Comparing the effectiveness of four common techniques

Comparing the Effectiveness of Four Common Techniques Used to Treat Nocturnal Enuresis Tiffiny H. Winters Clarion University of Pennsylvania

Abstract The proposed research is designed to combine 1 pharmaceutical treatment technique and 2 common behavioral interventions and assess the effect they have on the frequency of night-time wetting in children between the ages of 5 and 10 years old who suffer from nocturnal enuresis. I will randomly assign 120 child participants to one of six treatment groups which test them on varying degrees of the independent variables.

Participants will be tested for a period of 30 days prior to the intervention application to determine a baseline rate of occurrence of enuresis, then tested again for 30 days while applying the intervention strategies to determine if there is a significant change in the frequency of the occurrences. I predict that the groups receiving the behavioral training paired with the anti-diuretic medication will have fewer episodes of enuresis in a shorter amount of time during treatment, and have a slight increase in instances of regression after ceasing treatment.

I also predict that the treatment groups that do not receive the anti-diuretic will have a slower rate of progression during the experiment, but the progression will stay primarily steady after treatment has ceased. Comparing the Effectiveness of Four Common Techniques Used to Treat Nocturnal Enuresis Nocturnal enuresis is a commonchildhooddisorder, but can be a potentially distressing experience for children and parents alike.

It has been defined as an “ involuntary voiding of urine during sleep, with severity of at least twice a week, in children over 5 years of age, when not provoked by congenital or acquired defects of the central nervous system or

by the direct physiological effect of substances such as a diuretic” (American Psychiatric Association, 2000); Butler & Gasson, 2005). This disorder has many stressful consequences for a child, such as feeling like, or being treated as a social pariah, suffering a rollercoaster of emotional turmoil, a significant lowering of their self-esteem, and feelings of ncomprehension and helplessness. The prevalence of nocturnal enuresis in children ages 5 to 10 years old, according to The American Psychiatric Association (2000), are as follows: * Approximately 5% - 10% in 5 to 6 year olds * Approximately 11% - 18% in 7 to 8 year olds * Approximately 1. 5% - 5% in 9 to 10 year olds Prevalence rates are also higher for males than for females at all age points (Butler & Heron, 2008). At the present time, many empirical studies and reviews of different treatment strategies for nocturnal enuresis have been conducted.

Prominent researchers from both the psychological and medical communities are making important contributions to the ongoing question of what types of interventions work best for the children who suffer from this disorder, which tends to bridge both the psychological and medical fields. This can cause complications for the results of the research, because each field traditionally produces its own literature on the studies that they do, and therefore the results aren’t always all-encompassing.

However, experimenters are attempting to close this gap with new approaches that combine and compare treatments such as the dispensing of pharmaceuticals to patients, and some practical behavioral interventions. The behavioral interventions that will be used in this experiment are fairly common in the current research for treatment of nocturnal enuresis.

Retention Control Training (RTC) came about due to the medical evidence that some children suffering from this disorder had reduced bladder capacity, and thus couldn't hold a normal amount of fluid in their bladders throughout a typical night of sleep.

RTC expands a child's bladder capacity by having the child drink high amounts of fluid while delaying urination for as long as possible and trying to increase the amount of holding time each time. The thought is that this will cause the bladder to expand, and progress the child up to a relatively normal length of time between urinations. According to Friman (2008), RTC has had up to a 50% overall success rate. However, more recent studies are debating that these results may be negligible, and believe that other methods are more evidence-based and should be considered instead.

The process of Dry-Bed Training (DBT) is one of the oldest, best-known, and most evidence-based treatment packages for enuresis (Friman, 2008). The process consists of following a strict schedule of waking the child up at night until he or she learns to wake up alone when needed. This program is usually implemented for a period of 7 nights, and then the process is repeated. DBT is typically completed in less than 4 weeks, with relapse rates of only about 40% (Brown, Pope, & Brown, 2010). A Urine Alarm is a key component in this treatment, as well as cleanliness training and a positive reinforcement through a token system.

A Urine Alarm is a device that is either placed underneath the child in the form of a mat, or as a sensor inside of the child's pajamas that works by using a moisture-sensitive system that, when upon sensing dampness from urine, it sends a charge to a buzzer or alarm that is strong enough to wake

the child (Friman, 2008). The alarm is an adverse stimulus, which leads to a conditioned avoidance response (startling the child) which leads to muscle contractions in the pelvic floor and neck of the bladder, ceasing the flow of urine when the child wakes.

This leads to the child associating the feeling of a full bladder to the feeling of being awakened, and they will wake eventually without the help of the alarm. According to Mellon & Houts (2006), several reviewed studies and well-controlled experiments have established the basic urine Alarm as an effective treatment for nocturnal enuresis, alone or in combination with other treatment components, and the average success rate (14 consecutive dry nights) is 77. 9%, and has an average 6 month relapse rate of 15% - 30%.

Despite the arguable efficacy of these behavioral interventions, reviews of the recent literature show that the common healthcare practice among physicians and pediatricians is to treat enuretic children with medication rather than putting behavioral interventions to use (Friman, 2008). The two most commonly prescribed to treat this disorder are anti-depressants and anti-diuretics. I will not be addressing the components of the anti-depressant prescriptions, as it does not directly involve my xperiment. The anti-diuretic that is typically prescribed is Desmopressin, a synthetic version of Vasmopressin, which is the body’s naturally occurring anti-diuretic hormone. According to a review by Brown, Pope, & Brown (2010), the rationale for using this drug is that there is evidence that children with nocturnal enuresis may not have the same nocturnal increase in Vasmopressin as children that do not suffer from enuresis.

Desmopressin works by decreasing night-time urine production, and typically reduces the episodes by 50%. And although Desmopressin typically has a more rapid onset of dry nights than the Urine Alarm, removal of the drug almost always results in the child reverting back to the wetting behavior. In comparing this drug and its benefits to other behavioral treatments, it has been found in many studies to have better results when the drug therapy is used concurrently with one of the behavioral interventions previously discussed.

For example, according to Brown, Pope, & Brown (2010), recent literature shows that the Urine Alarm, when used in conjunction with anti-diuretic medication, leads to more dry nights earlier in the conditioning process, and a longer lasting performance after treatment has subsided. Also, there have been many studies comparing several of the aforementioned common behavioral techniques to one another, as well as the combined power of using more than one technique concurrently to enhance the speed and permanence of the desired results.

Also, studies have been done here in the United States, as well as abroad in many other countries, such as Australia, the United Kingdom, and many others. However, according to their review on studies done in this field of research, Brown, Pope, & Brown (2010) assert that " The medical and psychological literatures and studies completed regarding this problem have proceeded relatively independent from one another, and there has been little to no interconnection between the US and international studies, resulting in a lack of discourse and integration among researchers investigating treatment outcomes for enuresis. In general, many researchers agree that

the current research and scope of the experiments have been very limited, and perhaps even insufficient. The focus of my proposed study would be to bridge this gap that others have been stepping around, and bring some of the conflicting variables to light in one controlled study. The proposed research is designed to combine 1 pharmaceutical treatment technique and 2 common behavioral interventions and assess the effect they have on the frequency of night-time wetting in children between the ages of 5 and 10 years old who suffer from nocturnal enuresis.

My study would allow the individual treatment techniques to be compared under standard conditions without any other form of combined treatment or medicines, and it would also show the efficacy of each treatment technique when it is paired with the anti-diuretic Desmopressin, which has been shown to have remarkable results in the short-term treatment of episodes of enuresis, but is coming up short in the long-run battle against this disorder.

I will randomly assign the participants to one of six treatment groups: (1) will receive Retention Control Training (RCT) paired with a daily dose of Desmopressin; (2) will receive Retention Control Training with no medication; (3) will receive Retention Control Training paired with a placebo; (4) will receive Dry-Bed Training paired with a daily dose of Desmopressin; (5) will receive Dry-Bed Training with no medication; (6) will receive Dry-Bed Training paired with a placebo.

Participants will be tested for a period of 30 days prior to the intervention application to determine a baseline rate of occurrence of enuresis, then tested again for 30 days while applying the intervention strategies to determine if there is a significant change in the frequency of the

occurrences. Participants will also be tested a final time 30 days after ceasing the interventions for a period of 2 weeks to determine how quickly each group regressed, if any did so.

This would lead to many avenues of further research toward finding the best way to treat this problem, and also perhaps pave those avenues with a much stronger foundation than the one that has been going back and forth between the medical and psychological disciplines throughout the research that has been done thus far. I am predicting that the groups who receive the behavioral training paired with the anti-diuretic medication will have fewer episodes of enuresis in a shorter amount of time during treatment, and have a slight increase in instances of regression after ceasing treatment.

I also predict that the treatment groups that do not receive the anti-diuretic will have a slower rate of progression during the experiment, but the progression will stay primarily steady after treatment has ceased. Method Participants The sample (N= 120) will consist of 20 children (10 boys; 10 girls) at each of six age levels (5, 6, 7, 8, 9, and 10yrs old) who meet the American Psychiatric Association (2000) criteria to be diagnosed with nocturnal enuresis. Wetting must occur at least 2 times per week for at least a period of 3 months and have a negative impact on other areas of functioning, and must not be due to the effects of a substance or be caused by another medical condition.) All participants will be assigned randomly into one of six treatment groups. Participants will be selected on a voluntary basis from an ad placed in the local newspaper, and also bydoctorreferral through email notification sent to local doctor’s offices advertising information about the study that I will be conducting.

Informed consent will be obtained from parents of all of the participants, and consent forms and release forms will also be signed before participating in the procedure. Letters of explanation and consent forms will be sent to parents or guardians of the children, and they will be asked to return these by mail. To ensure confidentiality, participant names will be removed from any interviews and data entry recordings, and participants will be identified only by a numerical code. Participants, medical personnel, parents, and all others involved will be well informed that no information will be released about individual participants.

Participating children will receive an age-appropriate gift approved by their parents upon completion of the experiment as a thank-you for participating. Apparatus/Materials Materials that will be needed and used are as follows: * Basic physical form completed byfamilyphysician for each participant. * 120 basic clip-on Urine Alarms. * Approximately 1200 doses of Desmopressin. (40 children, 1 tablet each before bed every night for 30 nights.) (Can also be requested in nasal spray form.) * Data sheets to record all procedures and episodes of wetness per night. * Approximately 1200 doses of a basic sugar pill to administer as a placebo. 40 children, 1 tablet each before bed every night for 30 nights.) * Age-appropriate gift for each child given upon completion of the experiment. (120 total) Procedure An ad will be placed in the local newspapers to attempt to collect volunteers to participate in the experiment, as well as an email offering information about the study will be sent to all local pediatricians' offices asking them to inform any of their patients that may qualify and meet the guidelines about the study that I am conducting, and that they would be welcome to participate if they desire to.

Participants will be interviewed at their convenience at a location that they are comfortable with, and will be asked to answer simple background questions dealing with the criteria for the experiment, and will also be informed about all aspects of the experiment before they consent to their child or children participating. Once all participants have been selected and all required paperwork has been returned, the parents will be instructed on how to monitor their child’s episodes of enuresis for the next 30 nights and shown how to record them on the data sheets that I will provide to them.

Each parent will be provided a standard Urine Alarm and be instructed on how to use it to notify them throughout the night when their child wets to bed. (They can be programmed to notify the parent instead of waking the child.) The parent will then keep as accurate of a record as possible of the episodes during this 30 day period to establish a baseline of performance for each child. (The Urine Alarms will be re-collected after this 30 day period has concluded. Then, after the initial 30 day testing period has ended, each child will be randomly separated into one of six treatment groups: (1) will receive Retention Control Training (RCT) paired with a daily dose of Desmopressin; (2) will receive Retention Control Training with no medication; (3) will receive Retention Control Training paired with a placebo; (4) will receive Dry-Bed Training paired with a daily dose of Desmopressin; (5) will receive Dry-Bed Training with no medication; (6) will receive Dry-Bed Training paired with a placebo.

The parents will receive very thorough and easy to understand instructions on the treatment procedure that their child has to follow, and will be given a telephone number to contact me at any time day or night throughout the

experiment if they have any questions, concerns, or if their availability to participate in the experiment changes. The parents will not have any knowledge about the use of a sugar pill as a placebo, as to eliminate any participant reaction bias. I will collect the data from each parent at the end of every week, during both 30 day periods.

After the experimental 30 days has come to an end, I will collect all materials that were being used by the participants, compile the data that was collected and get it ready to analyze, hand out the gifts to the children for participating, conduct a closinginterviewof each parent and child to clear up any loose ends or questions that they may have, and to also ensure that no aftercare is needed for any parent or child that participated, and then thank them for their involvement andhard work. References American Psychiatric Association. 2000). Diagnosticand statistical manual of mental disorders. (4th ed.). Washington, DC: doi: 10. 1176/appi. books. 9780890423349 Brown, M. L. , Pope, A. W. , & Brown, E. J. (2010). Treatment of primary nocturnal enuresis in children: A review. Child: Care, Health, and Development, 37(2), 153-160. doi: 10. 1111/j. 1365-2214. 2010. 01146. x Butler, R. J. , & Gasson, S. L. (2005). Enuresis alarm treatment. Scandinavian Journal of Urology and Nephrology, 39, 349-357. Butler, R. J. , & Heron, J. (2008).

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