges / 4 Matches	-	--	9	.66

Note: Values are not signif. at $p = .05$. Critical χ^2 value at $\alpha = .05$, $3df = 7.81$, $9df = 16.92$.

Table 4

Chi-square values for the between-participant matching task

	<u>M</u>	<u>SD</u>	df	χ^2
All judges / All matching situations	1.31	1.11	3	.09
Judge 1	1.33	1.15	3	.04
Judge 2	1.83	1.53	3	.20
Judge 3	1.33	.89	3	.08
Judge 4	1.33	1.23	3	.04
Judge 5	1.42	1.00	3	.11
Judge 6	1.00	.95	3	.04
Judge 7	1.42	1.38	3	.37
Judge 8	.75	.87	3	.21
Judge 9	1.58	1.38	3	.31
Judge 10	1.08	.67	3	.31
All Judges / 0 Matches	--	--	9	.62
All Judges / 1 Match	--	--	9	.59
All Judges / 2 Matches	--	--	9	.77
All Judges / 4 Matches	--	--	9	2.22

Note: Values are not signif. at $p = .05$. Critical χ^2 value at alpha = .05, 3df = 7.81, 9df = 16.92.

Table 5

Content Analysis of Waking Ideation (WI) Reports and REM Dreams

Content category	Report Class			
	Thought sample (n = 124)	Significant concern (n = 129)	All WI (n = 253)	REM dream (n = 156)
<i>Jobs</i>	23%	16%	19%	8%
<i>Academics</i>	11%	12%	12%	5%
<i>Living Arrangements</i>	6%	7%	6%	3%
<i>Finances</i>	8%	8%	8%	4%
Interpersonal				
female/general	11%	5%	8%	24%
male	7%	18%	13%	6%
Family	2%	15%	8%	10%
Lab / Sleep concerns	6%	1%	3%	17%
Health / Leisure	12%	9%	11%	5%
Pets / Animals	2%	2%	2%	3%
Travel / Plans	7%	7%	7%	6%
Weather / Outdoors	2%	---	1%	5%
Celebrities / Media	5%	---	2%	3%
Descriptive	---	---	---	1%

Note: *Italics* = Day-to-day living concerns grouping

Bold = Interpersonal and family grouping

Table 6

Comparison of average number of bizarre elements and average word count as a function of REM period

	<u>M</u> # of bizarre elements	<u>M</u> word count
REM period		
1	.61	54.02
2	1.44	86.88
3	1.99	111.67

Table 7

t-values for the Hartmann Boundary Questionnaire

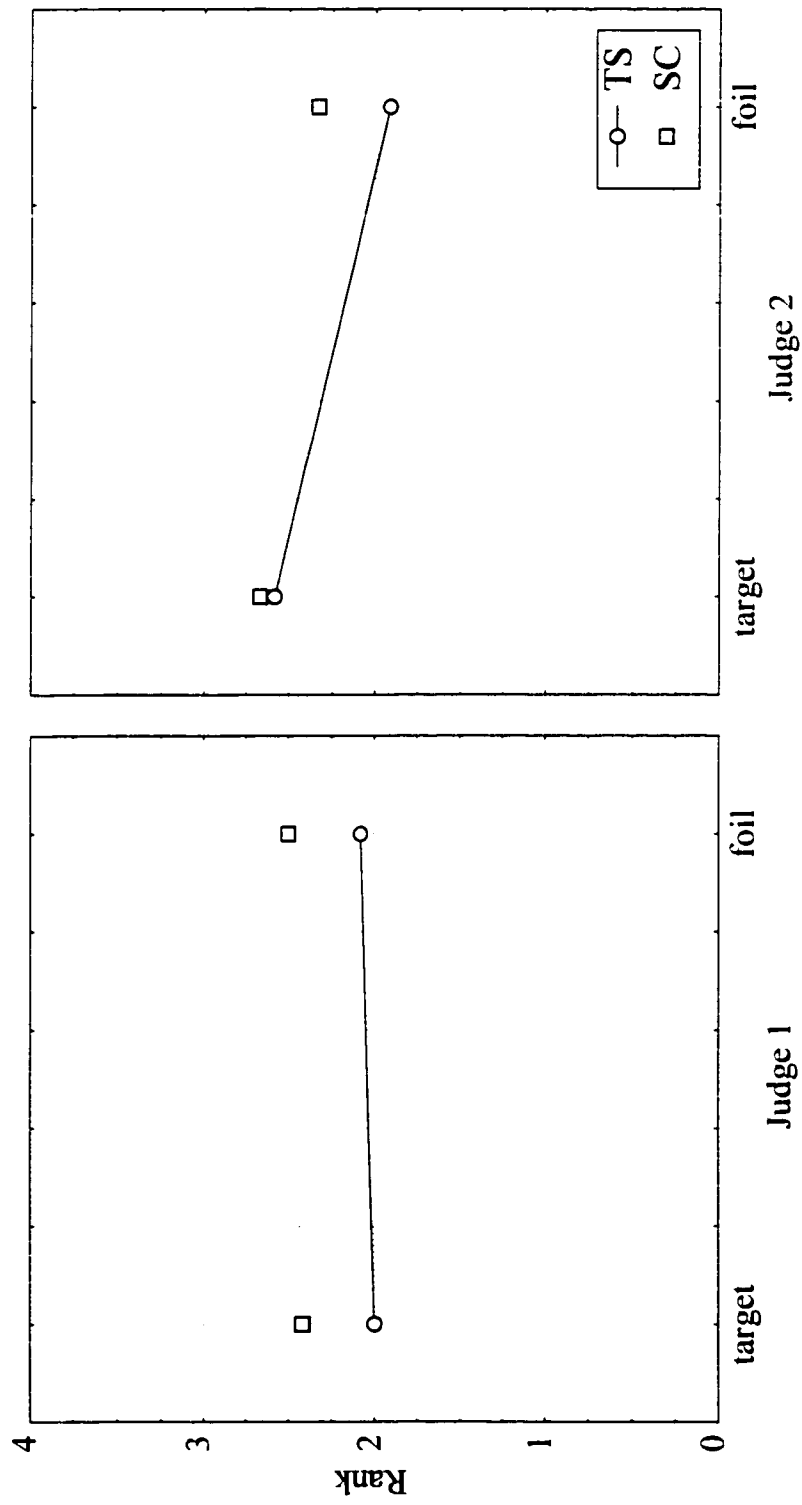
	Initial	Retest	df	t
SUMBOUND				
<u>M</u>	304.62	313.31	12	-1.29
<u>SD</u>	51.79	60.06		
CATEGORY 1 (sleep boundaries)				
<u>M</u>	26.31	24.38	12	1.38
<u>SD</u>	9.21	10.81		

Note: Values are not significant at $p = .05$.
Critical value for the t distribution for $\alpha = .05$, 12 df = 2.18.

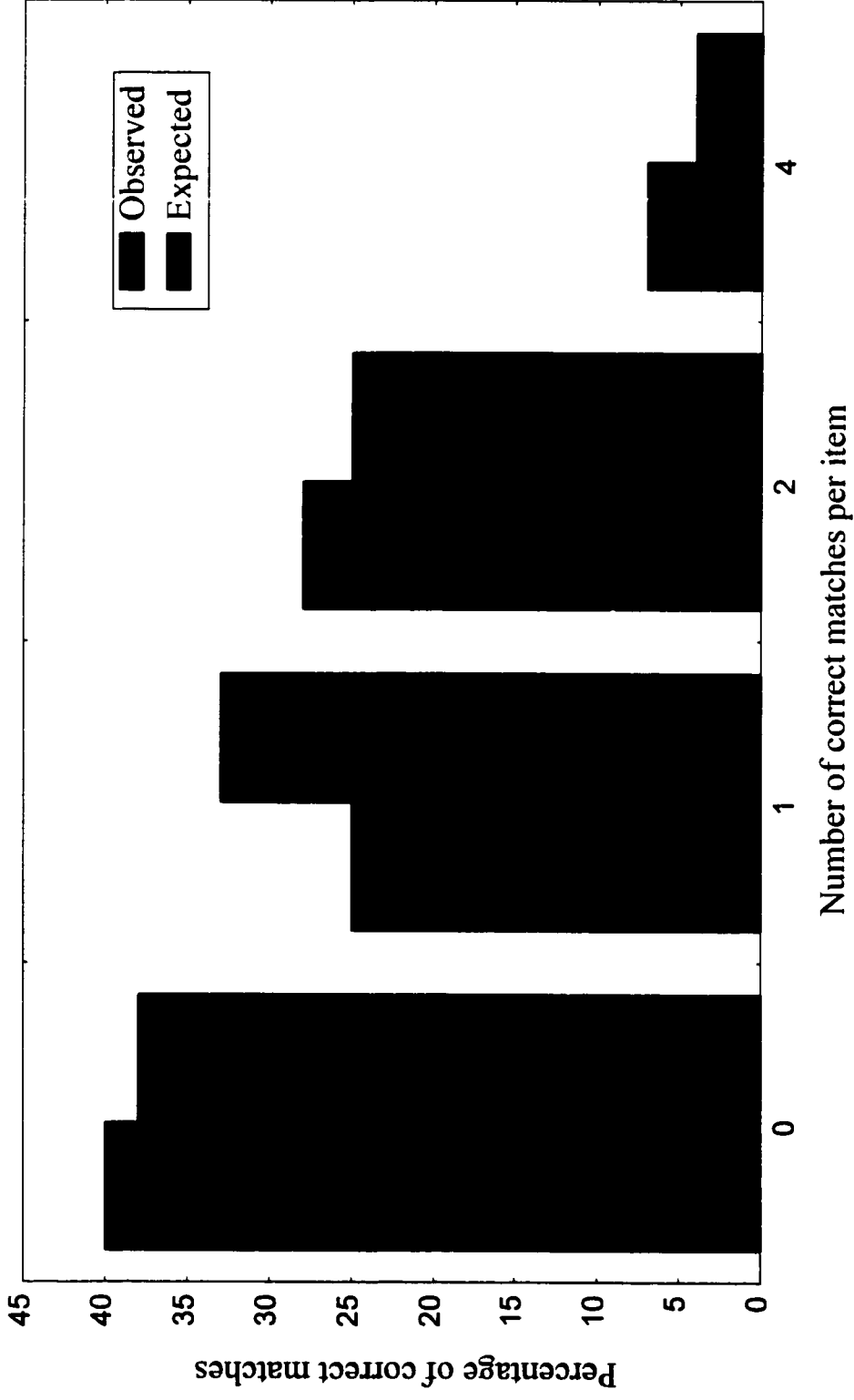
Figure Captions

- Figure 1. Plot of means for the 3-way interaction of dream (target & non-target) by waking (TS & SC) by judges (1 & 2).
- Figure 2. Observed versus expected frequencies for the within-subject matching task.
- Figure 3. Observed versus expected frequencies for the between-subject matching task.
- Figure 4. Plot of means for the 3-way interaction of dream (target & non-target) by waking (TS & SC) by judges (1 & 2 & clinical).
- Figure 5. Distribution of dreams and presleep samples in the various content analysis categories.
- Figure 6. Distribution of temporal references in the various Grenier Temporal Reference Scale categories.

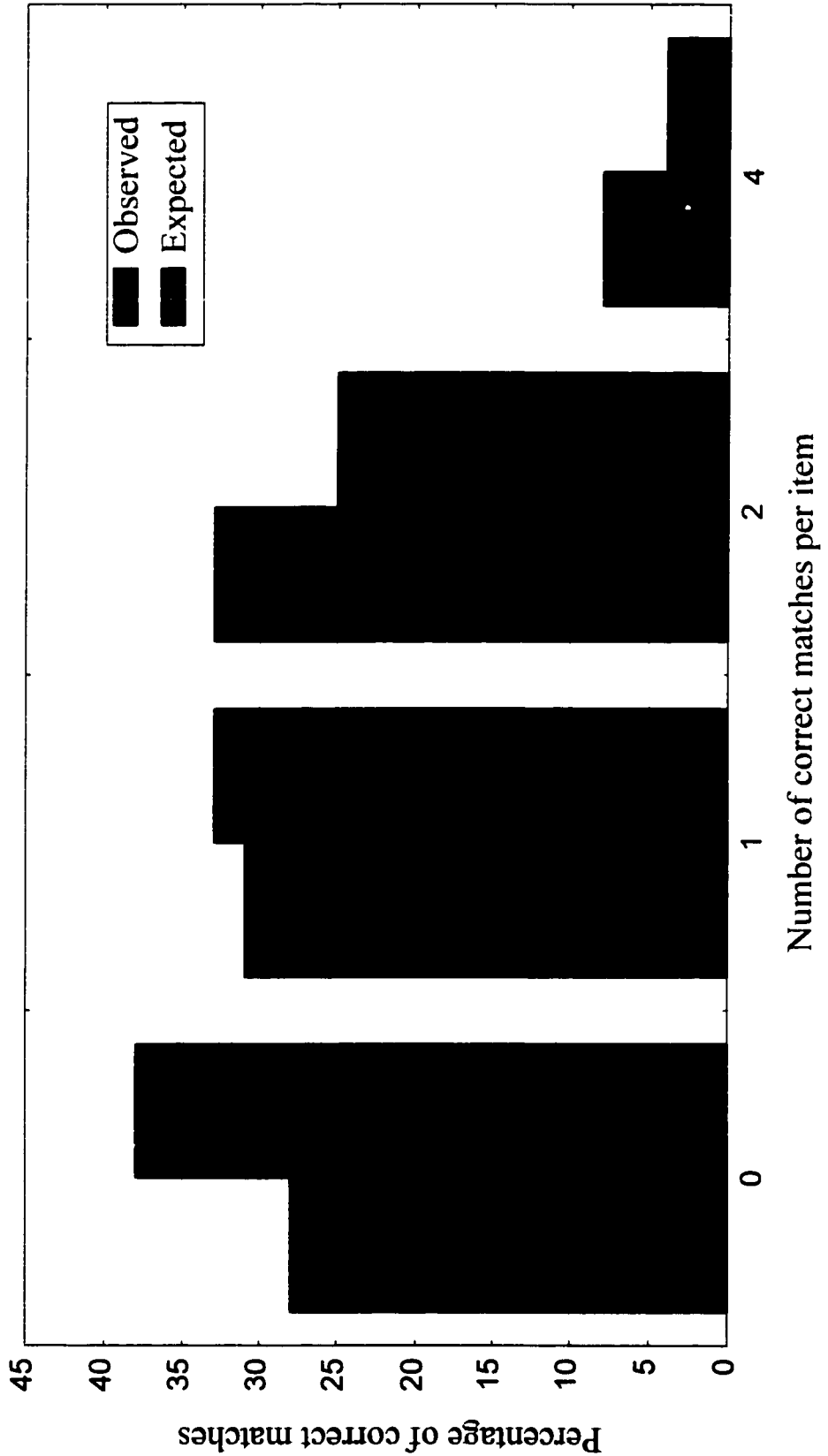
Plot of mean ranks for the 3-way interaction of dream (target & non-target)
by waking (TS & SC) by judges (1 & 2)
 $F(1,44)=.24; p<.6249$



Observed versus expected frequencies for within-participant matching

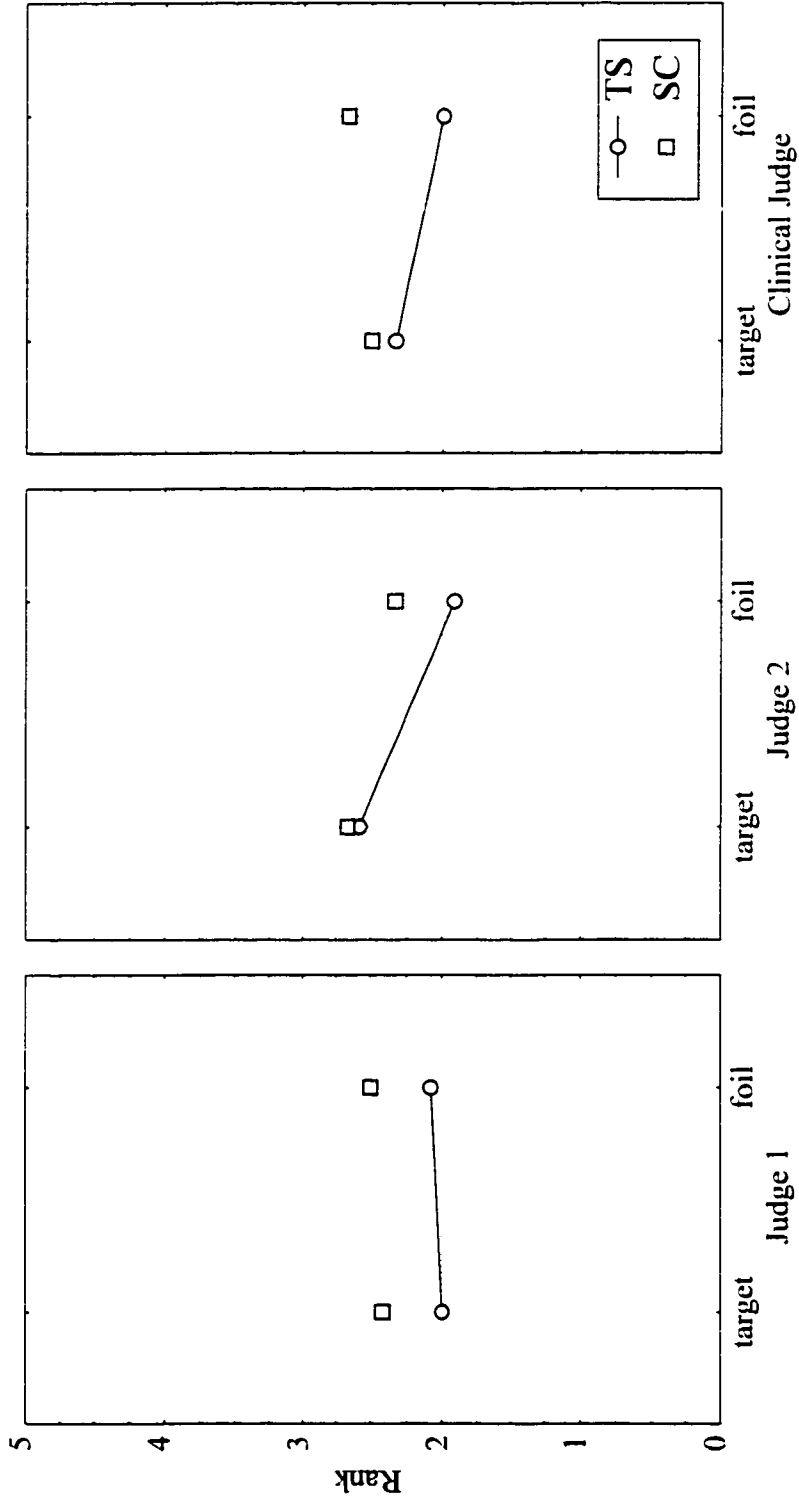


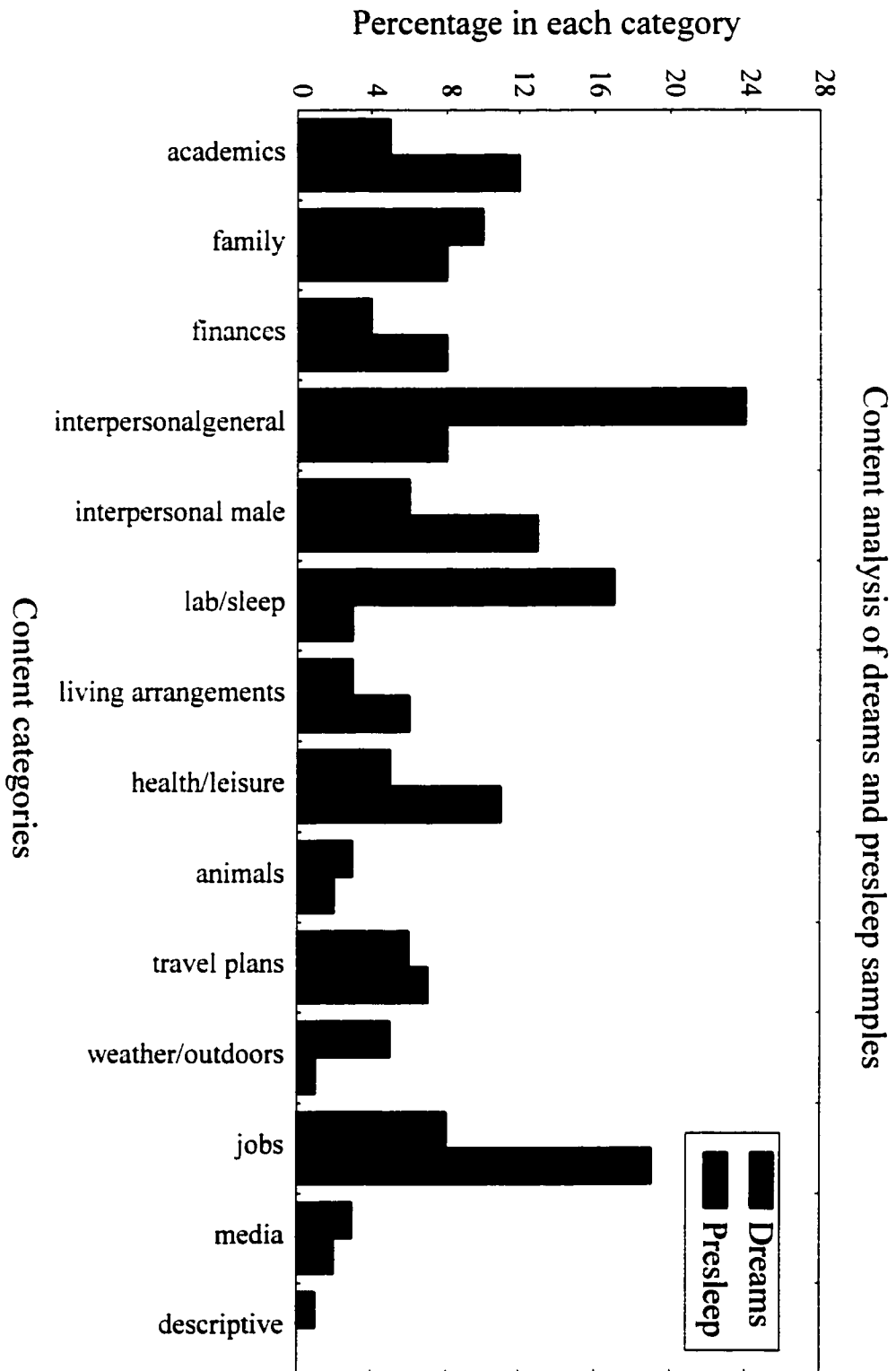
Observed versus expected frequencies for between-participant matching

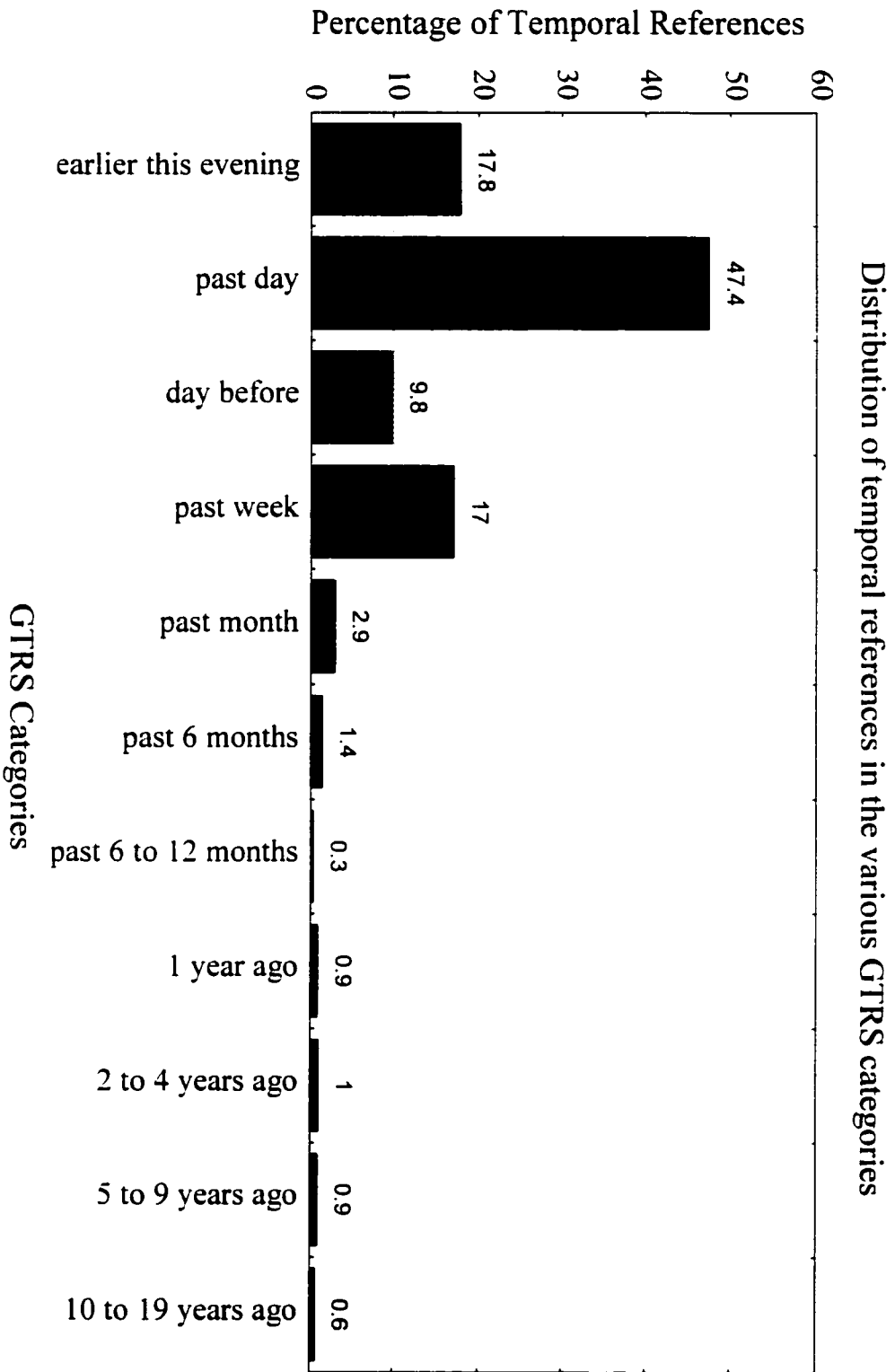


Plot of mean ranks for the 3-way interaction of dream (target & non-target)
by waking (TS & SC) by judges (1 & 2 & clinical)

$F(2,88)=.28; p<.7574$







Appendix A

Screening Questionnaire, Orientation Documentation and Consent Documents

Laboratoire du sommeil et des rêves
Université d'Ottawa
562-5250

CONSIGNES D'ORIENTATION:

Veillez lire cette information dès maintenant. Sentez-vous libre de nous poser des questions.

Tel que nous vous l'avons déjà expliqué, nous cherchons à connaître les sources des rêves. Afin d'étudier cette question, nous devons obtenir des échantillons de l'activité mentale éveillée et des rêves d'une bénéficiaire.

Rêves: Pendant chacune des 4 nuits expérimentales passées en laboratoire, nous ferons plusieurs collectes de rêve en sommeil paradoxal (SP). Pour ce faire, nous allons enregistrer vos ondes cérébrales ainsi que vos mouvements oculaires (la procédure vous sera expliquée plus en détail après la lecture de ce document). Pour chacune des nuits, nous vous réveillerons lors de l'apparition de votre première période de sommeil paradoxal (environ 60 à 150 minutes après l'endormissement). On vous demandera alors de décrire "qu'est-ce qui te passait par la tête avant le signal (d'éveil)". (Une copie du formulaire de réveil qui servira à l'expérimentatrice est jointe en annexe.) Puisque vous serez toujours réveillée pendant le sommeil paradoxal, les chances que vous allez pouvoir vous souvenir du contenu de vos rêves sont très bonnes. Toutefois, si jamais ceci vous est impossible, on vous laissera vous rendormir et comme d'habitude, nous ferons un autre réveil à la prochaine période de sommeil paradoxal.

Activité mentale à l'éveil: Pour 2 des 4 nuits, nous allons explorer votre activité mentale à l'état d'éveil par une méthode appelée "Préoccupations courantes". Pour les 2 autres nuits, nous utiliserons une méthode appelée "Échantillonnage de la pensée". Ces deux techniques ont déjà servies à la recherche dans le domaine des rêves mais elles n'ont toutefois jamais été utilisées afin d'étudier notre champ d'intérêt. Un questionnaire de frontière sera aussi utilisé afin d'obtenir un peu plus d'information sur votre activité mentale éveillée.

Préoccupations courantes: (voir feuille en annexe)

Avant l'endormissement, vous allez devoir enregistrer sur micro-cassette vos 5 préoccupations courantes (idées ou préoccupations que vous entretenez de façon soutenue). On vous demandera de décrire chaque préoccupation (une à la fois) et de spécifier son impact actuel dans votre vie immédiate. Le but est de vous demander de décrire les situations ou les préoccupations qui ont occupés votre conscience le plus souvent pendant les deux journées précédentes. Cette méthode sera utilisée pendant 2 de vos 4 nuits en laboratoire.

Échantillonnage des pensées: (voir feuille en annexe)

Cette méthode se fera tout au long de la journée avant de venir passer la nuit en laboratoire. À 5 moments choisis de façon aléatoire durant la journée, on vous donnera un signal sur pagette. Vous devrez alors enregistrer sur micro-cassette ce qui vous passait par la tête juste avant le signal et décrire l'activité dans laquelle vous étiez engagée à ce moment. Cette méthode sera utilisée avant 2 des 4 nuits expérimentales.

La raison pour laquelle nous avons deux différentes méthodes de collecte d'activité mentale à l'éveil est que celles-ci représentent deux façons différentes dont la vie éveillée pourrait se retrouver dans les rêves en sommeil paradoxal: les préoccupations qui sont consciemment importantes pour nous ou les idées et images qui nous viennent de façon spontanée (qu'elles soient importantes ou non) lorsqu'on laisse notre conscience errer au hasard. Il nous est donc important que vous compreniez clairement la nature de chacune des méthodes. C'est-à-dire, que vous nous décrivez dans la procédure des préoccupations courantes, ce qui vous a plus concerné dans les dernières journées et que vous passiez vos journées de façon habituelle lors de la méthode d'échantillonnage des pensées.

Entrevue du matin: Une entrevue sera menée chaque matin suivant les 4 nuits expérimentales. Cette entrevue consistera à écouter vos rêves un à la suite de l'autre. Nous vous demanderons pour chaque rêve d'identifier si vous reconnaissez des éléments de votre vie éveillée - soit des choses que vous avez vécues ou tout simplement auxquelles vous avez pensé.

Informations générales: Toutes les entrevues de rêve et d'activité mentale à l'éveil seront enregistrées sur audio-cassette et codées de façon à camoufler votre identité lors de la transcription des récits. Également, pour tout nos dossiers, vous serez identifiée par un numéro de sujet plutôt que par votre nom ou autre caractéristique personnelle qui pourrait vous identifier. Si toutefois en ce moment, vous jugez que nous faisons trop d'intrusion, vous pouvez vous sentir tout à fait libre de vous retirer de cette étude. Nous vous assurons toutefois que notre intérêt dans vos rêves et dans votre activité mentale à l'éveil est entièrement lié à la question scientifique du lien entre l'état d'éveil et de rêve. Nous vous faisons part de cela afin de vous démontrer que votre coopération est essentielle pour que vous puissiez répondre à cette question.

Lorsque nos analyses statistiques seront terminées, nous vous fournirons sur demande une copie de tout article ou document qui résultera de cette étude. De cette façon, vous verrez que notre attention ne porte pas sur les bénévoles qui ont participé individuellement à l'étude mais plutôt sur les données de groupe très importantes qui contribueront à une question très générale en psychologie du rêve: est-ce que les rêves sont en continuité avec notre vie éveillée?

Nous vous remercions du temps que vous avez consacré à la lecture de ce document, et si vous décidez de participer au projet, nous vous remercions à l'avance de votre intérêt,

coopération et persévérance. Si toutefois, à n'importe quel moment vous avez des questions au sujet de l'étude, n'hésitez pas à contacter les coordonnateurs de l'étude:

Francine Roussy
Joseph De Koninck, Ph.D.

au laboratoire, soit en personne ou en téléphonant au 562-5250.

FORMULAIRE DE CONSENTEMENT

Lorsqu'un projet d'étude est entrepris par un membre de l'Université d'Ottawa, le comité de déontologie de l'Université d'Ottawa exige le consentement écrit des participant(e)s.

Le but de cette étude

Le but de cette étude est d'examiner les sources du rêve.

Nature de l'étude

L'étude sera effectuée au laboratoire de sommeil de l'Université d'Ottawa situé à la salle 424 du Pavillon Montpetit, 125 Université Privé (tél. 562-5250). Le laboratoire est sous la direction du Dr. Joseph De Koninck (tél 562-5800 poste 1234). L'étude sera effectuée sous la direction de Francine Roussy et elle servira de base pour le projet de spécialisation de deux étudiantes du premier cycle: Isabelle Raymond et Isabelle Gonthier (tél. 562-5250). Toutes ces personnes peuvent être contactées, peu importe la raison (i.e. pour avoir de plus amples informations concernant le recrutement ou pour la participation à cette étude).

Nous vous assurons que tout est confidentiel et anonyme, tant au niveau des données physiologiques que psychologiques. Toutes les données polysomnographiques et les enregistrements seront codés et gardés sous verrous au laboratoire de sommeil. Seulement les personnes directement impliquées dans l'étude (superviseurs, étudiantes de spécialisation) seront au courant de l'identité des sujets.

On vous demandera de dormir au laboratoire de sommeil pour un total de quatre nuits (étalées sur les quatre semaines du mois de Juin 1996). Des électrodes (externes seulement) seront posées avant le coucher.

Pendant l'étude, vous serez assignée à une chambre privée. Tous les efforts seront pris pour maximiser votre confort (i.e. oreillers, température de la pièce, salle de bain située dans le laboratoire).

Durant la nuit, vous serez réveillée plusieurs fois pour des collectes de rêve. Lors de ces réveils, une expérimentatrice vous posera des questions via un intercom. Toutes ces entrevues seront enregistrées.

Une personne qualifiée sera au laboratoire tout au long de votre séjour. Vous pourrez communiquer avec l'expérimentatrice en tout temps via un intercom.

Participant(e)s

Étant donné la nature de l'étude, de même que d'autres études similaires complétées dans

notre laboratoire ainsi que d'autres universités, nous croyons qu'il n'y a aucun risque de santé liés à votre participation. Quelques irritations de la peau peuvent être provoquées par les électrodes, mais ce risque est minime puisque vous ne passerez qu'une nuit par semaine au laboratoire. Tout de même, si votre histoire médicale suggère que les pré-requis de cette étude pourraient avoir un impact négatif sur votre santé, ou si vous avez des préoccupations, vous devriez en discuter avec les investigatrices avant de participer à cette étude.

Vous êtes libre d'abandonner cette étude en tout temps, sans aucune sanction.

Vous recevrez une compensation monétaire pour votre participation (25\$ par nuit passée au laboratoire en plus de 50\$ bonis après avoir complété l'étude).

En participant à cette étude, vous acceptez que les données obtenues (activité mentale pré-sommeil/préoccupation, contenu des rêves, enregistrement physiologiques) puissent être utilisées pour fins d'enseignement ou de communications scientifiques de classe anonymement et/ou pour d'autres usages démonstratifs (i.e. réunions scientifiques). Vous pouvez, cependant, décider de refuser ce droit à tout moment, en partie ou complètement, par entente verbale ou écrite avec l'investigatrice principale.

Consentement

Je, soussignée, ai lu et compris toutes les informations présentées dans ce formulaire de consentement. J'ai visité le laboratoire de sommeil et ai reçu l'information pertinente à cette étude. J'accepte de participer à cette étude. J'ai reçu une copie de ce document.

----- Nom (sujet)	----- signature	----- date
----- Nom (investigatrice principale)	----- signature	----- date
----- Nom (témoin)	----- signature	----- date

PRÉOCCUPATIONS COURANTES

Ok, j'aimerais commencer cette entrevue en te rappelant certaines règles fondamentales. Tu devrais identifier sur une enregistreuse micro-cassette cinq préoccupations auxquelles tu as pensé le plus souvent durant les derniers jours. Essaie de garder tes préoccupations raisonnablement spécifiques: par exemple, "est-ce que je vais obtenir la job que je veux cet été" au lieu de dire "à propos de cet été", ou parler de symptômes spécifiques au lieu de parler "de ma santé", ou mentionner des cours et des sujets spécifiques au lieu de dire "de l'école". Essaie aussi, avec des préoccupations interpersonnelles, de les rendre spécifiques concernant la personne: Par exemple, "est-ce que je vais m'entendre avec ma co-locataire X" au lieu de "m'entendre avec mon amie".

Ok, je suis sûre que tu comprends l'idée maintenant, alors enregistre les préoccupations courantes auxquelles tu as pensé le plus pendant ces derniers quelques jours. En quelques phrases, quelle est ta première préoccupation?

Alors, spécifie quel est l'impact présent des thèmes ou situations générant cette préoccupation.

Fait de même pour les 4 autres préoccupations. Encerle les numéro au fur et à mesure, pour compter le nombre de préoccupations que tu as mentionnées.

1 2 3 4 5

FORMAT DE L'ENTREVUE CONCERNANT LES PENSÉES DES SUJETS (ÉCHANTILLONNAGE DE LA PENSÉE)

Signal (de la pagette)

Tu dois enregistrer à quoi tu pensais et ce que tu faisais au moment précis du signal de la pagette.

Cette procédure sera utilisée cinq fois durant la journée. À chaque fois que le signal se présentera, tu devras répéter ce qui est mentionné ci-haut.

FORMAT DE L'ENTREVUE DU RÊVE EN SOMMEIL PARADOXAL**signal d'éveil**

Dis-moi, s'il te plaît, tout ce dont tu peux te souvenir de ce qui te passait pas la tête avant que je t'appelle.

si réponse spontanée

Tu peux te rappeler autre chose?
(continuer jusqu'à réponse négative)

si réponse non spontanée

Peux-tu réfléchir quelques instants et voir si quelque chose te revient?

(30 sec. Pour y penser)

Est-ce que quelque chose

te revient?

si oui**si non**

Ok, merci, tu peux te recoucher et on essaiera à la prochaine période de sommeil paradoxal

Ok, tu peux te recoucher.

Appendix B

French Translation of the Hartmann Boundary Questionnaire

LE QUESTIONNAIRE DES FRONTIÈRES

Veillez coter chacune des affirmations suivantes de 0 à 4, 0 indiquant non, pas du tout, ou ne s'applique pas du tout à moi, 4 indiquant, oui, définitivement, ou s'applique sûrement à moi.

NO. DE SUJET: _____

Date:

1. Quand je me réveille le matin, je ne suis pas sûr, pendant quelques minutes, d'être vraiment réveillé.
0 1 2 3 4
2. J'ai déjà eu des réactions inusitées à l'alcool.
0 1 2 3 4
3. Mes sentiments se confondent les uns avec les autres.
0 1 2 3 4
4. Je me sens très près de mes sentiments d'enfance.
0 1 2 3 4
5. Je fais très attention à ce que je dis aux gens jusqu'à ce que je les connaisse très bien.
0 1 2 3 4
6. Je suis très sensible aux sentiments des autres.
0 1 2 3 4
7. J'aime classer les choses le plus possible.
0 1 2 3 4
8. J'aime beaucoup la musique avec un rythme bien défini.
0 1 2 3 4
9. Je pense que les enfants ont un sens particulier de joie et d'émerveillement qui souvent disparaît plus tard.
0 1 2 3 4
10. Dans une organisation, chacun devrait avoir une place définie et un rôle spécifique.
0 1 2 3 4
11. Les gens de différentes nations sont fondamentalement semblables.
0 1 2 3 4
12. Il y a plusieurs forces qui exercent une influence sur nous et que la science ne comprend pas.
0 1 2 3 4

13. J'ai des rêves, des rêveries, des cauchemars dans lesquels mon corps, ou le corps de quelqu'un d'autre, est poignardé, blessé ou mutilé.
0 1 2 3 4
14. J'ai déjà eu des réactions inusitées à la marijuana.
0 1 2 3 4
15. Parfois je ne sais pas si je suis en train de penser ou de ressentir.
0 1 2 3 4
16. Je peux me rappeler des choses qui remontent avant l'âge de trois ans.
0 1 2 3 4
17. Je m'attends à ce que les autres gardent une certaine distance envers moi.
0 1 2 3 4
18. Je pense que je serais un bon psychothérapeute.
0 1 2 3 4
19. Je garde mon bureau et ma table de travail propres et bien organisés.
0 1 2 3 4
20. Je pense que ce serait amusant de porter une armure du moyen âge.
0 1 2 3 4
21. Un bon professeur doit aider un enfant à demeurer spécial.
0 1 2 3 4
22. Lorsque l'on prend une décision il ne faudrait pas laisser nos sentiments intervenir.
0 1 2 3 4
23. C'est important d'être habillé proprement et correctement.
0 1 2 3 4
24. Il y a un temps pour réfléchir et un temps pour les sentiments; les deux devraient demeurer séparés.
0 1 2 3 4
25. Je n'ai pas toujours le contrôle de mes rêveries le jour.
0 1 2 3 4
26. J'ai déjà eu des réactions inusitées au café ou au thé.
0 1 2 3 4
27. Pour moi les choses sont noires ou blanches. Il n'y a pas de zones grises.
0 1 2 3 4

28. J'ai eu une enfance difficile et compliquée.
0 1 2 3 4
29. Lorsque je m'implique dans une relation avec quelqu'un, je sais exactement qui je suis et qui est l'autre personne. Nous pouvons collaborer, mais en gardant chacun son moi.
0 1 2 3 4
30. Je peux être facilement blessé.
0 1 2 3 4
31. Je suis très ponctuel à mes rendez-vous.
0 1 2 3 4
32. J'aime les vêtements solides et lourds.
0 1 2 3 4
33. Les enfants et les adultes ont beaucoup en commun. Ils devraient se donner la chance d'être ensemble sans rôles stricts.
0 1 2 3 4
34. En interagissant avec d'autres personnes dans une organisation, c'est très important d'être flexible et adaptable.
0 1 2 3 4
35. Je crois que beaucoup des problèmes du monde pourraient être résolus si seulement les gens se faisaient confiance.
0 1 2 3 4
36. Ou bien vous dites la vérité, ou bien vous mentez; c'est tout.
0 1 2 3 4
37. Je passe beaucoup de temps à avoir des fantaisies ou des rêveries.
0 1 2 3 4
38. J'ai peur de me désintégrer complètement.
0 1 2 3 4
39. J'aime avoir des expériences belles et agréables sans avoir à les analyser et sans essayer de les comprendre en détail.
0 1 2 3 4
40. J'ai des plans définis pour mon avenir. Je peux très bien élaborer ce à quoi je m'attends, année par année, du moins pour les quelques années à venir.
0 1 2 3 4

41. Je peux habituellement percevoir ce qu'une autre personne pense ou ressent sans que personne n'ait dit quoi que ce soit.
0 1 2 3 4
42. Je suis particulièrement sensible aux bruits forts et aux lumières brillantes.
0 1 2 3 4
43. Je suis bon pour tenir des livres de compte et savoir où va mon argent.
0 1 2 3 4
44. J'aime les histoires qui ont un début, un milieu et une fin bien définis.
0 1 2 3 4
45. Je pense qu'un artiste doit rester un peu un enfant.
0 1 2 3 4
46. Une bonne organisation en est une où les responsabilités de chacun sont précisées et clairement établies.
0 1 2 3 4
47. Chaque nation devrait voir clairement où sont ses intérêts et ses frontières, et en faire pareil au sujet des intérêts et frontières des autres nations.
0 1 2 3 4
48. Chaque chose a sa place et une place pour chaque chose.
0 1 2 3 4
49. Chaque fois qu'un événement épouvantable se produit, j'ai des cauchemars, des fantaisies ou des souvenirs impliquant cet événement stressant.
0 1 2 3 4
50. Je me demande parfois qui je suis.
0 1 2 3 4
51. Il m'arrive parfois de me sentir à la fois heureux et triste.
0 1 2 3 4
52. J'ai une mémoire claire et nette de mon passé. Je pourrais vous dire assez précisément ce qui s'est passé année par année.
0 1 2 3 4
53. Lorsque je m'implique dans une relation avec quelqu'un nous devenons parfois trop près l'un de l'autre.
0 1 2 3 4
54. Je suis une personne très sensible.
0 1 2 3 4

55. J'aime bien que les choses soient expliquées précisément et spécifiquement.
0 1 2 3 4
56. Je pense qu'un bon enseignant demeure en partie un enfant.
0 1 2 3 4
57. J'aime les peintures et les dessins aux contours nets et limites non floues.
0 1 2 3 4
58. Une bonne relation en est une où tout est clairement défini et spécifié.
0 1 2 3 4
59. Les gens sont totalement différents les uns des autres.
0 1 2 3 4
60. Lorsque je me réveille, je le fais rapidement et je suis tout à fait sûr d'être réveillé.
0 1 2 3 4
61. Parfois, j'ai eu l'impression de me désintégrer.
0 1 2 3 4
62. Mes pensées se mêlent les unes aux autres.
0 1 2 3 4
63. J'ai eu une adolescence difficile et compliquée.
0 1 2 3 4
64. Parfois, ça fait peur lorsqu'une personne s'implique trop dans une relation avec une autre.
0 1 2 3 4
65. J'aime bien les atmosphères envoûtantes, même si je ne comprends pas ce qui se passe.
0 1 2 3 4
67. J'aime les peintures et les dessins aux contours flous et doux.
0 1 2 3 4
68. Un bon parent doit aussi être un peu un enfant.
0 1 2 3 4
69. Je ne peux pas imaginer épouser ou vivre avec quelqu'un d'une autre religion.
0 1 2 3 4
70. Il est très difficile d'avoir une empathie réelle pour une autre personne car les gens sont tellement différents les uns des autres.
0 1 2 3 4

71. Toutes les pensées importantes impliquent aussi des sentiments.
0 1 2 3 4
72. J'ai des rêves, des rêveries éveillées ou des cauchemars dans lesquels je vois des parties de corps détachées - bras, jambes, tête ou autre.
0 1 2 3 4
73. Les choses autour de moi semblent changer de forme et de dimension.
0 1 2 3 4
74. Je peux facilement imaginer être un animal ou comment ce serait d'être un animal.
0 1 2 3 4
75. Je me sens séparé et distinct de toute autre personne.
0 1 2 3 4
76. Quand je me trouve dans une nouvelle situation, je tente le plus tôt possible de savoir ce qui se passe et de comprendre les règles du jeu.
0 1 2 3 4
77. J'aime la géométrie: il y a là des règles simples et claires et tout est en ordre.
0 1 2 3 4
78. Un bon parent doit avoir de l'empathie pour ses enfants, être leur ami et un compagnon de jeu à la fois.
0 1 2 3 4
79. Je ne peux pas imaginer vivre avec une personne ou être marié à une personne d'une autre race.
0 1 2 3 4
80. Les gens sont si différents que je ne sais jamais ce qu'une autre personne pense ou ressent.
0 1 2 3 4
81. La beauté est une chose subjective. Je sais ce que j'aime, mais je ne m'attends pas à ce que quelqu'un d'autre soit d'accord avec moi.
0 1 2 3 4
82. Dans mes rêveries, les personnes semblent se fusionner entre elles ou une personne en devient une autre.
0 1 2 3 4
83. Mon corps semble de temps à autre changer de dimension ou de forme.
0 1 2 3 4
84. Je deviens trop impliqué dans les choses.

0 1 2 3 4

85. Lorsque quelque chose arrive à un(e) ou ami(e) ou un(e) amant(e), c'est un peu comme si ça m'arrivait.
0 1 2 3 4
86. Lorsque je travaille sur un projet, je n'aime pas me contraindre à un plan défini. Je préfère laisser vaguer ma pensée.
0 1 2 3 4
87. C'est très important pour une image ou pour une peinture d'avoir un cadre solide.
0 1 2 3 4
88. Je crois que les enfants ont besoin d'une discipline stricte.
0 1 2 3 4
89. Les gens sont plus heureux avec des gens de même type qu'eux qu'avec des gens de types différents.
0 1 2 3 4
90. L'est est l'est et l'ouest est l'ouest et jamais les deux ne se rencontreront.
0 1 2 3 4
91. Il y a des règles et des standards définis, qui s'apprennent au sujet de ce qui est beau et ce qui ne l'est pas.
0 1 2 3 4
92. Dans mes rêves, parfois les personnages se fusionnent ou deviennent d'autres personnes.
0 1 2 3 4
93. Je crois que je suis influencé par des forces que personne ne peut comprendre.
0 1 2 3 4
94. Quand je lis quelque chose, je m'implique tellement que c'est parfois difficile de revenir dans la réalité.
0 1 2 3 4
95. Je fais facilement confiance aux gens.
0 1 2 3 4
96. Lorsque je travaille sur un projet, je prépare un plan très détaillé et je le suis de très près.
0 1 2 3 4
97. Les films et les programmes de télévision que je préfère sont ceux où il y a des bons et des méchants qu'on peut identifier facilement.
0 1 2 3 4

98. Si on s'ouvre sur le monde, on trouve que les choses vont mieux que ce à quoi on s'attendrait.
0 1 2 3 4
99. La plupart des gens sont sains; certains sont fous; il n'y a pas d'intermédiaire.
0 1 2 3 4
100. J'ai déjà eu des expériences de «déjà vu».
0 1 2 3 4
101. J'ai une perception très précise de l'espace qui m'entoure.
0 1 2 3 4
102. Lorsque je m'engage à fond dans un jeu ou que je joue à quelque chose, c'est parfois difficile lorsque le jeu arrête et la vie courante recommence.
0 1 2 3 4
103. Je suis quelqu'un de très ouvert.
0 1 2 3 4
104. Je crois que j'aimerais être ingénieur.
0 1 2 3 4
105. Il n'y a pas de frontières précises entre les personnes normales, celles qui ont des problèmes, et celles qui sont considérées comme psychotiques ou folles.
0 1 2 3 4
106. Lorsque j'écoute de la musique je me sens tellement embarqué que ça m'est difficile de revenir à la réalité.
0 1 2 3 4
107. Je suis toujours plus ou moins sur mes gardes.
0 1 2 3 4
108. Je suis une personne terre à terre.
0 1 2 3 4
109. J'aime les maisons aux espaces flexibles, où on peut changer les choses et mettre les pièces à des usages différents.
0 1 2 3 4
110. Le succès est largement fonction d'une bonne organisation et d'un bon contrôle des dossiers.
0 1 2 3 4
111. Tout le monde est un petit peu fou à l'occasion.
0 1 2 3 4

112. Il m'arrive d'avoir des cauchemars le jour.
0 1 2 3 4
113. Je me réveille d'un rêve pour me retrouver dans un autre.
0 1 2 3 4
114. Le temps ralentit et accélère pour moi. Le temps passe très différemment selon les occasions.
0 1 2 3 4
115. Je me sens comme un tout avec le monde.
0 1 2 3 4
116. Parfois je rencontre une personne en qui j'ai si totalement confiance que je peux partager tout ce qui me concerne avec elle dès la première rencontre.
0 1 2 3 4
117. Je crois que j'aimerais être capitaine de bateau.
0 1 2 3 4
118. Les bonnes clôtures font les bons voisins.
0 1 2 3 4
119. Les images de mes rêves ont l'air tellement vraies que même plus tard je ne peux les différencier de la réalité.
0 1 2 3 4
120. J'ai souvent eu l'expérience d'avoir différentes sensations se mêler les unes aux autres. Par exemple, j'ai senti que je pouvais sentir une couleur, voir un son, ou entendre une odeur.
0 1 2 3 4
121. Je lis les choses du début à la fin (je ne saute pas de passages, je ne m'aventure pas dans des tangentes intéressantes).
0 1 2 3 4
122. J'ai des amis et des ennemis et je sais les différencier.
0 1 2 3 4
123. Je pense que j'aimerais beaucoup être un artiste créateur.
0 1 2 3 4
124. Un homme est un homme et une femme est une femme; c'est très important de garder cette distinction.
0 1 2 3 4

125. Je sais exactement quels quartiers de la ville sont sécuritaires et lesquels sont dangereux.
0 1 2 3 4
126. J'ai déjà eu l'expérience de ne pas savoir si j'imaginais une chose ou si elle se produisait réellement.
0 1 2 3 4
127. Lorsque je me rappelle une conversation ou une pièce de musique, je l'entends comme si elle se reproduisait devant moi.
0 1 2 3 4
128. Je crois que j'aimerais un travail flexible dont je pourrais rédiger moi-même la description de tâches.
0 1 2 3 4
129. Tous les hommes ont quelque chose de féminin en eux, et toutes les femmes ont quelque chose de masculin en elles.
0 1 2 3 4
130. Dans mes rêves j'ai déjà été une personne de l'autre sexe.
0 1 2 3 4
131. J'ai déjà eu l'expérience de quelqu'un qui m'appelait ou prononçait mon nom et de ne pas être sûr si cela s'était produit réellement ou si je l'avais imaginé.
0 1 2 3 4
132. Je peux visualiser quelque chose d'une façon tellement réaliste que c'était comme si cela se produisait directement devant moi.
0 1 2 3 4
133. Je crois que je pourrais être un bon médium ou diseur de bonne aventure.
0 1 2 3 4
134. Je suis toujours moi-même dans mes rêves.
0 1 2 3 4
135. Je perçois des auras ou des champs d'énergie autour des gens.
0 1 2 3 4
136. Je peux facilement imaginer que je serais une personne de l'autre sexe.
0 1 2 3 4
137. J'aime les frontières claires et précises.
0 1 2 3 4

138. J'ai déjà eu le sentiment que quelqu'un qui m'était proche était en danger ou avait été blessé, sans que j'ai eu moyen de le savoir, pour découvrir plus tard que c'était vrai.
0 1 2 3 4
139. J'ai une perception claire et distincte du temps.
0 1 2 3 4
140. J'aime les maisons où les pièces ont des murs bien définis et où chaque pièce a sa fonction.
0 1 2 3 4
141. J'ai déjà eu des rêves qui sont devenus par la suite des réalités.
0 1 2 3 4
142. J'aime les frontières floues.
0 1 2 3 4
143. J'ai eu des expériences extra corporelles pendant lesquelles mon esprit a vraiment quitté mon corps.
0 1 2 3 4
144. J'aime les lignes droites.
0 1 2 3 4
145. J'aime les lignes ondulées ou courbes plus que les lignes droites.
0 1 2 3 4
146. Je me sens certain d'avoir de l'empathie pour les personnes âgées.
0 1 2 3 4

Appendix C

Ranking Task instructions for judges and sample items

Item 1 and 2 are both from participant 1.

Item 1 consisted of the first study day's Thought Samples and the four dreams sets.

Item 2 consisted of the third study day's Thought Samples and the same four dreams sets.

The target dream for item 1 is night 1 (N1) whereas the target dream for item 2 is night 3 (N3).

Therefore, N1 was a foil for item 2 and N3 was a foil for item 1.

The ranks given by judges were as follows:

	Item 1		Item 2	
	Target (N1)	Foil (N3)	Target (N3)	Foil (N1)
Judge 1	2	3	1	3
Judge 2	1	3	2	1
Clinical	3	4	1	2

Tâche de mise en rang

Cette tâche comprend 24 items. Pour chaque item, vous devez lire la description de la journée ainsi que les rêves de chacune des 4 nuits. Par la suite, vous devez mettre ces 4 nuits en rang de 1 à 4. Le rang de 1 doit être donné à la nuit que vous croyez la plus probable d'être celle qui a suivi cette journée et le rang de 4 à celle que vous croyez la moins probable. Il est à noter que vous devez donner un rang à chacune des 4 nuits mais que vous ne pouvez accorder le même rang à deux nuits pour un même item. Lorsque vous avez donné des rangs aux 4 nuits d'un item, vous pouvez passer au prochain item sans toutefois retourner en arrière. Il est très important d'évaluer chaque item indépendamment les uns des autres. Enfin, si vous vous sentez fatiguée et moins concentrée, vous pouvez prendre une pause sans aucun problème. D'ailleurs, il est recommandé de le faire vu le degré d'attention assez élevé que nécessite cette tâche.

Voici un exemple:

ITEM ??

N1: 2

N2: 4

N3: 1

N4: 3

Ranking Task**ITEM 1****JOURNÉE**

1. Il est 11h05, lundi matin. Je suis en train de faire le ménage. Je suis en train de faire mon lavage, puis je ne pensais pas à grand chose. Je pensais qu'il fallait que je travaille ce soir de 5h à 10h, et demain il faut que j'aille chez mes parents parce que je leur donne mon chien. Il faut que j'aille donner mon chien. Ça ne me tente pas. Parce que ça fait 7 ans que je l'ai puis ça me fait beaucoup de peine. C'est un peu à ça que je pensais.
2. Je suis en train d'écouter de la musique, c'est Meatloaf. Puis c'était "I'd do anything for love". Je suis en train de penser à mon chum. Je me demandais s'il m'aime. Ces temps-ci, ça m'inquiète bien gros.
3. Il est 1h20. Je viens de finir de manger. Pour dire bien franchement je ne pensais pas à grand chose. Mon 'landlord' vient d'appeler, puis il veut avoir son loyer. C'est ça que je m'en allais chercher à la banque. À part de ça, je ne pensais pas à grand chose. Je pensais à cette nuit, la nuit qui s'en vient qu'il faut passer en labo, puis je me demandais si tout allait bien se passer. Puis si j'allais vous aider avec votre étude.
4. Il est à peu près 2h25. Je suis en train de faire la vaisselle, puis je suis en train de penser à mon travail à temps partiel, quand la salle de massage va être prête pour que je puisse commencer à exercer mon métier à faire mes massages puis tout ça. Ça fait à peu près un mois que c'est supposé être prêt puis c'est même pas commencé encore. Je me demandais quand est-ce que ça allait aboutir.
5. Il est 3h25. Je viens juste de sortir de la douche. Je suis en train de m'habiller. Puis j'écoutais de la musique. Je pensais à un cours que je vais prendre (de mannequin) qui commence la semaine prochaine, qui dure six mois. Puis c'est pas vraiment une préoccupation mais j'ai hâte que ça commence. J'ai hâte de voir ce que ça va donner, qu'est-ce que ça va avoir l'air.

ITEM 2**JOURNÉE**

1. Il est 12h10. Je viens juste de sortir de la douche. Je m'apprêtais à m'habiller et aller faire des commissions. Je ne pensais pas à vraiment rien de particulier. Pour être honnête je me demandais si Isabelle avait oublier de me "pager" parce que je travaille à 3h. Je pensais à ça. Je me demandais si elle était pour me "pager" bientôt.
2. Je suis à l'ouvrage. Je n'ai pas commencé encore. Je suis venue de bonne heure. Je m'apprêtais à parler à mon patron au sujet de mon frère pour lui demander s'il avait une job pour lui. C'est à ça que je pensais en gros puis aussi je me demandais si j'avais le temps d'aller au Centre Rideau parce que j'ai des commissions assez importantes à faire. C'est pas grand chose d'excitant à quoi je pensais.
3. Je suis au travail, il est 2h45. J'écoutais la musique et j'étais en train de placer des papiers, puis je pensais à mon chum qui est super stressé, puis il a l'air bizarre ces derniers temps, mais c'est rien de nouveau. Je pensais à une petite vacance qu'on pourrait prendre, ça serait le fun, puis ça l'enlèverait le stress pour les deux. C'est l'argent qui manque. C'est un autre stress.
4. J'étais en train de marcher du Centre universitaire à ma résidence Stanton où est-ce que je travaille. Je pensais à qu'est-ce que je vais manger parce que j'ai super faim puis je ne sais pas pourquoi j'ai faim. Donc je me demande qu'est-ce que je vais manger. C'est un peu niaiseux mais c'est à ça que je pensais.
5. Je suis au travail puis j'essaie de trouver une solution à un problème. Un groupe est arrivé puis on n'est pas capable de faire le `check-in` à l'ordinateur puis tout semble être correct mais ça n'a juste pas marché. J'essayais de trouver le problème à l'ordinateur.

N1

R1

J'étais en autobus de la ville. Je ne sais pas si j'étais dans l'autobus ou si j'examinais quelqu'un dans l'autobus, mais il y avait un monsieur avec une espèce de bêche. Il ne lâchait pas de bêcher. Il brisait les fenêtres et courait après un autre monsieur. Il y avait un grand édifice. C'est là que le monsieur avec la bêche travaillait. Il descendait toujours dans la cave et remontait. Il bêchait partout.

R2

J'étais en voiture avec le toit baissé. J'écoutais de la musique. Il y avait une autre voiture avec une petite fille et un garçon. Ils se promenaient. C'était comme une bande animée ("cartoon"). Il y avait plein de couleur. Le linge de la petite fille sentait les fruits. Le chemin se changeait à mesure quand ils passaient dessus. Moi, j'étais en dehors, je regardais, je n'étais même pas dans le rêve. Au début, la petite fille et le petit gars ce n'était pas bizarre, c'était normal. Ils se promenaient et tout était beau. Tout à coup, cela a commencé à onduler et il y avait des couleurs vivantes et l'odeur des fruits. Avant qu'ils se promènent, j'étais dans un centre d'achats avec une de mes meilleures amies. On ne se voit jamais. Je m'en allait travailler de 3 à minuit quelque part et elle travaillait avec moi, on travaillait le même "shift" et on était toute contentes parce qu'on ne se voit jamais.

R3

J'étais à la salle de bain. J'étais en train de me préparer. J'avais mes électrodes et tout cela, j'avais mes fils. J'ai regardé l'heure et il était seulement six heures moins quart. J'avais peur que vous me chicaniez parce que je ne vous avait pas averties que j'allais à la salle de bain et je m'étais levée avant huit heures. J'ai regardé à côté et j'ai vu un autre bol de toilette avec des fils dedans. Je me demandais ce qui était arrivé à l'autre fille. J'avais l'impression (le feeling) que c'était vraiment fini et qu'il fallait que je me lève.

N2

R1

J'étais ici. J'essayais de tomber endormie pour que vous puissiez me réveiller.

R2

Il y avait un fourneau. J'étais en train de faire des crêpes et du bacon pour une grosse "gang". Il y avait de la musique. Tout de suite après, j'étais dans une voiture. J'étais assise en arrière, je ne conduisais pas. C'était toute ma famille dans la voiture. On s'en allait à un bar pour la soirée. On cherchait la blonde d'un de mes cousins. Mon cousin parlait tout bas au conducteur. J'écoutais. Je pouvais entendre. Il disait que si on allait quelque part d'autre, on allait la trouver qui buvait encore. Mon cousin était perturbé.

R3

On était dans un laboratoire. Il y avait plein de monde qui appelait. C'était un party d'une conseillère en résidence. C'était une étude menée en laboratoire mais c'était comme un party. Le monde appelait pour poser plein de questions. Je prenais les rendez-vous pour quand ils devraient dormir. Il y a une fille que je connais qui était là (ça fait longtemps que je ne lui ai pas parlé). Elle avait un petit bébé. J'étais à côté de la blonde d'un gars qui disait que j'avais l'air plus stupide que sa blonde mais que j'étais plus intelligente. Il y avait une autre personne qui disait que j'avais l'air saoule mais je ne l'étais pas. C'était toute des choses comme ça. À un moment donné, c'est moi qui dormais. J'essayais de dormir mais la musique devenait de plus en plus forte. J'avais de la misère à dormir.

N3**R1**

J'étais en résidence. Il y avait une dame qui était là pour une conférence. Elle restait en résidence pour 4 nuits. Elle voulait partir et donc voulait un remboursement d'une nuit.

R2

C'était encore à la résidence. Il y avait une madame qui s'inscrivait. On lui demandait une pièce d'identification. Elle nous racontait qu'elle était dans la Gendarmerie Royale du Canada (GRC) et qu'elle était une personne très importante. En même temps, j'étais en train de trouver une solution... c'était comme une partie de mon travail. J'essayais de trouver un chemin pour que mon frère puisse aller quelque part en bicyclette sans trop de détours, dans la ville d'Ottawa. J'essayais de trouver un chemin avec la patronne.

R3

Isabelle était venue me réveiller. On était chez elle. Je ne sais pas de quoi ça a l'air chez elle, mais en tout cas, dans mon rêve c'était ... j'ai déjà vu cette place là avant, je ne sais plus où. On écoutait la télévision et elle m'enlevait mes électrodes en même temps. C'était des "previews" de films qui allaient passer à la télévision. C'était une gang d'hommes habillés avec des casques durs jaunes et des imperméables jaunes. C'était comme des mineurs. Il y en avait un qui était sorti de sa tombe. Il était comme un squelette. Il voulait qu'un d'eux le remette dans sa tombe. Comme il disait cela, il y avait une police pas loin, donc l'autre gars ne voulait pas. Il paniquait parce qu'il avait peur de se faire attraper. Tout le monde criait en voyant le squelette.

N4**R1**

J'ai vu un ventilateur. Je m'apprêtais à aller dormir pour la nuit. C'était le soir, je pensais à demain midi. Je pensais que je ne voulais pas me lever avant midi et que le téléphone n'allait pas sonner avant midi alors il ne pourrait pas me réveiller.

R2

On dirait que je ne dormais pas. J'avais l'impression de ne pas dormir. Il y avait plein de monde. C'était comme si je ne venais pas à bout de voir une histoire qui faisait du sens. C'était au travail, pas à l'Université mais c'était au travail. C'était comme dans le rêve. Quand tu m'as réveillée j'étais en vélo et je chantais. Il y avait un petit chat qui me suivait.

R3

J'étais avec la fille de mon patron. Je ne sais pas où j'étais mais on essayait de s'arranger pour qu'elle puisse venir me mener quelque chose au travail et me laisser ses clés d'appartement ou je ne sais pas quoi. La fille a 15 ans et reste encore chez ses parents. On essayait de s'arranger voir si elle venait en ville, au centre ville pour sortir, alors elle pourrait arrêter ici pour m'apporter mes choses.

Appendix D

Matching Task instructions for judges and sample item of the
within-participant matching

Item 10 consists of the 4 waking ideation samples (2 TS & 2 SC) and 4 dream sets of participant 12.

The correct waking-dreaming pairs were as follows:

N1	-	JB
N2	-	JC
N3	-	JD
N4	-	JA

Overall, 17 correct matches were made by the 11 judges (10 naive + 1 clinical). Only 1 judge was able to complete all 4 matches for this item.

Méthode d'évaluation

Cette évaluation comporte deux phases, soit la tâche 1 et la tâche 2 comportant 12 et 13 items respectivement. Pour chaque item, vous devez prendre connaissance des 4 nuits (comprenant 3 rêves chacune) et des 4 entrevues pré-sommeil (comprenant 5 éléments chacune). Par la suite, vous devez sélectionner laquelle des entrevues pré-sommeil correspond le mieux à chacune des nuits. Les entrevues pré-sommeil sont codifiées par J (qui signifie journée) et par une lettre de A à D. Sur la feuille réponse qui vous a été distribuée, vous devez inscrire la lettre qui correspond le mieux selon vous à la nuit 1 (codée N1), à la nuit 2 (N2) et ainsi de suite. Il est à noter que chacune des lettres doit être pairée. Lorsque votre pairage sera terminé, vous pouvez passer à l'item 2 sans toutefois retourner en arrière. Il est très important d'évaluer chacun des items indépendamment les uns des autres. Vous devez donc effectuer les pairages pour chaque item en ne tenant pas compte de ce que vous avez pairé auparavant. Enfin, si vous vous sentez fatiguée et moins concentrée, vous pouvez prendre une pause sans aucun problème. D'ailleurs, il est recommandé de le faire vu le degré d'attention assez élevé que nécessite cette tâche.

ITEM 10**N1****R1**

J'étais à l'arrêt d'autobus. J'avais des prescriptions dans mes poches. C'était des bouteilles de médicaments qui se désintégraient. J'avais les poches pleines de ces bouteilles qui se désintégraient. J'attendais l'autobus pour les États-Unis.

R2

J'étais avec Claudette, une femme avec qui je travaille à la pharmacie. Elle avait un enfant. Puisqu'elle devait amener l'enfant chez la gardienne, elle est arrivée en retard. Mon patron a vraiment perdu les pédales. Il l'a engueulée devant tout le monde et il l'a renvoyée éventuellement. Je trouvais que sa réaction était exagérée. Les autres employés discutaient de cela.

R3

Ma mère aidait ma petite soeur à se préparer pour s'en aller à Sherbrooke. Elle est déménagée là il y a une semaine bientôt. Elles se chicanaient parce que ma soeur n'organisait pas assez et ma mère organisait trop. Je regardais tout cela. Cela se passait dans le sous-sol chez nous. Il y avait une pile de boîtes. Ma soeur disait que ma mère pensait trop. Ma mère disait le contraire de ma soeur.

ITEM 10**N2****R1**

J'étais dans un espèce de grand magasin. J'étais avec des inconnus. Au moment où tu m'as réveillée, la caissière m'a demandé le prix. Le magasin était très vaste. C'était comme un espèce d'ancan très achalandé. Il n'y avait pas de grandes rangées comme telles. C'était vraiment juste des genres de tables avec ce qu'il y avait à vendre. Il n'y avait pas de rangées ni de sections. C'était comme un ancan.

R2

J'étais en voiture. C'était bizarre, c'était une voiture volante. J'avais une perspective de voir la voiture. J'essayais d'éviter les arbres dans le rêve. J'étais moi-même. J'étais la conductrice. Il y avait des nuages dans le ciel. C'était gris. J'essayais de contourner les troncs d'arbres. Je ne pouvais pas passer par dessus. Il fallait que je les contourne.

R3

C'est juste comme un flash. Il fallait que je me coupe les ongles. Je n'ai pas de détails. C'est tout ce que je me souviens.

ITEM 10**N3****R1**

C'est assez flou mais je sais que c'est des statistiques là dedans. Je vois quelqu'un qui est en train de faire des statistiques. Il y a d'autres personnes autour d'elle. C'est la fête. C'est comme juste un flash. Il y avait pas mal de monde autour de cette personne là. Je ne la connais pas non plus. Moi, je ne fais rien.

R2

Je suis dans un bar. Il y a plein de monde. J'étais avec la cousine de Marie-Josée. Il y avait aussi l'amie de Marie-Josée, Marie-Claude. On cherchait Marie-Josée mais il y avait tellement de monde, c'était presque une émeute. Il y avait un gars qui était là. Il nous suivait. Il avait les cheveux très longs. Je ne peux pas voir sa figure.

R3

J'étais dans un salon chez moi. J'étais avec mon copain et un autre de ses amis que je venais juste de connaître. On regardait la télévision et on était relax. C'était un party intime d'amis. Je vois le visage de mon cousin des États-Unis que je ne vois pas souvent. C'était lui. Le film qui jouait est "Top Gun".

ITEM 10**N4**

R1

C'était une discussion entre un groupe de personnes et moi. C'était une chicane. Je ne connaissais pas les autres dans le groupe. Je ne me souviens pas des circonstances qui entouraient.

R2

Je suis un détective. Je suis à la recherche d'indices. Je sais que c'était dans un couloir étroit. Il y avait des meubles. J'essaie de penser exactement ce que je cherchais et pourquoi je cherchais mais ça ne me revient pas. J'avais un assistant avec moi aussi. C'est un petit peu comme Sherlock Holmes. Les murs du couloir étaient rouges.

R3

J'étais avec un de mes amis, Jean-Paul. Il était blessé. Je me disais que... je jouais à l'infirmière. Je vais mettre le bandage, un pansement. Je suis comme devenue médecin. Mais je n'étais pas infirmière et je n'étais pas médecin. On discutait et il me disait qu'il voulait me marier.

ITEM 10**JA**

1. Pour le premier beep, j'étais dans l'auto, j'allais reconduire un des mes amis, Charles à Ottawa, j'étais à Ottawa sur la rue Rideau. Là je viens d'arriver à la pharmacie, il est midi. Je commence mon shift. Je travaille jusqu'à 9 heures. Charles et moi on discutait de ce qu'on allait faire en fin de semaine, les plans et tout ça.
2. C'est le deuxième appel, je suis encore à la pharmacie puisque je travaille jusqu'à 9 heures. Quand vous avez appelé j'étais au téléphone avec un client super fatiguant. Il y a plein de problème dans son dossier avec des médicaments. J'étais sur l'ordinateur en train de figurer son dossier.
3. C'est le troisième appel, toujours à la pharmacie, j'étais à l'ordinateur et je remplissais des prescriptions, donc je ne pensais pas à rien de spécifique, je me concentrais vraiment sur la prescription dans le sens que si c'est un médicament générique, quelle quantité donner.
4. C'est le quatrième appel, toujours à la pharmacie. Je suis en train de parler avec Josée une de mes collègues de travail à propos d'une commande pour un client. Il y a un produit qu'on avait commandé, du sirop de calcium qui n'est pas arrivé encore et on discutait s'il avait été commandé ou si quelqu'un d'autre l'aurait reçu et ne nous l'avait pas donné.
5. Je viens d'arriver à l'université, j'ai fini de travailler à 9 heures, ensuite je suis allée à la maison. J'ai mangé un peu, un petit souper, j'ai parlé avec mes parents de ma journée, journée très occupée, je me suis préparée tranquillement, j'ai préparé mes choses pour aller coucher à l'université. J'ai appelé Charles et Michael, des amis et c'est ça, là je m'en vais faire dodo.

ITEM 10**JB**

1. Alors voici mes 5 préoccupations de la journée. La première c'est à la pharmacie Jean Coutu, je travaille au laboratoire, avec les assurances, donc c'est du travail de bureau, j'étais supposée donner cet emploi d'assurance au mois de mars et maintenant on est au mois d'août, et puis je l'ai encore. Je n'ai pas vraiment le temps d'entraîner la nouvelle. Ça c'est une de mes plus grandes préoccupations, j'aimerais être capable de lui enseigner le plus vite possible, j'espère qu'elle apprend vite parce qu'on a pas beaucoup de temps pour l'entraîner.
2. Deuxième préoccupation, ma petite soeur déménage à Sherbrooke. C'est la première fois qu'elle part de la maison. naturellement. C'est ma petite soeur Martine. Ca va faire une semaine samedi, puis je m'inquiète un peu, à savoir si elle s'arrange bien. si elle n'a pas eu de problèmes à trouver son chemin sur le campus parce qu'elle est à l'université là-bas. Elle fait un baccalauréat en géographie avec une mineure en communication, alors j'espère que tout va bien aller pour elle et qu'elle aura des bonnes notes et qu'elle aura beaucoup de fun là-bas.
3. Troisième préoccupation, côté coeur. Admettons que j'ai trois possibilités et pas une m'intéresse et je me demande si je vais trouver l'âme soeur comme on dit, ça me préoccupe assez, j'espère me trouver quelqu'un. Je sais que je suis encore jeune, mais il me semble que je suis prête à ça, je suis tannée du party, c'est fini.
4. Quatrième préoccupation, j'ai de la famille malade, mes deux grands-mères, maternelle et paternelle et mon oncle Pierre, le frère de mon père. Les trois sont très malades, je ne veux pas qu'ils souffrent trop, on voit la fin approcher, c'est évident mais j'aimerais qu'on leur épargne la souffrance et qu'on nous laisse plus de temps. On reçoit des téléphones souvent comme quoi ils sont rendus à l'hôpital et c'est inquiétant.
5. Cinquième préoccupation, c'est au niveau de l'école. En septembre je commence des cours préparatoires pour les cours qui me manquent pour la maîtrise en orthophonie et ceci me préoccupe beaucoup car il y a plusieurs demandes et ils n'en acceptent pas beaucoup et j'espère être acceptée. C'est une de mes préoccupations les plus fréquentes, et j'espère juste avoir des bonnes notes et être acceptée. J'espère être acceptée à Ottawa mais il y a aussi des autres possibilités d'universités, donc ça me préoccupe beaucoup.

ITEM 10**JC**

1. Je suis à la pharmacie Jean Coutu au travail. je suis entrain de remplir une prescription à l'ordinateur donc je me concentrais sur comment bien entrer la posologie, calculer la quantité de médicaments à donner pour le mois.
2. Je suis devant l'ordinateur encore une fois parce que je suis toujours à la pharmacie jusqu'à 5h, je travaille. Moi et une collègue de travail Nancy on est en train d'essayer de figurer comment transférer une prescription de Val D'or à Rouyn sans faire d'appel téléphonique.
3. Je suis toujours à la pharmacie Jean Coutu. Je suis en train de dîner, une pause de 15 minutes ça fait du bien. On est très occupé. Puis on est entrain de discuter avec une collègue de travail. On est entrain de discuter des histoires d'enfance et de nos voyages.
4. Je suis toujours à la pharmacie. Il est 4 heures moins vingt à peu près. Je suis en train de remplir une prescription. Je suis avec le pharmacien. Je suis très congestionnée. Je voulais savoir ce que je pouvais faire. À part de ça, là ça tombait mort à la pharmacie. On n'est pas très occupé puis je devrais quitter vers 4h.
5. Le cinquième appel et le dernier. Je suis chez nous. Je suis en train de faire le souper. Je me prépare pour aller à mon cours de statistique tranquillement. Je ne suis pas pressée. Le cours est plate. J'écoute de la musique puis je relaxe. Je me décompresse de ma journée de travail.

ITEM 10**JD**

1. Bon alors les cinq préoccupations qui m'ont le plus inquiétée dans les derniers jours, bon la première, on a de la maladie dans la famille. Mes deux grands-mères maternelles et un des frères à mon père, les trois sont très malades. Alors mon oncle Pierre est diabétique, ma grand-mère maternelle est anémique et ma grand-mère paternelle est aussi diabétique et elle est prise du coeur. Alors les trois sont très très très malades, on ne sait pas trop, c'est beaucoup de va et vient à l'hôpital.
2. Ma deuxième préoccupation, bien je viens juste de finir mes examens aujourd'hui, en fait ce soir je viens de finir mon cours de statistique. j'avais psychologie, introduction à la psychologie hier, lundi le 12 août alors j'espère juste que tout s'est bien déroulé, tout s'est bien passé.
3. Ma troisième préoccupation, côté amoureux, je suis toujours en situation avec Michael Daniel, un homme que j'ai rencontré, un ami d'un ami, et c'est toujours, c'est en train de se décider.
4. Ma quatrième préoccupation ma petite soeur déménage à Sherbrooke samedi le 17 août et j'espère que tout va bien se passer pour elle. Je m'inquiète un petit peu, c'est ma petite soeur Martine et puis c'est la première fois qu'elle part de la maison et j'espère que tout va bien se passer pour elle, je m'inquiète un peu pour elle. Sherbrooke c'est quand même à trois heures d'ici. Elle s'en va étudier à l'université là-bas. Elle est inscrite en géographie avec une mineure en communication. J'espère que tout va bien se passer pour elle parce que c'est ma petite soeur. On s'inquiète toujours les grandes soeurs pour les petites soeurs.
5. Ma cinquième préoccupation, bien le travail. Je travaille à la pharmacie Jean-Coutu à Aylmer et comme c'est là je suis dans le processus d'entraîner quelqu'un, parce que j'avais deux emplois à la pharmacie et j'en ai laissé un. Et c'est à savoir si tout va bien se dérouler comme ça devrait car on est un peu pressé, il faut qu'elle apprenne le plus vite possible. Il faut que tout se fasse très vite. Anne, la fille que je dois entraîner, bien j'espère qu'elle est prête à apprendre vite car on a des 'deadlines' et ils faut qu'ils soient atteints dans le bon temps.

Appendix E

Preliminary version of the Grenier Temporal Reference Scale

QUESTIONNAIRE DES RÉFÉRENCES TEMPORELLES (version préliminaire)*

A. Encerclez sur l'échelle appropriée le chiffre qui correspond le mieux à l'évaluation personnelle que vous faites de votre rêve. N'encerclez qu'une seule valeur par question.

	4	3	2	1
	Beaucoup	Modérément	Un peu	Pas du tout
1. La qualité de mon rappel de rêve était bonne:.....				4 3 2 1
2. Mon rêve était vivant:.....				4 3 2 1
3. Dans mon rêve, j'ai ressenti des émotions. Il s'agit des émotions suivantes:				
- de la joie.....				4 3 2 1
- du bonheur.....				4 3 2 1
- de l'appréhension.....				4 3 2 1
- de la colère.....				4 3 2 1
- de la tristesse.....				4 3 2 1
- de la confusion.....				4 3 2 1
- de la peur.....				4 3 2 1
- de l'anxiété.....				4 3 2 1

B. Veuillez cocher (✓) la réponse qui semble la plus appropriée.

1. Dans mon rêve: - j'avais mon âge actuel..... ()
 - j'étais plus jeune que je le suis..... ()
 - j'étais plus vieux, vieille que je le suis.... ()
2. Dans mon rêve, j'avais l'âge:
- d'un ou d'une enfant (entre 6 et 12 ans)..... ()
 - d'un ou d'une adolescent(e) (entre 13 et 19 ans)... ()
 - d'un ou d'une jeune adulte (entre 20 et 29 ans).... ()
 - d'un ou d'une adulte (entre 30 et 45 ans)..... ()
 - d'une ou d'une adulte (entre 46 et 65 ans)..... ()
 - d'une personne âgée (plus de 65 ans)..... ()
3. Dans mon rêve, j'ai senti ou goûté à des choses que j'ai déjà connues:
- Non..... ()
 - Oui: il y a moins de 10 ans..... ()
 - Oui: il y a plus de 10 ans..... ()

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

* Note: Une version modifiée de ce questionnaire a été publié par Grenier et al. (1998).

4. Dans mon rêve, les lieux se réfèrent à une période de temps que j'ai déjà connue:

- | | | | |
|-----------------------------|-----|------------------------------|-----|
| - inconnus..... | () | - il y a 1 an..... | () |
| - en soirée..... | () | - il y a 2 à 4 ans..... | () |
| - hier..... | () | - il y a 5 à 9 ans..... | () |
| - avant hier..... | () | - il y a 10 à 19 ans..... | () |
| - semaine dernière..... | () | - il y a 20 à 29 ans..... | () |
| - mois dernier..... | () | - il y a 30 à 39 ans..... | () |
| - 6 derniers mois..... | () | - il y a 40 à 49 ans..... | () |
| - derniers 6 à 12 mois..... | () | - il y a 50 ans ou plus..... | () |

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

5. Dans mon rêve, les objets se réfèrent à une période de temps que j'ai déjà connue:

- | | | | |
|-----------------------------|-----|------------------------------|-----|
| - inconnus..... | () | - il y a 1 an..... | () |
| - en soirée..... | () | - il y a 2 à 4 ans..... | () |
| - hier..... | () | - il y a 5 à 9 ans..... | () |
| - avant hier..... | () | - il y a 10 à 19 ans..... | () |
| - semaine dernière..... | () | - il y a 20 à 29 ans..... | () |
| - mois dernier..... | () | - il y a 30 à 39 ans..... | () |
| - 6 derniers mois..... | () | - il y a 40 à 49 ans..... | () |
| - derniers 6 à 12 mois..... | () | - il y a 50 ans ou plus..... | () |

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

6. Dans mon rêve, il y a des personnes que j'ai connues à un moment donné, c'est-à-dire:

- | | | | |
|-----------------------------|-----|------------------------------|-----|
| - inconnus..... | () | - il y a 1 an..... | () |
| - en soirée..... | () | - il y a 2 à 4 ans..... | () |
| - hier..... | () | - il y a 5 à 9 ans..... | () |
| - avant hier..... | () | - il y a 10 à 19 ans..... | () |
| - semaine dernière..... | () | - il y a 20 à 29 ans..... | () |
| - mois dernier..... | () | - il y a 30 à 39 ans..... | () |
| - 6 derniers mois..... | () | - il y a 40 à 49 ans..... | () |
| - derniers 6 à 12 mois..... | () | - il y a 50 ans ou plus..... | () |

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

7. Dans mon rêve, les événements se réfèrent à une période de temps que j'ai connue:

- | | | | |
|-----------------------------|-----|------------------------------|-----|
| - inconnus..... | () | - il y a 1 an..... | () |
| - en soirée..... | () | - il y a 2 à 4 ans..... | () |
| - hier..... | () | - il y a 5 à 9 ans..... | () |
| - avant hier..... | () | - il y a 10 à 19 ans..... | () |
| - semaine dernière..... | () | - il y a 20 à 29 ans..... | () |
| - mois dernier..... | () | - il y a 30 à 39 ans..... | () |
| - 6 derniers mois..... | () | - il y a 40 à 49 ans..... | () |
| - derniers 6 à 12 mois..... | () | - il y a 50 ans ou plus..... | () |

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

8. Dans mon rêve, les activités se réfèrent à une période de temps que j'ai connue:

- | | | | |
|-----------------------------|-----|------------------------------|-----|
| - inconnus..... | () | - il y a 1 an..... | () |
| - en soirée..... | () | - il y a 2 à 4 ans..... | () |
| - hier..... | () | - il y a 5 à 9 ans..... | () |
| - avant hier..... | () | - il y a 10 à 19 ans..... | () |
| - semaine dernière..... | () | - il y a 20 à 29 ans..... | () |
| - mois dernier..... | () | - il y a 30 à 39 ans..... | () |
| - 6 derniers mois..... | () | - il y a 40 à 49 ans..... | () |
| - derniers 6 à 12 mois..... | () | - il y a 50 ans ou plus..... | () |

Il s'agit de: (A) _____
 (B) _____
 (C) _____
 (D) _____

NOTES