COLLEGE POPULATION ATTITUDES AND KNOWLEDGE REGARDING SLEEPWALKING BEHAVIORS

by

Kathy A. Koeppen

A Thesis

Presented to

The Faculty of Humboldt State University

In Partial Fulfillment

of the Requirements of the Degree

Masters of Arts

Psychology (Counseling)

May 2007

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Approved by the Master's Thesis Committee:

Mark T. Harwood PhD, Committee Chair	Date
Jim Dupree PhD, Committee Member	Date
Emily Sommerman PhD, Committee member	Date
Mark T. Harwood PhD, Graduate Coordinator	Date
Chris A. Hopper, Interim Dean, Graduate Studies	Date

ABSTRACT

The purpose of this study was to explore people's attitudes towards sleepwalking towards individuals who walk in their sleep. Previous experience or exposure to sleepwalking was also assessed for their influence in shaping resulting attitudes. Furthermore, participant's attitudes towards sleepwalking were examined based on their prior knowledge of the subject. This study surveyed 155 undergraduate students in the participant pool at Humboldt State University and, students in other introductory psychology classes. Attitudes towards sleepwalking were assessed using a questionnaire specifically designed for the purposes of this study. Descriptive statistics for demographics and level of experience with sleepwalking were obtained. Attitudes of people with exposure and people without exposure were compared along with the means of people with previous knowledge on the subject and people without previous knowledge on the subject. It is hypothesized that participants who are either sleepwalkers themselves or who have had previous experience with sleepwalkers will subsequently have more positive attitudes towards sleepwalking in general. It is also hypothesized that the participants who have previous knowledge about the subject of sleepwalking will also have more positive attitudes towards sleepwalking. Suggestions and considerations for further research were discussed.

AKNOWLDEGEMENTS

First of all I would like to thank my family Kathleen and Gary Koeppen and my brother Nick. Thanks for always being there when I needed you and always believing that I had the power to accomplish anything in life. I would also like to thank Dr. Jim Dupree and Dr. Emily Sommerman whose guidance and support during this experience was greatly appreciated. Also special thanks to Dr. Mark Harwood who helped push me to get this done. You were always flexible and would always accommodate my hectic schedule with a smile. Thanks to my friend Amelia Coulter, sometimes you were the only person in the world who fully understood exactly what I was going through. I would also like to thank Dewey Kiefer, you are so much more than a friend you are my partner, your love and support meant more than words can express. To everyone else who has shaped my experience, my time here at Humboldt State University has taught me to always do what is in my heart and everything else will fall into place.

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INTRODUCTION

Sleepwalking, also called somnambulism, is a sleep disturbance that has been of some interest and intrigue throughout the years. As interesting as this sleep disturbance is, it has received little attention by scientists in the last decade. The bulk of the research on this subject has been limited to prevalence and possible etiology of this disturbance. Little research has been done to examine people's attitudes in regards to other individuals who may be experiencing this disorder. People may often form attitudes quickly with little to no real knowledge on the subject, people's attitudes towards individuals or groups of people can be formed in much the same way. There is a social psychology principle that discusses how there is evidence about changing people's attitudes entirely through feelings. In studies of the mere exposure effect people show a preference for familiar objects over one that they have never seen before (Lord, 1997). This study explored whether the exposure effect could be used to influence people's respective attitudes towards individuals who may exhibit sleepwalking behaviors. Even though people may not be aware of it they may develop certain attitudes about these individuals because of the stigmas that may surround this sleep disturbance. With this in mind, it may be useful to think about these aspects with regards to the amount of information students and mental health care providers must receive before working with or treating people who have this sleep disturbance.

LITERATURE REVIEW

Sleepwalking, also called somnambulism (Dupree, 1989), is an intriguing parasomnia commonly experienced by many children. Although common in childhood, little research into the subject extends beyond the experience of sleepwalking at this developmental level. Most of the research in the past has focused on who sleepwalks, when, and under what conditions. With that said, few if any research exists examining people's attitudes and general beliefs regarding those who sleepwalk. Parasomnias are a category of sleep disturbances described by the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision* (American Psychiatric Association, 2002). This source, referred to as the *DSM-IV-TR*, has described parasomnias as disturbances of sleep, which are characterized "by abnormal behavioral or physiological events occurring during sleep or associated with sleep". The *DSM-IV-TR*, goes on to say that while dysomnias are sleep disturbances associated with abnormalities in the mechanisms which generate sleep-wake cycles, wakefulness, timing and quality of sleep, parasomnias on the other hand represent an activation of physiological systems at inappropriate times during the sleep-wake cycle. Parkes (1985) notes, body movements during sleep are quite normal, that even people who sleep well experience about 8-15 arousals during sleep and do not recall these arousals when they wake. It is suggested that these arousal or shifts in posture while sleeping are important to sleep. Although this may be a common experience it is very different than sleepwalking which is "an automatism

which occurs during NREM sleep, usually during the first third of the night," and 15 % of children ages 5-12 walk in their sleep at least once (Parkes, p.205).

Description of Dyssomnias and Parasomnias

Many people experience some sort of problem with sleep during their lifetime. These problems can range from short-lasting transient problems to those that are longer, having a significant impact on the functioning and the well-being of the individual. Sleep disorders are categorized into Dyssomnias and Parasomnias. In the *DSM-IV*-TR the disorders included under the category of Dyssomnias are Primary Insomnia, Primary Hypersomnia, Narcolepsy, Breathing-Related Sleep Disorder, and Circadian Rhythm Sleep Disorder. Included under the category of Parasomnias are Nightmare Disorder, Sleep Terror Disorder, and Sleepwalking Disorder. Mindell (1993), states that Dyssomnias can be thought of as disorders in which the main complaints are quality or duration of sleep. On the other hand, parasomnias are disorders that interfere with the sleep process. Laberge, Tremblay, Vitaro, and Montplaisir (2000) also suggest that parasomnias are clinical disorders that are not abnormalities of the inherent mechanisms responsible for the sleep process and wake states; rather they are inappropriate physical phenomenon that occur primarily during sleep.

Description of symptoms

Included under parasomnias is sleepwalking. Sleepwalking is the second most common parasomnia experienced by children (Mindell, 1993). Sleepwalking is usually experienced one to three hours after sleep begins and after non-rapid eye movement slow wave sleep has been initiated. This is the deepest level of sleep and occupies 10%-20% of

the total sleep time. Sleepwalkers awake from slow-wave sleep more often than control subjects and as a result sleepwalkers have a reduction of slow-wave activity when compared with controls (Joncas, Zadras, Paquet, & Montplaisir, 2002). Sleepwalking can be conceptualized as an inability to maintain consolidated slow-wave sleep.

An episode of sleepwalking is brief and usually lasts for about 10 minutes (Kales, Constantin, Soldators & Kales, 1987) and rarely is there more than one episode of sleepwalking per night. Sleepwalking can be categorized by such behaviors as sitting up in bed to getting out of bed and walking around, and can vary in frequency from one episode to several episodes a week. Berlin and Qayyum (1986) suggest that sleepwalking can be thought of as a disorder of impaired arousal in which manifestations of sleep and wakefulness are combined. Episodes can entail simple poorly coordinated behaviors or those that consist of a series of more complex behaviors like driving a car.
Usually the individual will, on more than one night, participate in behaviors beginning with simply sitting up in bed, making repetitive purposeless movements to more sophisticated behaviors like getting up and walking around the room or performing some routine activities like dressing or going to the bathroom. During an episode of sleepwalking, individuals generally have a blank or expressionless look on their face and behave as though there are indifferent or unaware of their environment (Kales, et .al., 1987). Even though their actions are manifested by clumsiness or purposeless activities, they usually show some degree of skill in maneuvering around simple objects. Individuals who walk in their sleep generally wake up with no recollection of the events that have transpired.

Differential Diagnosis

An important factor in diagnosing and or treating sleepwalking is recognizing that the causes of sleepwalking may vary greatly with age. In childhood sleepwalking is usually a harmless, self-limited disorder but in some researchers believe that sleepwalking is much more likely to be symptomatic of a psychiatric or medical disorder, or it may be a side effect of medication (Berlin & Qayyum, 1986). Sleepwalking has been linked to genetic and maturational factors. Berlin and Qayyum (1986) report that as many as 80% of families of those who sleepwalk have at least one other family member who also sleepwalks.

A differential diagnosis that should be considered for sleepwalking in children is the idea that there could be some organic cause or problem like febrile illness or seizure. Berlin and Qayyum (1986) suggest that fever can have a profound effect on sleep, elevated temperatures can cause fragmented sleep patterns and reduction of the total sleep time.

Berlin and Qayyum (1986) go on to say that elevated temperature can cause a suppression of stages 3 and 4 of sleep. This suppression can cause a rebound effect which in turn can create a situation in which the individual is predisposed to disorders of arousal from slow-wave sleep. Furthermore, psychomotor epileptic seizures that occur during the night can cause sleepwalking like behaviors. Unlike actual sleepwalkers an individual having a seizure will have no reaction to the environment, will perform preservative movements like hand-rubbing and swallowing, and individuals having a seizure will rarely return to their own bed (Vgontzas & Kales, 1999).

Parasomnias like sleepwalking are episodic sleep disorders of impaired arousal and sleep laboratories have shown that these episodes are non-epileptic in nature, although at times they may show activity that is very similar to the behavior seen in in these types of disorders (Vela-Bueno & Soldatos 1987). This disorder is more prevalent in childhood where maturational factors play a significant role in its cause and much less frequent in adulthood where psychological factors are predominant. Sleepwalking in adults occurs less frequently, is often related to major life stress, is less likely to be associated with a family history of sleepwalking, and is usually a symptom of psychopathology, medication side effects, or the result of an underlying medical disorder (Berlin & Qayyum, 1986). Vgontzas and Kales, found that emotional factors predominate in people who begin walking in their sleep as an adult and that those individuals who were sleepwalking more frequently than in the past reported that a major life event occurred at the onset of the disorder.

There is also evidence of sleepwalking behaviors being induced by drugs. Somnambulistic –like events have been pharmacologically induced in individuals receiving lithium treatments as well as individuals receiving high doses of neuroleptic drugs (Kales, et. al., 1987). Furthermore sleepwalking behaviors have been reported by individuals receiving triazolam, a hypnotic agent known to produce anterograde amnesia (Vgontzas & Kales, 1999).

Epidemiology

Sleepwalking is considered normal in childhood, onset is usually quite common in children but is rare in adults. Sleepwalking is said to be the second most common

childhood parasomnia, with a chronic childhood prevalence rate of approximately 1-6% with as many as 15% of children having at least one episode (Mindell, 1993). Sleepwalking is most prevalent in children between the ages of 4 and 8, usually with most children beginning before reaching 12 years of age. As children mature and grow` older their total sleep time decreases and becomes more stable, so sleepwalking episodes are disorders of partial arousal from NREM sleep and are thought to be related to immaturity in the central nervous system (Hales, 1981). Although sleepwalking is quite common in childhood it usually disappears spontaneously in adolescence. In a study done by Laberge, Tremblay, Vitaro, and Montplaisir (2000) they report that even though sleepwalking usually remits by adolescence, with most cases being outgrown by age 10, sleepwalking still persists in 24.1% of sleepwalkers at age 13.

In children who develop sleepwalking in early childhood psychological factors are usually not prominent. Although those who develop sleep disorders in adolescence continue to have them as adults, it is in this situation that significant psychological characteristics become more apparent (Vela- Beuno & Soldatos, 1987). Like sleepwalking in children sleepwalking in adults usually occurs during the first third of the night when slow-wave sleep is predominate, and the individual is usually in an EEG state on incomplete awakening for the duration of the episode. Although sleepwalking is usually outgrown in childhood, up to 25% of individuals that began sleepwalking prior to the age of 10 will continue to walk in their sleep as an adult (Guilleminault, Kirisoglu, Bao, Arias, Chan, & Li, 2005). It has also been estimated that sleepwalking affects about

2.5% of the general adult population, and has been associated with risk of trauma, injury, violence, and uncontrolled behavior that can be dangerous (Guilleminault et al., 2005).

Primary sleepwalking in adults is similar in nature to sleepwalking in children. Adults who present with sleepwalking, who do not have any pre-existing mental or psychiatric illness, the condition usually began in childhood without the normal remission in adolescence (Parkes, 1985). Parkes adds that there are many mental or psychiatric disorders that are accompanied by sleepwalking behaviors. This adds to the confusion about whether there are clear differences in the sleepwalking behavior of adults and children. It has been suggested that sleepwalking in children is somehow different from sleepwalking in adults. In adults it can be difficult to distinguish normal sleepwalking behavior from the automatic and purposeless behaviors that may accompany a psychiatric disorder, but may be present without any evidence of being asleep (Parkes, 1985). Thus the simple likely explanation for this is that these sleepwalking episodes are secondary somnambulism in adults with severe psychopathology and the events are precipitated by anxiety, emotional disturbances, and severe traumatic psychological events.

Genetic Influences

The development of sleepwalking is linked to maturational and genetic factors. Parkes (1985), suggests that sleepwalking is familial in 10-20% of all cases. As many as 80% of families of sleepwalkers include one or more other family members who also walk in their sleep (Carlson, & Cordova, 1999). Berlin and Qayyum (1986), state that when a parent has a history of sleepwalking the chances that their child will also sleepwalk will increase six times compared to children with neither parent being a

sleepwalker. Furthermore the prevalence of sleepwalking in a first degree relative of a sleepwalker is at least 10 times greater than that in the general population (Hublin, Kaprio, Partinen, & Koskenvuo, 2001). They go on to say that " monzygotic twins have been reported to be concordant for sleepwalking six times as frequently as dyzygotic twins" (Berlin & Qayyum, 1986, p. 756). This suggests that monozygotic twins sleepwalk much more often than dyzygotic twins and identical twins may have a very similar sleep structure.

Sleepwalking and Dangerousness

Sleepwalkers tend to move around in a clumsy and rather confused manner, but slowly they begin to show better coordination, avoiding objects, and often participating in more complex behaviors. In most cases sleepwalkers do not suffer any harm, but on occasion sleepwalkers may injure themselves as well as those around them (Kennedy, 2002). Violence during sleep is an important concern of forensic sleep medicine. Guilleminault, Moscovitch, and Leger (1995), reported on violent versus nonviolent subjects with nocturnal wandering. From their research it is clear that subjects with disorders of arousal are at risk for self-inflicted injuries and may also inflict injuries on others. In cases where nocturnal wandering occurs, a clinician or sleep medicine specialist may be faced with some important questions asked by the patient. In order to address these questions Guilleminault, Moscovitch, and Leger, performed a retrospective investigation of all subjects that came to a sleep clinic with the complaint of chronic nocturnal wandering

Given the low levels of awareness and reactivity that are associated with episodes of sleepwalking, reports of injury are common in patients who sleepwalk. The risk of injury is higher for children who may sleep alone or unsupervised such as at a friend's house or a summer camp. The risk of injury is also higher for an adult who maybe sleeping in a unique or special situation, such as serving in the Navy (Vela- Bueno & Soldatos, 1987).

Attitudes

Sleepwalking has long been thought of as a mysterious phenomenon that has captured the public imagination for centuries. Playwrights and poets portray an individual who is inattentive to everything but the task at hand, and in that state express feelings, secret wishes, or impulses, that they normally would never reveal in front of another person if their mental state was more intact (Crisp, 1996). Shakespeare writes about how Lady Macbeth expresses her hidden guilt in the paradoxical context of how in her wakefulness she is a demon (Shakespeare, 1980). Most often there is an image created that there is inherent goodness and compliance when the person is awake, while sleepwalking they may behave in a way that expresses their true feelings but the individual cannot be blamed because they were asleep.

Attitudes are evaluative reactions to issues, people, or objects. Attitudes are hypothetical mediating variables, they are intervening mental structures that guide a persons response to attitude objects. Although people don't hold attitudes towards everything, and some individuals are more prone to evaluate than other, evaluation is a basic human activity. When people are asked to describe a particular person, object, or

issue, an evaluation emerges. Whether good or bad such judgments tend to be made very rapidly often without conscious intention or effort (Lord, 1997).

Attitudes are commonly assumed to be comprised of three components: beliefs, feelings, and actions. The first component, belief, refers to all the knowledge a person has about an attitude object. Feelings are the second component of an attitude, it is the emotion that is created when the attitude object is seen or experienced (Lord, 1997). Lastly, action or behavior is the final component of an attitude. Attitudes are generally but not always associated with behavioral tendencies.

Some attitudes are acquired through instrumental learning. Lord (1997), states that people have either positive or negative attitudes about certain people, issues, or objects in large part because they have been reinforced for holding these attitudes. Because attitudes can also be formed by observation and modeling, these vicarious experiences can influence attitude formation. Another way attitude can be acquired independent of beliefs is through a process known as the mere exposure effect (Lord, 1997). The mere exposure effect refers to the fact that the more often we are exposed to a neutral stimulus, the more we like it, thus creating a positive attitude towards it. In general familiarity breeds liking and not contempt.

HYPOTHESES

1. People who have had experience with sleepwalking or who have experienced walking in their sleep will have more positive attitudes about sleepwalking.

2. People who have more knowledge about sleepwalking will have a more positive attitude about sleepwalking, than those with less knowledge.

METHODOLOGY

Participants

For this research study 155 male and female research participants 18 years of age and over were obtained using the subject pool and other sources at Humboldt State University. The subject pool is comprised of students in undergraduate level introductory psychology classes. Since the number of participants gathered through the participant pool was too low, this researcher went into other psychology classes to obtain enough participants for the sample The IRB approval number for this research study was 05-.47.

Research participants have the right to confidentiality, privacy, and protection so that any information or data obtained during the course of the study is kept in strict confidence. To protect the confidentiality of the participants this survey was anonymous and this researcher did not record the participants' identities. In doing so, this researcher was not able to identify any participant who provided any particular piece of information.

The students' participation in the research was voluntary and they were told that they were participating in a survey on attitudes about sleepwalking. The instructions at the top of the questionnaire were read aloud to the participants to ensure understanding. As noted in the instructions, completion of the questionnaire was considered consent for participation, their participation was voluntary, and they could stop or withdraw at any time if they no longer wished to participate, and to refrain from participating if they were under the age 18. The participants were instructed not to out their names on the questionnaire to ensure their anonymity.

Questionnaire

A questionnaire was designed for the purposes of this study. The questionnaire was developed using elements from two previous questionnaires, Dupree's (1989) Sleepwalking Questionnaire and The Adjective Checklist (Gough & Heilbrun, 1978), as well as items found in the existing literature on sleepwalking. The Attitudes Towards Sleepwalking Questionnaire began with a definition of sleepwalking and basic instructions for completing the questionnaire. The questionnaire includes the demographic questions of age and gender and an additional question asking if the research participants have ever taken a course in college in which sleep disorders were discussed (See Appendix A).

The first section of the questionnaire addresses the participant's knowledge on the subject of sleepwalking. There are 19 statements regarding sleepwalking, 10 are direct facts about sleepwalking and contain statements like, "sleepwalking usually begins in childhood". The remaining 9 statements are myths about sleepwalking and contain statements like, "people are more likely to sleepwalk during a full moon". The participants were asked to read each statement carefully and endorse either true or false according to what they know about sleepwalking.

The section of the questionnaire that follows assesses the participant's exposure to sleepwalking. The questionnaire contains five questions that ask about the participant's personal sleepwalking experience or first hand exposure to other individuals in their life that either walk in their sleep currently or were sleepwalkers in the past. For these items the participants were required to check either yes or no. The questionnaire contained

statements like, “Did you ever walk in your sleep as a child”? and “Do you know someone who walks in their sleep at this time”?

The next section of the questionnaire was adapted from the Adjective Checklist (Gough & Heilbrun, 1978) by examining the 300 adjectives listed in that questionnaire and retaining those that reflected adjectives used in the existing sleepwalking literature and those that are believed to reflect a participant’s possible attitude towards sleepwalking. Since this was a new questionnaire designed for the specific purposes of this study, there was no reliability or validity information to report. In the formation of this questionnaire three pilot studies were done. In the first pilot study the questionnaire was given to a graduate level research methodologies class to evaluate the questionnaire’s readability. A second small pilot study was done to decide which adjectives were positive and which adjectives were negative. Those adjectives that received at least 4 out of 5 psychology graduate student’s agreement on whether they were positive or negative were retained for the questionnaire. In the third pilot study eight students were used whose majors spanned those included in the participant pool. This researcher had the participants in the pilot study put the adjectives into three negative subscales: Aggression, Anxiety, and Psychopathology because these are important concepts found within the existing literature. This helped the researcher delete any extraneous adjectives that may not have been related directly to sleepwalking and created new avenues for further research. Half of the adjectives on the list were adjectives deemed to be culturally “positive” adjectives like, “harmless”. The other half of the adjectives on the list were adjectives that were found to be culturally “negative” adjectives like, “hostile”.

The respondents were directed to circle all the adjectives that they felt applied to sleepwalkers. This section of the questionnaire aimed to assess people's attitudes towards sleepwalking. Participants that have a more negative attitude towards sleepwalking were more likely to endorse those adjectives that were thought to be culturally negative, and those participants with a more positive attitude towards sleepwalking were more likely to endorse those adjectives which were deemed culturally positive.

Lastly, there was a section at the very end of the questionnaire where the participants were thanked for their time and cooperation and were then invited to discuss their thoughts or attitudes further with the researcher. Also, there was space provided for the participants to write down anything else they thought they would like to add to help the researcher better understand their attitudes about sleepwalking. The participant could use this space to provide any additional comments or concerns.

Procedures

This investigator used the psychology participant pool at Humboldt State University. Recruitment of participants was through the web-based system located at http://hsupool.sona-systems.com. Information regarding different research studies, including descriptions of the studies, locations and times were provided on the system. If respondents were interested in participating in this particular research study they could create an account and sign up for this study on-line. They received course credit for completing the survey and the locations and times that the survey was distributed was also available on-line. Participants met with the investigator in a designated room to complete the questionnaires and were given information regarding the study. This

information included some basic details about the study, specifically that if they wished to participate, they would complete questionnaires designed to assess people's attitudes towards sleepwalking. Participants were instructed not to put their name or any other identifying information on the questionnaire to ensure anonymity. Next the instructions at the top of the questionnaire were read out loud to ensure understanding. Lastly the response format was explained, they were told to please read each statement carefully and then circle either true or false. Next they were told to answer questions 20 through 24 by checking a box "yes" or "no". Also, they were instructed to read over the list of adjectives on the last page and circle all the adjectives that they felt applied to sleepwalking. When the participants had completed the questionnaire they were collected in a large envelope and mixed in with other previously collected questionnaires to further promote anonymity. After completion of the survey the investigator discussed any additional thoughts or concerns a participant may have had and provided each participant with referral information, if necessary.

Benefits

If participants chose to participate in the study by completing the questionnaires they received course credit. Also, since there was very little research done on the subject of sleepwalking, a potential benefit of this research is that of providing new information on the subject. This research provided valuable information regarding people's attitudes towards individuals who have this particular parasomnia, and what may influence whether they have a positive or negative attitude towards these individuals. This

investigator also provided important considerations for clinicians to keep in mind while working with and treating people with different parasomnias.

Risks

The risks of the research were very few. No psychological or social risks from participating in the research study were apparent. The only psychological discomfort a participant might have incurred as a result of participating in the study was that it forced participants to think about their own attitudes towards sleepwalking. Participants may not have realized before that they had formed attitudes about the subject being studied. Also by participating in the study and completing the questionnaire research participants may have been reminded of their own sleepwalking, which could have caused some discomfort for the participant.

Management of Risks

After completion of the questionnaire research participants were invited to discuss any questions or concerns they may have had with the researcher. Also if a participant experienced any additional discomfort as a result of their participation in the study referrals to the Davis House Psychology Clinic or the Counseling and Psychological Services Center here at Humboldt State University were made in order for the participant to receive evaluation and consultation.

RESULTS

The purpose of this study was to examine how exposure and knowledge with respect to sleepwalking can influence or predict a persons' resulting attitude on the subject. Participants in this study were recruited from various Psychology courses at Humboldt State University through the Psychology Department participant pool. There were 155 male and female students who participated in this study. Each participant completed a Sleepwalking Questionnaire (see Appendix A). The Sleepwalking Questionnaire has three sections designed to measure the variables of exposure and knowledge and a third section to measure their resulting impact on the participant's attitude about sleepwalking or sleepwalkers.

The data from completed questionnaires were analyzed using SPSS version 14. Raw scores for each of the sections were recorded for each participant. These scores were tallied by counting the number of correct answers to the true and false section which assessed a person's knowledge of sleepwalking. This section was comprised of both myth and facts about the subject and the participants were asked to endorse either true or false according to each participant's personal knowledge base on sleepwalking. Scores ranged from 1 through 17 based on the number or correct responses that the participant endorsed. Two items were dropped from the initial section of the questionnaire because conflicting information was found within the existing research. In the next section of the questionnaire there were 5 items designed to measure a participant's exposure or personal experience with sleepwalking .Each participant earned a score ranging from 1 through 5

based on their amount of personal experience with, or exposure to, sleepwalking. The last section of the questionnaire was designed to measure a participant's attitudes towards sleepwalking in general. In this section participants were asked to look over a list of 62 adjectives of which 30 were deemed to be culturally positive and 32 which were deemed to be culturally negative adjectives. Then the participants were asked to circle all the adjectives that they felt applied to the topic of sleepwalking. There was an inherent design flaw in the creation of the questionnaire in that when the attitude section of the questionnaire was compiled there were unequal numbers of positive and negative adjectives. This gave an unequal weight distribution to the adjective checklist, so the participant's scores needed to be adjusted to correct for this problem.

In order to correct for this problem the investigator balanced the questionnaire by artificially weighting the adjective check list by first multiplying the participant's positive score by .9375 then dividing it by the total number of positive adjectives included in the questionnaire. Then the researcher took the participant's number of negative adjectives and divided it by the total number of negative adjectives included in the survey. At this point each participant provided a balanced negative attitude score and positive attitude score.

The first hypothesis stated that people who have had experience with sleepwalking or who have walked in their sleep themselves will have more positive attitudes about sleepwalking. A Pearson Correlation was used to determine if there was a correlation between experience or exposure (M =1.17, $S.D.$= 1.21) and positive attitude

(*M*= 3.72, *S.D.*= 3.06). The Results of the Pearson Correlation revealed no significant correlation between exposure and positive attitude(*r* =.151, *p* = n.s.). (See Table 1.)

The second hypothesis stated that people who have knowledge about sleepwalking will have a more positive attitude about sleepwalking. Again a Pearson Correlation was used to determine if there was a correlation between knowledge (*M*= 12.03, *S.D.*= 2.33) and positive attitude (*M*=3.72, *S.D.*= 3.06). The results of the Pearson Correlation revealed a non-significant correlation between knowledge and a more positive attitude(*r* =.-.145, *p*= n.s.).

The results of the ANOVA indicated an overall significance among the variables (*F*= 3.58, *df* =122, *p*= 0.031). Regression analyses were conducted to see if any additional information could be gathered to support the hypotheses in the study. The regression equation showed that both knowledge and exposure were predictive of attitude when the attitude was positive. In the regression analysis the beta weight associated with exposure suggests that exposure or experience is predictive of positive attitude (β = .466, *p*= .036). The first hypothesis was supported in the regression analysis: exposure or experience with sleepwalking has a positive association with sleepwalking in general. As experience increases, so does positive attitude. The second hypothesis was not accepted. In the regression analysis the beta weight suggests that knowledge may have an attenuating or negative effect on positive attitude (β =-.248, *p*=.041). In other words, knowledge may not confer information that one can relate to personally.

Table 1.

Correlation Matrix.

	Knowledge	Exposure	Attitude Positive	Attitude Negative
Knowledge		0.143	-0.145	0.006
Exposure			0.151	0.033
Attitude Positive				0.000
Attitude Negative				

DISCUSSION

The purpose of this investigation was to explore people's attitudes towards sleep walking and individuals who walk in their sleep. Previous experience or exposure to sleepwalking as well as a participant's prior knowledge on the subject was also examined to highlight their influence in shaping a person's resulting attitude. Two hypotheses regarding exposure and knowledge as they relate to positive attitude formation were tested.

The first hypothesis looked at how a person's personal exposure or experience with sleepwalking influenced their resulting positive attitude towards the subject in general. This hypothesis was supported. Although simple bivariate correlations were not significant, experience did seem to have a positive impact on whether a person will have a more positive attitude on the subject in general based on the results of the regression analysis. Personal experience, either from participation in the behavior first hand or having witnessed a family member or friend participate in the behavior may have created a more intimate knowledge of the subject matter making it more personal for the average participant. In other words the more we are exposed to something the more comfortable we are with it, and familiarity breeds a more positive attitude, not contempt.

The second hypothesis examined how knowledge on the subject of sleepwalking would relate to one's level of positive attitude about sleepwalking in general. This hypothesis was not supported by the bivariate results in that there was not a significant correlation between knowledge and positive attitude towards sleepwalking. The results

from the correlation matrix did not demonstrate a significant relationship; however, the correlations were consistent with the direction of association derived from the regression analyses. Regression revealed relationships that were not identified in the correlation matrix. This may have been in part due to the robust nature of the regression technique. That is regression is less influenced by violations of normality, equal variances, and sample size assumptions. The results indicated that exposure or personal experience with sleepwalking predicted a person's positive attitude on the topic of sleepwalking and knowledge of the topic of sleepwalking was found to have a negative or attenuating impact on a person's positive attitude on sleepwalking in general.

Limitation of the Study and Implications for Future Research

The current research study involved several methodological limitations that need to be addressed. The first limitation of the research study involved the measure that was used. Because there was no existing questionnaire to measure a person's experience and knowledge with regards to sleepwalkers or the topic of sleepwalking, a new measure was created for the specific purposes of this study. Due to the fact that the Sleep Walking Questionnaire was created for the purposes of this study there was no reliability or validity information on the questionnaire. For future research it might be very useful to run a test re- test reliability analysis and examine the construct validity of the measure to determine the true value of the scale.

Due to the complexity of examining people's attitudes, personal exposure, and knowledge about sleepwalking, a self –report measure needed to be used. When relying on a self-report measure there is always the risk of response bias. When asking people

about socially undesirable attitudes or beliefs, people may edit their responses to make themselves look good This may have resulted in response bias about their attitudes and may have reduced the number of adjectives endorsed in order to create a more positive self- presentation.

The participants in this study were 155 undergraduate college students from a state university in northern California, whose answers might not have been representative the larger population. These findings might not be descriptive of other college samples. It would be recommended that a new study be conducted on a larger sample with a more diverse population.

Since this study was a preliminary investigation of people's attitudes towards Sleepwalking, future research might include a sample taken from the general population rather than a university student population in the event that university students are for some reason not representative regarding people's exposure, knowledge, or attitude on the subject of sleepwalking. Similarly if using a student respondent pool, a survey of students majoring in other disciplines outside of psychology might help to increase the generalizability of the results.

Another major limitation of the study was the lack of extant research on the subject of sleepwalking. There was no research available on the effects of exposure and knowledge as they relate to the subject of sleepwalking or individuals who may be effected by that particular parasomnia. Future research might build upon this study and investigate if the results could be used to examine the people's attitudes regarding different sleep disorders as well as other psychological disorders. This could have

specific implications for clinicians in the field and their attitudes about treating individuals with certain psychological disorders.

This study also provided valuable information or implications for clinicians working in the field. This investigation suggests that clinicians may have attitudes already formed about people who manifest behaviors associated with disorders that they are not comfortable with or disorders that may have a stigma associated with them. This investigation can provide clinicians with important considerations to keep in mind while they are working with or treating people with different parasomnias.

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APPENDIX A

SLEEPWALKING QUESTIONNAIRE

Sleepwalking Questionnaire

This is a survey about attitudes and knowledge about sleepwalking. Sleepwalking (also called somnambulism) is the act of getting out of bed and walking around for any period of time while asleep. This survey is for research purposes. Participation is completely voluntary and you may stop at any time if you wish. Completion of this survey is considered consent for participation. Please do not print your name or any other identifying information anywhere on this questionnaire. If you are under 18 please do not participate in this survey. After you have completed the survey you are invited to discuss your thoughts and attitudes further with the researcher. Your completed survey will be collected in a large envelope by the researcher Kathy A. Koeppen graduate student, psychology department, and will be mixed-up before review so that they remain confidential and anonymous. You may contact the researcher Kathy Koeppen, kak20@humboldt.edu or Dr. James Dupree, jld3@humbolt.edu if you have any questions or concerns.

Please answer each of the following questions.

1. Gender (check one) Female____ Male____

2. Age: ____

3. Have you ever taken a course in college in which sleep disorders were discussed? (check one) Yes____ No____

	True	False
1. Sleepwalking is a serious sleep disturbance.	T	F
2. People who walk in their sleep often wake up in a different room.	T	F
3. People who walk in their sleep are acting out a dream.	T	F
4. People who sleepwalk usually have no memory of the event the next morning.	T	F
5. People who sleepwalk often limit activities like sleeping overnight at a friend's house.	T	F
6. People who sleepwalk may injure another person while sleepwalking.	T	F
7. Sleepwalking is easily treated.	T	F
8.People who walk in their sleep are at a great risk for injuring themselves whiled sleepwalking.	T	F

9. People are more likely to walk in their sleep when they are very tired. T F

10.People only walk in their sleep during NON-REM sleep, “not dreaming.” T F

11.Sleepwalkers are easily awakened. T F

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12. Sleepwalking indicates that the sleepwalker has an underlying psychological problem. T F

13. People are more likely to sleepwalk during a full moon. T F

14. Most of the behaviors that occur during sleepwalking are routine or simple behaviors. T F

15. People who walk in their sleep often limit activities that would reveal their behavior to others, like sleeping over a friends house. T F

16. Sleepwalking usually begins during childhood. T F

17. People tend to walk in their sleep when they are under stress. T F

18. Sleepwalking tends to run in families. T F

19. People who sleepwalk also tend to talk in their sleep. T F

20. Did you ever walk in you sleep as a child? (check one) Yes____ No_____

21. Did you ever walk in your sleep as an adult? (check one) Yes____ No_____

22. Do you consider yourself a “sleepwalker” now? (check one) Yes____ No_____

23. Have you known someone well who walked in his or her sleep such as a roommate, friend, relative, or spouse? (check one) Yes____ No_____|

24. Do you know someone who walks in his or her sleep at this time? (check one) Yes____ No_____

Please read over the words below on the page. <u>Please circle all terms you feel apply to sleepwalkers</u>. Don't spend very long thinking about each term I am looking for your initial reaction to these terms.

I think sleepwalkers tend to be:

Aggressive	**Inhibited**
Anxious	**Intelligent**
Artistic	**Interesting**
Calm	**Irresponsible**
Careless	**Nervous**
Cautious	**Out-going**
Clumsy	**Patient**
Confident	**Peculiar**
Considerate	**Psychopathological**
Cooperative	**Reckless**
Creative	**Reliable**
Dangerous	**Responsible**
Deceitful	**Scary**
Dependable	**Self-injurious**
Dominant	**Selfish**
Easy-going	**Shy**
Egotistical	**Stable**
Energetic	**Strong**
Enthusiastic	**Suggestible**
Foolish	**Superstitious**
Friendly	**Timid**
Funny	**Trustworthy**
Generous	**Understanding**
Good-natured	**Uninhibited**
Harmless	**Unintelligent**
Honest	**Unpredictable**
Hostile	**Unstable**
Imaginative	**Vindictive**
Impulsive	**Violent**
Independent	**Weak**
Indifferent	**Withdrawn**

Thank you for your time; your participation is greatly appreciated!

Is there anything else you would like to add to help us better understand your attitudes about sleepwalking? Please use the following space to provide any additional comments if you wish.

Now that you have finished the survey you are invited to discuss your thoughts and attitudes further with the researcher.