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Continuity of emotions across pre-sleep state and the content of dreams

Teresa M. Picciocchi
B.A., College of St. Elizabeth

CONTINUITY OF EMOTIONS ACROSS PRE-SLEEP STATE AND THE CONTENT OF DREAMS

By

TERESA M. PICCIOCCHI

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Continuity of Emotions Across Pre-sleep State

And the Content of Dreams

By

Teresa M. Picciocchi

I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Master of Arts.

Kenneth A. Blick

Dr. Kenneth A. Blick, Committee Chair

Frederick J. Kozub

Dr. Frederick J. Kozub, Committee Member

Scott T. Allison

Dr. Scott T. Allison, Committee Member

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Continuity of Emotions Across Pre-sleep State and the Content of Dreams

Teresa Picciocchi

University of Richmond

Abstract

The relationship between unmanipulated pre-sleep states and the affective composition of dreams was investigated. Sixty college students completed the State-Trait Personality Inventory (STPI) prior to retiring for the night and the Differential Emotion Scale (DES-IV) focusing upon any dream recalled upon awakening. In support of the Continuity Theory, which states that our personalities and experiences are reflected in our dreams, significant positive correlations were found between pre-sleep curiosity and the presence of interest in the dream, pre-sleep anger and anger in the dream and pre sleep depression and sadness within the dream. Support for the Day Residue effect was obtained when 93% of subjects recalled incidents from the immediately preceding day had triggered dream content.

Continuity of Emotions Across Pre-sleep State and the Emotional Content of Dreams

"Dreams are true while they last,
and do we not live in dreams?"

Alfred Lord Tennyson
The Higher Pantheism

Although we spend a third of our lives in the realm of sleep, our understanding of the meaning and purpose of dreams remains largely incomplete. Within the field of psychology, the topic has stirred debate since Freud first proposed that the unconscious disguises our innermost wishes during sleep to mask their disturbing nature. Over the years, theories on the function of dreams have evolved with the focal interests of researchers. Consequently, dreams have been said to serve a physiological role, an information processing service, and an emotion regulation function.

In 1988, a Harvard neurobiologist proposed an activation-synthesis hypothesis that appears to be the antithesis of Freud's theory of dreams. Basically, Hobson's theory focuses on the pons, a part of the hindbrain, which releases three neurotransmitters which determine cognition, mood and memory, and emotions. During sleep and particularly

during REM, neuromodulators in the pons randomly send out electrical firings which produce an abundance of images, thoughts, feelings and emotions. Consequently the receiving forebrain attempts to integrate all this haphazard activation into the narrative of dreams.

Other research suggests that while we dream we are integrating current experiences with past ones already established in long term-memory (Evans, 1983; Palombo, 1980). In a similar vein, Breger (1969) also proposed that the memory system is involved with dreaming. However, he believed that because of fewer demands placed on the brain due to a decrease of external influences, stored information is more accessible. Therefore, events of the day which are rich in emotion trigger memories of comparable emotional occurrences of our pasts, a process which stimulates dreaming.

In terms of the effect these emotions have on the dream, Kramer (1982) posited the selective mood regulatory theory, nicknamed the "Thermostat theory." Basically, each of us has a set mood that remains fairly consistent throughout our lives. When something triggers an agitation of emotions, our dreams will regulate us back to an emotionally comfortable level.

The relevancy of the purpose of dreaming centers upon whether mental health professionals should explore the content of their clients' dreams during therapy. If our sleep mentations merely are, as Hobson suggests, the results of random neural firings than their study would seem unsubstantiated. Conversely, if dreams derive from the mental processing of information and emotions, than their content would illustrate what the mind deems is noteworthy. Hence they may reflect significant events and concerns of waking life.

The latter premise has been incorporated into the Continuity Theory, which proposes that what we dream about mirrors our waking personalities, unique experiences and life events (Cartwright, 1969; Cohen, 1973; Hall & Nordby, 1972; Kramer et al., 1976). In 1953, the seeds for the continuity hypothesis were planted when Hall examined the dreams of college students, revealing that recalled settings were usually familiar to the dreamer and that characters in dreams were frequently people with whom the dreamer was emotionally and/or oppositionally involved.

One branch of research exploring the succession between waking life and the content of dreams has concentrated on representative characteristics of the dreamer. Demographic

variables such as race, sex, marital status, and socioeconomic standing are associated with the content of our dreams (Foulkes, 1967; LeVine, 1966). For instance, while women generally can recall significantly more dreams than men (Winget, Kramer, & Whitman, 1972), the affective qualities of their dreams change with age; younger women recount more emotions in their dreams than do older woman (Blick & Howe, 1984; Brenneis, 1975; Zepelin, 1981).

Other researchers have explored the Continuity Theory with an emphasis on the personality and psychopathology of the dreamer. Jacka (1995) found that subjects characterized as intuitive by the Myers-Briggs Type Indicator report dreams with more emotional intensity and disturbing qualities than do sensate subjects. Interestingly, studies have also associated the frequency of nightmares to personality characteristics. Schizophrenics and individuals with elevated scores on the Minnesota Multiphasic Personality Inventory (MMPI) experience significantly more nightmares than the general population (Berquier & Roderick, 1992; Hartman, 1984).

The continuity between waking life and the realm of dreams has been investigated with other abnormal populations as well. For example, in 1992 Brink and Allan studied the

dreams of anorexic and bulimic women. Their findings suggest that these women report significantly more allusions to impending doom, attacks upon the dreamer by humans, animals or things, and feelings of being watched than do their non-eating disordered counterparts. However, as malevolent as they first appear, these disturbing elements may ultimately provide a beneficial service.

Recently dream researchers have proposed an addendum to the Continuity Theory as their studies indicate that dreams may serve an adaptive/ problem solving function via embodying waking disharmony (Hill, 1996). By way of illustration, Cartwright (1991) investigated the dreams of clinically depressed and non-depressed individuals experiencing a marital separation. She discovered that depressed subjects had dreams with stronger affect and more disturbing content. Interestingly, however, she found that depressed individuals who incorporated their former spouses into their dreams showed significantly greater mental health improvement one year after the initial study than compared to those had no such dreams.

Nonetheless, the adaptive/ problem solving function of dreams has limits. In a study focusing on the dreams of Holocaust survivors, Lavie and Kaminer (1991) found that well

adjusted survivors recalled significantly less dreams than less adjusted survivors and control subjects. In addition, less adjusted survivors experienced dreams with higher levels of general anxiety, guilt anxiety and aggression as well as more dreams about their childhood than did well adjusted survivors and control subjects. Hence it appears that when dreams aren't able to assist us in surmounting our difficulties, their very absence may be more beneficial.

However, the Continuity Theory is not limited to encompassing aspects of waking life. In other words, particular instances and minor episodes may materialize in dreams. Consequently another component of the theory that has been investigate focuses on the temporal relationship between waking experiences and dreams.

When material of the immediately preceding day presents itself in dreams, the day residue effect is said to be enacted. Subjects participating in sleep laboratory studies have reported that the researchers appeared in their dreams (Barad et al., 1961). After recording 800 of his own dreams and associating them to 463 daytime events, Hartman (1963) found that 94% of his dreams incorporated events from the previous day. However, an overview of research on the topic

(Nielsen & Powell, 1992) suggests that the percentage if dreams containing day residue is more likely about 65-70%.

Attempting to explore the phenomenon of day residue, researchers have sometimes manipulated pre-sleep conditions and examined the effect on dreams. Hence subjects have been deprived of fluid (Dement & Wolpert, 1958), food and fluid (Bokert, 1968 as cited in Van de Castle, 1994), and normal color perception through the wearing of rose tinted glasses (Roffwerg et al., 1978). Findings suggest that these efforts successfully elicited reflections of the manipulated limitations into dream content.

In several other studies, pre-sleep influences were exerted onto subjects via movies watched prior to sleep. Researchers then assessed the content of subjects' subsequent dreams for elements of the films which might have been incorporated (Foulkes & Reuchtschaffen, 1964; Witkin, 1969; Witkin & Lewis, 1967). Apparently, movie and movie elements which trigger a greater emotional response are more likely to be incorporated into dreams than those which produce more neutral or apathetic reactions.

Nonetheless, a movie as a stimulus can not replicate emotions produced without manipulation and as the result of personally relevant experiences. One study (Breger, Hunter, &

Lane, 1971 as cited in Van de Castle, 1994) addressed this issue by employing two unique groups of subjects. Five participants, each of whom was scheduled for major surgery, composed the first group. The second group consisted of 4 undergraduate students who participated in group therapy. During their sessions, their emotions, fears, conflicts, and memories were figuratively dissected. Both groups reported numerous examples of emotions, triggered by their situations, being incorporated into their dreams.

The emotional content of dreams has been a focus of research in and of itself. Contradictory findings from sleep laboratory studies suggest that emotions are present in around 12.5% of reported dreams (McCarley & Hobson, 1979) or in 70-75% of them (Foulkes, Sullivan, Kerr, & Brown, 1988; Strauch, Loepfe, & Meier, 1987). However, the obvious disparity may be attributable to methodological considerations (Nielsen, Deslauriers, & Baylor, 1991); for example, subjects in the McCarley and Hobson study were not directly asked to describe the emotions in their dreams and consequently may have unwittingly omitted them. Most researchers, however, agree that the emotional content of dreams is more often negatively expressed (Hall & Van de Castle, 1966; Nielsen, T.A. et al., 1991; Stairs & Blick,

1979) with such descriptions as fear, anger, distress and shame.

An important aspect of Continuity Theory concerns the relationship between the non-experimentally stimulated emotional state of the dreamer directly prior to sleep and the emotional content of subsequent dreams. Are unmanipulated pre-sleep states indicative of the affective composition of dreams due to the phenomenon of day residue?

The present study examined the relationship between the self reported, pre-sleep state of the dreamer and the emotional content of dreams. In particular, it was hypothesized that positive correlations would be obtained between:

1) reported anxiety in pre-sleep state and the presence of fear in the dream;

2) reported curiosity in pre-sleep state and the presence of interest in the dream;

3) anger in pre-sleep state and the presence of anger in the dream;

4) depression in pre-sleep state and the presence of sadness in the dream.

Method

Subjects

Sixty-two undergraduates (46 females and 14 males) were recruited from the following courses: Introduction to Psychological Science (32 students), Motivation and Emotion (9 students), Abnormal Behavior (8 students), and Cognitive Processes (13 students). Data from two males in the introductory course could not be used as their submitted materials were completed incorrectly. Subjects received credit toward their research participation requirements for their respective courses.

Materials

STPI Form Y-1: The State-Trait Personality Inventory (Spielberger, 1995) consists of eight 10 item subscales measuring state and trait anxiety, anger, depression and curiosity. The 40 items pertaining to state have been extracted for use in this study. (See Appendix A)

As a newly revised measure of personality, the STPI Form Y-1 has not yet been utilized extensively in research. It was chosen for the present study, however, because of the validity and wide use of its State-Trait predecessors (Barker, Barker, & Wadsworth, 1977; Ben-Zur & Zeidner, 1995;

Steere, Butler & Cooper, 1990; Stuckless, Ford, & Vitelli, 1995).

Dream Journal: Relevant information concerning dreams was recorded in specially designed dream journals. Each journal began with an implied consent form, 8 suggestions for improving dream recall (Hill, 1996), and a page reminding subjects of the correct procedure for completing the journal. Subjects described the settings, characters and plots of their dreams in designated sections of a dream synopsis page. Exploratory questions concerning daytime residue in the dream and the quality and quantity of the night's rest were answered as well; subjects noted any incidents from the previous day that might have triggered any portion of the dream, the number of hours they slept and the relative quality of the night's sleep on a 5 level Likert Scale (Bad, Poor, Average, Good, and Excellent). Finally, subjects reported whether they recorded the dream sometime in the night or in the morning. (See Appendix B)

DES-IV: To complete the dream journal, subjects responded to 36 items of the Differential Emotions Scale IV (Blumberg & Izard, 1985). The DES-IV assesses the expression of 12 emotions: interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, and

hostility inward. Numerous studies support the construct validity of this assessment (Blumberg & Izard, 1985; Hill, Diemar, Hess, Hillyer, & Seeman, 1993).

Designed for measuring state and trait emotional expression, the scale was modified for the present study. The directional prompt "*In this dream, did you...*" replaces the former "*In your daily life, how often do you...*" for state assessment and "*During the past week, how often did you...*" for trait evaluation. In addition, the Likert Scale based on frequency (with 1 corresponding to *Rarely or Never* and 5 representing *Very Often*) was altered to reflect degree (with 1 equivalent to *Not At All* and 5 denoting *Very Much So*). (See Appendix C)

Procedure

In groups of no more than ten, all potential subjects from the research participation pool (approximately 125 students) were briefed about the study and given their STPI forms and Dream Journals. They were told that the purpose of the study was to examine dreams. They were assured that all submitted information would be kept confidential and that all data would be reported in group form, with no individual response alluded to or discussed. Subjects were asked to complete the STPI directly prior to retiring for the night.

They were then be asked to complete the dream journal the following morning if they remembered any dream they had. As subjects might have completed the STPI and not recalled a dream upon awakening, they were each given 4 copies of the questionnaire, with additional copies available upon request. However, emphasis was placed on evaluating and submitting a dream that was experienced on the same night that the pre-sleep questionnaire was completed.

Upon completion of the study, subjects had numerous opportunities to learn more about the study and the findings. All subjects were given information on how to the chief researcher (i.e. office number, home phone number and e-mail address) in the dream journals. In addition, subjects had access to summary presentations via a research symposium on campus and a poster presentation.

Results

Correlations

Pearson product-moment correlations were used to determine the degree to which pre-sleep state correlates with dream content. With one-tailed tests of significance, positive correlations were found between:

1) the STPI variable curiosity and the DES-IV variable interest (r = .31, p = .00);

2) the STPI variable anger and the DES-IV variable anger (r = .29, p = .01);

3) the STPI variable depression and the DES-IV variable sadness (r = .49, p = .00); and

4) the STPI variable anxiety and the DES-IV variable fear (r = .13, p = .32).

Correlations between the emotion variables of the State-Trait Personality Inventory and the Differential Emotions Scale IV are available in Table 1. As this analysis was exploratory, the probabilities noted on this matrix are based on two-tailed test of significance.

As the DES-IV basically was designed to differentiate emotions, for the purpose of this study derived scores for each of its variables were transformed to reflect the weight each question item response had upon its relevant emotion. Consequently, each item score was standardized before being multiplied by its factor loading to the emotional variable it assesses. Factor loadings were established by varimax rotation of a factor analysis of the DES-IV (Izard, Libero, Putnam, & Haynes, 1993).

When Pearson product-moment correlations with one-tailed tests of significance were conducted with the transformed DES-IV variables and the STPI variables, significant positive correlations were still obtained for STPI curiosity and the DES-IV *interest* (r = .30, p = .01), STPI anger and DES-IV anger (r = .30, p = .01) and STPI depression and the DES-IV sadness (r = .49, p = .00). The correlation between STPI *anxiety* and DES-IV *fear* did not reach significance (r = .15, p = .13).

State-Trait Personality Inventory

The mean scores and standard deviations for the STPI state variables anger, depression, curiosity and anxiety are reported in Table 2. Mean scores obtained from 66 male and 133 female college students on state anxiety, curiosity, and anger are provided for comparison. These scores, provided in the Preliminary Manual for the STPI , are derived from a study utilizing an earlier version of Spielberger's inventory which did not assess depression.

Differential Emotions Scale IV

Means scores and standard deviations of the twelve emotions assessed by the DES-IV and their prevalence in the

recorded dreams are reported in Table 3. The minimum score obtainable for each emotion is 3 while the maximum is 15.

The Day Residue Effect

Fifty-six of the subjects (93%) were able to identify an event, issue or fleeting thought from the previous day which might have triggered or caused a portion of the recorded dream.

Quantity and Quality of Sleep

Subjects slept an average of 7.02 hours (*SD* = 1.07) on the night of participation. The minimum hours of sleep reported was 4 while the maximum was 9. One subject did not record how many hours she slept.

Approximately 83% of subjects rated the quality of their sleep on the research participation night as Average (n= 26) or Good (n= 23). While 3 subjects reported an Excellent night of sleep, 2 viewed their sleep as relatively Bad and 6 as Poor. Assessment of quality of sleep was positively correlated with hours of sleep ($r = .49$, $p = .00$).

For exploratory purposes, Pearson product-moment correlations were conducted between assessment of sleep

quality and the STPI variables assessing state prior to sleep and the DES-IV variables evaluating emotions experienced in dreams. Significant findings are reported in Table 4.

Discussion

The present study investigated the relationship between pre sleep state of the dreamer and the emotional content of dreams. As expected, significant positive correlations were found between:

1) reported curiosity in pre-sleep state and the presence of interest in the dream,

2) reported anger in pre-sleep state and the presence of anger in the dream, and

3) reported depression in pre-sleep state and the presence of sadness in the dream.

These findings support the premise that our dreams reflect our waking personalities and life issues, the basic assumption of Continuity Theory.

Interestingly, the expected positive correlation between reported anxiety in the pre-sleep state and the presence of fear in the dream was not obtained. This finding is surprising considering the reported prevalence of anxiety and other negative emotions in dreams, particularly when stress-

inducing life factors are involved (Cartwright, 1991; Hall & Van de Castle, 1966; Nielsen, T.A. et al., 1991; Stairs & Blick, 1979). However, this lack of correlation might be attributable to several factors.

To begin with, only 60 subjects were obtained for the present study. As the correlation approached significance (r = .15, p = .13) with the limitations of this sample size, perhaps more subjects would have led to the expected findings.

Another factor to consider concerns the timing of the study. Data was collected in February and March, usually a relatively "down time" for most college students. The majority of freshmen have adjusted to their college environments by the Spring Semester. The holidays and any anxiety they might have caused have passed while final exams are months away. Consequently, self reported ratings of anxiety prior to sleep and/or the presence of fear in dreams may have been higher if they were obtained at a different time in the school year.

Finally, the lack of significant correlation may be indicative of the fact that the two assessment measures used in this study (the State-Trait Personality Inventory and the Differential Emotions Scale) are not appraising the same

underlying affect. For the other correlations, obvious similarities exist in the definitive qualities and expressions of the emotions being assessed. For example, anger is evaluated on the STPI based on degree of agreement with such statements as "I feel like yelling" and "I feel like breaking things" while on the DES-IV anger is assessed by statements such as "(Do you) feel like screaming at somebody or banging on something." However, for the assessment of anxiety by the STPI, statements such as "I feel nervous" and "I am jittery" are used whereas the DES-IV evaluates fear with assertions such as "(Do you) feel scared, uneasy, like something may harm you." Consequently, although the terms "anxiety" and "fear" may seem comparable, the STPI focuses on the former with an emphasis on the bodily tension associated with stress while the DES-IV explores the latter with the focus on natural responses to being frightened by an external stimulus.

Interestingly, however, degree of pre sleep anxiety does correlate positively and significantly with the presence of other emotions in dreams. Affective levels of sadness, anger, shame and hostility inward were related to STPI scores of anxiety. On a speculative note, this could indicate that our dreaming selves are experiencing the emotions which are our typical reactions to anxiety in everyday life.

Table 1 also reveals other interesting relationships between emotions present prior to sleep and those that appear in the content of our dreams. Negative emotions on the STPI are positively correlated with negative undesirable emotions on the DES-IV whereas positive emotions experienced before falling asleep appear related to more pleasant affects in dreams. For example, STPI anger and DES-IV contempt are significantly correlated ($r = .27$, $p < .05$) as are STPI curiosity and DES-IV surprise ($r = .35$, $p < .01$).

Also worth noting are the high positive correlations between pre sleep anger, anxiety, and depression. Obviously, though emotions can be described and assessed separately, they often appear simultaneously. Based on the high correlations amongst many of the emotions assessed by the DES-IV, affective intermingling occurs in our dreams as well.

Overall, scores obtained on the State-Trait Personality Inventory are fairly consistent with scores previously reported for college students from a prior version of the inventory. In the present study, women scored higher than their male peers on all four of the emotions being assessed. However, no significant differences were found when t tests for independent means were conducted.

In terms of the affective quality of dreams, the prevalence of emotions can be ranked as follows (from most to least): surprise, interest, anger, fear, enjoyment, sadness, contempt, shyness, guilt, shame, disgust and hostility inward. This ranking is based on mean scores reported on the Differential Emotions Scale IV as applied to the presence of emotions in dream content. When gender is taken into consideration, however, the rank order changes. For male subjects, the order is: interest, surprise, enjoyment, anger, fear, contempt, shyness, sadness, shame, disgust and hostility inward (equivalent means), and guilt. Female subjects, on the other hand, experienced dreams with the following order of prevalence: surprise, interest, anger, fear, sadness, enjoyment, contempt, guilt, shyness, shame, disgust, and hostility inward. As a whole, women assessed their dreams as containing significantly more guilt and sadness. These findings are interesting, particularly if they are reflective of the prevalence of emotions in waking life. Future research may focus on whether these differences are present throughout the life span. Furthermore, the potential to change mental schemas, such as perceptions of guilt, using dream content as a variable for evidence of success may also be explored.

In terms of the Day Residue Effect, findings from this study indicate that the presence of material from the immediately preceding day is quite extensive. Perhaps by completing the dream synopsis part of the journal, subjects "prodded" their memories and thus were able to recall associations more easily than in previous studies (see Nielsen & Powell, 1992 for an overview).

Nevertheless, what may be the most intriguing and surprising finding of this study was the result of unplanned, exploratory analysis. Having collected data on the quality of sleep on the night of participation in this study, it was decided to correlate this information with how many hours of sleep the subject had (obviously an expected positive correlation) as well as with obtained scores on the STPI and the DES-IV. The latter correlations were conducted using two-tailed tests of significance. As displayed in Table 4, three of the STPI variables (anger, depression, and anxiety) and six of the DES-IV variables (disgust, anger, sadness, shame, enjoyment, and contempt) were significantly correlated with quality of sleep. With the exception of DES-IV enjoyment, all of these relationships were negative.

These finding suggest a fascinating premise in their own right. Just as our waking lives affect our dreams, so too do

our dreams affect our waking lives. As our perception of our night's rest influences our waking mood, the content of our dreams may very well direct our daily disposition. Apparently "continuity" does not have a limited trajectory.

Overall this study has lent support to the Continuity Theory and the Day Residue Effect, as well as advanced our understanding of the succession between the realm of our dreams and our waking personalities. It should be noted, however, that these findings were obtained from a study conducted outside a sleep laboratory. Although we like to believe in the integrity of all subjects, we must be cautious in over generalizing from a study dependent on subject honesty in method completion.

Future research under a more controlled environment may focus on emotions in dreams as related to the state and traits of the dreamer. In the present study, one was only able to "tap" pre-sleep state as determined by one questionnaire. However, whether these states are consistent with the dreamers' personalities or completely uncharacteristic is unknown. Perhaps we do dream more, as Kramer (1982) suggests, when we have experienced a surge of emotions that leaves us needing affective homeostasis. On the other hand, maybe our

dreams are more consistent with our everyday personalities, mirroring our most prevalent state and trait personalities.

Ultimately our dreams are, at best, elusive. In the very act of describing them, we recognize just how feeble our grasp was. However, with each bit of knowledge we gain from their study, we find they become a bit more tangible.

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Table 1

Correlations Among Emotions of the State-Trait Personality Inventory and the Differential Emotions Scale IV

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. STPI Anger	---															
2. STPI Anxiety	.71+	---														
3. STPI Curiosity	.23	.14	---													
4. STPI Depression	.66+	.62+	-.02	---												
5. DES-IV Anger	..29*	.36+	-.01	.31*	---											
6. DES-IV Contempt	.27*	.24	.03	.04	.62+	---										
7. DES-IV Disgust	.10	.18	.07	.15	.55+	.43+	---									
8. DES-IV Enjoyment	-.15	-.01	.35+	-.20	-.49+	-.30*	-.44+	---								
9. DES-IV Fear	.03	.13	-.13	.24	.27*	-.03	.32*	-.24	---							
10. DES-IV Guilt	.01	.09	-.08	.20	.01	-.08	-.09	-.14	.34+	---						
11. DES-IV Hostility Inward	.22	.30*	-.08	.33+	.32*	.10	.36+	-.22	.46+	.40+	---					
12. DES-IV Interest	.00	.04	.31*	-.11	-.33+	.01	-30*	.46+	-.07	.07	-.29*	---				
13.DES-IV Sadness	.31*	.41+	.05	.49+	.57+	.24	.56+	-.41+	.39+	.24	.59+	-.25*	---			
14. DES-IV Shame	.03	.33*	.17	.18	.27*	.02	.20	.09	.32-	.24	.40+	-.01	.30*	---		
15. DES-IV Shyness	-.02	.23	.12	.14	.06	-.07	-.01	.29*	.30*.	.39+	.50+	.00	..25	.62+	---	
16. DES-IV Surprise	-.03	-.01	.41+	-.10	.00	-.01	.14	.14	.38+	.04	-.03	.38+	.08	.21	.03	---

*p < .05. +p < .01

Table 2

STPI mean scores with gender division for state anxiety, curiosity, anger, and depression: Present study findings and comparison study scores

	Prior to Sleep			College Students	
	Overall	Male	Female	Male	Female
S- Anger					
M	15.30	15.00	15.39	13.42	14.24
SD	7.86	7.98	7.92	5.38	5.75
S- Anxiety					
M	23.03	20.50	23.80	17.95	19.06
SD	8.03	6.75	8.29	5.92	6.25
S- Curiosity					
M	22.87	21.86	23.17	26.85	26.17
SD	5.23	5.86	5.12	5.72	5.45
S- Depression					
M	20.67	18.86	21.22		
SD	6.57	3.80	7.15		

Table 3

Mean scores for the prevalence of the DES-IV emotions in recorded dreams

	Overall		Male		Female	
	M	SD	M	SD	M	SD
Hostility Inward	4.88	2.89	4.21	2.46	5.09	3.00
Disgust	4.90	3.03	4.21	2.72	5.11	3.11
Shame	5.03	2.64	4.58	1.95	5.18	2.82
Guilt*	5.72	3.22	4.15	1.77	6.12	3.41
Shyness	5.73	2.88	5.43	2.98	5.83	2.89
Contempt	6.18	3.46	5.50	2.77	6.39	3.65
Sadness*	6.50	3.44	4.86	2.74	7.00	3.50
Enjoyment	6.57	2.69	7.00	2.80	6.43	2.67
Fear	6.98	4.01	6.07	3.61	7.26	4.12
Anger	7.10	4.02	6.21	3.55	7.37	4.15
Interest	8.73	3.32	9.64	4.03	8.45	3.07
Surprise	9.17	3.88	8.00	3.92	9.52	3.83

* indicates significant gender difference of emotion based on t tests for independent means

Table 4

STPI and DES-IV variables significantly correlated with ratings of quality of sleep

	r	P
STPI		
Anger	-.33	.01
Depression	-.28	.03
Anxiety	-.42	.00
DES-IV		
Disgust	-.40	.00
Anger	-.39	.00
Sadness	-.34	.01
Shame	-.32	.01
Enjoyment	.30	.02
Contempt	-.29	.03

P based on two-tailed test of significance

SELF-ANALYSIS QUESTIONNAIRE
STPI FORM Y-1

MIND GARDEN
P.O. BOX 60669
Palo Alto, CA 94306

IDENTIFICATION NUMBER	AGE	TODAY'S DATE			Gender	HIGHEST GRADE	MARITAL STATUS
A B C D E F G H I		MO	DAY	YR		8TH OR LESS	SINGLE
		Jan.				9 11	MARRIED
		Feb.				10 12	WIDOWED
0 0 0 0 0 0 0 0 0	0 0	Mar.	0 0	0 0	Female / Male	H.S. DIPLOMA	SEPARATED
1 1 1 1 1 1 1 1 1	1 1	Apr.	1 1	1 1		H.S. G.E.D.	DIVORCED
2 2 2 2 2 2 2 2 2	2 2	May	2 2	2 2			**ETHNIC CODE**
3 3 3 3 3 3 3 3 3	3 3	Jun.	3 3	3 3		Some College	AFRICAN AMERICAN
4 4 4 4 4 4 4 4 4	4 4	Jul.	4 4	4 4			ASIAN
5 5 5 5 5 5 5 5 5	5 5	Aug.	5 5	5 5		A.A OR A.S	CAUCASIAN
6 6 6 6 6 6 6 6 6	6 6	Sep.	6 6	6 6		B.A. OR B.S.	(WHITE)
7 7 7 7 7 7 7 7 7	7 7	Oct.	7 7	7 7		M.A. OR M.S.	HISPANIC
8 8 8 8 8 8 8 8 8	8 8	Nov.	8 8	8 8		Ph.D., Ed.D.,	NATIVE AMERICAN
9 9 9 9 9 9 9 9 9	9 9	Dec.	9 9	9 9		L.L.B. M.D.	OTHER

DIRECTIONS FOR MARKING ANSWER SHEET

- Use a No. 2 black lead pencil. Do NOT use ink or ball point pen
- Make each mark heavy and black. Mark should fill circle completely.
- Erase clearly any answers you wish to change. Make no stray marks.

IMPROPER ✓ X ●

PROPER ● ● ●

Part 1 Directions: A number of statements that people have used to describe themselves are given below. Read each statement and then darken the appropriate value to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to **best** describe your **present feelings.**

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I am in a questioning mood	1	2	3	4
3. I am furious	1	2	3	4
4. I feel strong	1	2	3	4
5. I am tense	1	2	3	4
6. I feel curious	1	2	3	4
7. I feel like banging on the table	1	2	3	4
8. I feel blue	1	2	3	4
9. I feel at ease	1	2	3	4
10. I feel interested	1	2	3	4
11. I feel angry	1	2	3	4
12. I feel miserable	1	2	3	4
13. I am presently worrying over possible misfortunes	1	2	3	4
14. I feel inquisitive	1	2	3	4
15. I feel like kicking somebody	1	2	3	4
16. I feel downhearted	1	2	3	4
17. I feel nervous	1	2	3	4
18. I feel like exploring my environment	1	2	3	4
19. I feel like breaking things	1	2	3	4
20. I feel alive	1	2	3	4
21. I am jittery	1	2	3	4
22. I feel stimulated	1	2	3	4
23. I am mad	1	2	3	4
24. I feel sad	1	2	3	4
25. I am relaxed	1	2	3	4
26. I feel mentally active	1	2	3	4
27. I feel irritated	1	2	3	4
28. I feel safe	1	2	3	4
29. I am worried	1	2	3	4
30. I feel bored	1	2	3	4
31. I feel like hitting someone	1	2	3	4
32. I feel gloomy	1	2	3	4
33. I feel steady	1	2	3	4
34. I feel eager	1	2	3	4
35. I feel annoyed	1	2	3	4
36. I feel healthy	1	2	3	4
37. I feel frightened	1	2	3	4
38. I feel disinterested	1	2	3	4
39. I feel like swearing	1	2	3	4
40. I feel hopeful about the future	1	2	3	4

Dream Journal

Social Security Number:

Course:

Researcher information:
Teresa Picciocchi
Office 112, Richmond Hall
755-7510
tpiccioc@student.richmond.edu

By completing and returning this Journal, you are granting your implied consent to participate in this research project. Participation is voluntary and you are free to withdraw at any time without penalty. Please note, however, that all data will be reported in group form and that no individual response will be alluded to or discussed.

Reminders

You do not need to use complete sentences when filling in the Dream Synopsis sections. However, try to be as descriptive as possible in conveying dream content.

In the area designated **setting**, please identify where the events in your dream took place (*not* where you fell asleep); for example: my dorm room, the kitchen of my grandmother's house, an amusement park, etc.

In the section labeled **characters**, please indicate anyone who appeared in the dream; for example: Jane- my older sister, Chris- my best friend in 6th grade, Harrison Ford, and Dr. Bilton- my chemistry professor.

For **plot**, please describe what events took place in the dream; for example: I was swimming underwater when I saw..., I don't know who it was but someone was following me as I drove along a curving road and I..., I was sitting beside the pool when I remembered...

Current theories about dreams suggest that what we dream about at night might be "triggered" or prompted by something experienced during the day. In the next Dream Synopsis section, please try to relate your dream or any part of it to your previous day. For example: For two years I haven't seen Mary (who appeared in the dream) but yesterday I saw someone on campus who looked just like her, I was thinking yesterday about how I never have any free time to just enjoy life and last night I dreamt that I was relaxing on the beach...

If you have any other questions about this journal or any aspect of the study, do not hesitate to contact me. Thanks again for your participation.

Suggestions for Improving Dream Recall

1- Avoid alcohol because it reduces REM sleep.

2- Instruct yourself to remember your dreams before going to sleep.

3- Keep this journal and a pen next to your bed and write down dream as soon as you awaken.

4- Sleep as long as you can because you spend more time in REM sleep the longer you sleep.

5- Waking without an alarm allows some people to move gradually from the dream state into the waking state. This gradual wakening sometimes strengthens the probability of remembering the dream.

6- Staying in the body position you were in during the dream can sometimes facilitate recall.

7- Rehearse the dream before getting up. Perhaps try to fix on a key image to help you remember.

8- Don't pressure yourself too much to remember your dream. Sometimes when you try to hard, dreams vanish.

These suggestions were taken from Working with Dreams in Psychotherapy (1996) by Clara Hill.

Dream Synopsis

Setting: _____

_____

_____

Characters: _____

_____

_____

Plot: _____

_____

_____

_____

_____

_____

Please describe any event, issue or fleeting thought from yesterday that might have triggered or caused any portion of this dream: _____

_____

_____

_____

How many hours did you sleep? _____

In comparison to the quality of your average night's sleep, this night was:
Bad Poor Average Good Excellent

Did you record the dream:
sometime in the night_____ in the morning_____

In this dream, did you...

		Not at all		Somewhat		Very Much So
1.	Feel regret, sorry about something you did	1	2	3	4	5
2.	Feel sheepish, like you did not want to be seen	1	2	3	4	5
3.	Feel glad about something	1	2	3	4	5
4.	Feel like something stinks, puts a bad taste in your mouth	1	2	3	4	5
5.	Feel you couldn't stand yourself	1	2	3	4	5
6.	Feel embarrassed when anybody saw you make a mistake	1	2	3	4	5
7.	Feel unhappy, blue, downhearted	1	2	3	4	5
8.	Feel surprised, like when something suddenly happened you had no idea would happen	1	2	3	4	5
9.	Feel like somebody was a low-life, not worth the time of day	1	2	3	4	5
10.	Feel shy, like you want to hide	1	2	3	4	5
11.	Feel like what you're doing or watching was interesting	1	2	3	4	5
12.	Feel scared, uneasy, like something might harm you	1	2	3	4	5