Hypnosis for Test Anxiety via an Audio Recording

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Abstract

This study assessed the effectiveness of hypnotherapy for test anxiety when presented via an audio recording compared to a live presentation. Many smartphone and tablet applications (apps) offer self-help interventions for a range of problems. Many of these apps use audio recordings of hypnosis. The most common uses of these apps are to lose weight, increase self-esteem/confidence, improve relaxation, and reduce stress. Participants were college students randomly assigned to either a live or recorded hypnosis group. Participants completed a test anxiety measure pre and post intervention. The live hypnosis group received two live hypnosis sessions. The recorded hypnosis group listened to two audio recordings of hypnosis sessions. Results suggested that both groups demonstrated a significant reduction in test anxiety at post intervention, and that there was no significant difference between the two groups in their test anxiety reduction.

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Chapter 1: Nature of the Study

Introduction

Providers have used hypnosis for behavioral change, such as with weight loss and smoking cessation interventions (Alladin, 2012). They have also used hypnosis to treat medical issues, including burns and chronic pain, as well as emotional concerns, such as test anxiety (Ainsworth et al., 2010; Askay, 2007; Dundas et al., 2013; Jensen, 2009; Stanton, 1993, 1994; Sapp, 1991). Some studies on hypnosis have included presenting participants with an audio recording of hypnosis scripts as part of their procedures (Bryant et al., 2005; Carmody et al., 2008; Elkins & Rajab, 2004). Hypnosis has commonly been offered live by a trained hypnotherapist in a therapy office. At the start of therapy, hypnotherapists establish rapport with their patient, and then explain hypnosis as well as how it is used to treat the patient's presenting problems. Early in therapy, hypnotherapists explore the kind of imagery and suggestions to use during hypnosis. The imagery may include clients imagining themselves in places they feel relaxed. Hypnotic suggestions can be defined as the presentation of thoughts or ideas to clients, such as thoughts about passing a test (American Society of Clinical Hypnosis, 2015).

Many hypnotherapists commonly provide their patients with an audio recording of a hypnosis script to listen to between sessions. Individuals can also download a mobile application that provides them with audio recordings of hypnosis (Sucala et al., 2013). There are many smartphone and tablet applications ("apps") that offer self-help interventions for a range of problems (Luxton et al., 2011).

Hypnosis Delivered with Mobile Apps

There are at least 7,000 apps related to mental health, and over 800 advertised as including hypnosis (Prentice & Dobson, 2014; Sucala et al., 2013). The most common uses of

these apps are to lose weight, increase self-esteem/confidence, improve relaxation, and reduce stress (Sucala et al., 2013). However, none report how the app was tested for efficacy (Sucala et al., 2013). Thus, in the interests of public health, we should study the effectiveness of this use of hypnosis.

In 2014, 168 million people in the United States owned smartphones (Lee, 2015). As noted above, there are many apps available to address a range of concerns; most can be downloaded and installed in minutes, and cost less than five dollars (Sucala et al., 2013). However, seeing a certified hypnotherapist requires obtaining a referral, contacting the provider, scheduling an appointment according to the provider's availability, and then waiting until the appointment. Further, treatment can cost between $75 and $200 per session (Stoller-Lindsey, 2017).

There are also several concerns regarding hypnotherapy delivered via an app. First, few apps disclose the credentials or training (if any) of the person designing the hypnotherapy script or offering it in the audio recording. Sucala and colleagues (2013) found that only 7% of apps using hypnosis stated that the hypnotist was a "doctor," and few included the doctor's field or area of expertise (Sucala et al., 2013). They also found that only 35% of the descriptions stated whether the hypnotist was trained or certified in hypnosis (Sucala et al., 2013). As a result, for 65% of these apps, users do not know the level of training of the recorded hypnotists (Sucala et al., 2013). Furthermore, less than 14% of all the apps using hypnosis include any disclaimers to warn users about the appropriate use of the app, making it difficult for users to make informed choices (Sucala et al., 2013).

Another concern is the reading level of these apps (Smith et al., 2015). Smith and colleagues (2015) recommend that such apps should be written at or below a sixth-grade reading

level so that most users can understand the information in the app. However, they reviewed 38 apps and found only two (5%) met this criterion (Smith et al., 2015). For the rest, 16 fell between a sixth and ninth grade level, 13 fell between a ninth and twelfth grade level, and seven fell at or above twelfth grade level (Smith et al., 2015). This is concerning, as it may indicate that hypnosis scripts used in such apps may not be clear to many users.

Another concern with such apps is that users do not always know what they need. Generally, a person seeking therapy can identify their problem, but relies on a therapist to provide the right type of treatment, or refer them if needed. A person thinking about using a hypnosis app may not know what kind of imagery and suggestions would work best for them, or when they need to seek more intensive treatment.

A final challenge is that apps are often updated and some may be discontinued (Smith et al., 2015). Of note, Sucala (2013) compiled a list of 870 unique hypnosis apps from the iTunes store for review; 97 of these apps (11%) were removed from the iTunes Store during the first months of their review process. It is expected that individuals using an app will need to use it over a period of time to reach their goals. Similar to attending therapy sessions, the amount of time using an app will depend on individual's specific goals. This means that a person using such an app may have to update to a new version of an app, or switch to a different app, to continue their self-help efforts. This may cause confusion or frustration for users, and may interrupt their self-help efforts.

Hypnosis for Test Anxiety

Test anxiety is defined as anxiety that occurs in evaluative situations, likely because the person worries about their performance (Putwain, 2008). Some anxiety about being evaluated is normal, however, too much anxiety can decrease academic performance (Hill & Wigfield, 1984;

Stanton, 1993). It is estimated that 25% to 40% of students suffer from test anxiety at some point during their college years (Gerwing et al., 2015; Salend, 2011). Hypnosis has been shown to be effective in reducing test anxiety when compared to no-treatment control groups. (Ainsworth et al., 2010; Boutin & Tosi, 1983; Sapp, 1991; Stanton, 1993, 1994). Given that a large number of college students experience test anxiety, self-help apps may be a convenient way for them to address their difficulties (Gerwing et al., 2015; Salend, 2011).

Chapter 2: Research Design and Method

Chapter Overview

The purpose of this study was to assess the effectiveness of hypnotherapy for test anxiety when the intervention is presented via an audio recording compared to a live presentation. Participants received hypnotherapy either via an audio recording or live from a hypnotherapist. Participant level of test anxiety were measured before and after the study.

Research Hypotheses

The first hypothesis was that both groups would see a significant decrease in their test anxiety scores. The second hypothesis was that the degree of change in the two groups' test anxiety scores would not significantly differ.

Research Design

This study was quantitative and participants were randomly assigned to one of two groups. One group was a treatment as usual group (live) and the other was an experimental group (recorded). All participants were administered a pre and post intervention measure of test anxiety. This design was selected to compare the two groups' test anxiety reductions.

Participants

The primary investigator recruited adults age 18 years of age or older experiencing test anxiety for this study. Participants were currently taking college courses in the New Orleans area (e.g. Xavier University of Louisiana, Delgado Community College, and the University of New Orleans). Due to there being one independent variable, it was determined that 30 participants would provide sufficient power for this study. Participants were recruited by flyers posted at Xavier University of Louisiana's campus. Flyers were also distributed to university professors to present to their students. The primary investigator also recruited Xavier University of Louisiana

students through https://xula.sona-systems.com, a website used by the university to recruit participants for research studies.

Procedures

The study was conducted at Xavier University of Louisiana. The primary investigator or a graduate assistant met with participants to explain the nature of the study and obtain their informed consent in a one-on-one meeting. The participants were told that the point of this study was to assess the effects of hypnosis on test anxiety. They were not informed initially that the study actually assessed the effectiveness of live vs. recorded hypnotherapy. After giving their consent, participants were administered the Westside Test Anxiety Scale (Driscoll, 2017; see assessment tools section for a more thorough explanation). Only participants who scored a 2.0 and higher (meaning they reported experiencing at least some test anxiety) were allowed to take part in the study. Eligible participants were randomly assigned to one of two groups ("live" and "recorded", as explained in the next paragraph). The primary investigator or a graduate assistant also discussed common myths and misconceptions about hypnosis.

Participants assigned to the "live" hypnosis group received two hypnotherapy sessions for test anxiety. These sessions were facilitated by the primary investigator or a graduate assistant, both of whom were clinical psychology graduate students trained in clinical hypnosis. Participants assigned to the "recorded" hypnosis group met with the primary investigator or a graduate assistant and listened to two recordings of a hypnosis session for test anxiety. The recordings were made by a practicing clinical psychologist, the primary investigator, and the graduate assistant, and so the voice on the recordings did not match the same investigator who presented the informed consent.

The primary investigator underwent training with the American Society of Clinical Hypnosis (ASCH), completing the Basic and Intermediate Workshops. The Basic Workshop teaches participants beginning skills to use clinical hypnosis in clinical practice, while the Intermediate Workshop increases clinicians' skills and builds confidence in the use of hypnosis in therapeutic settings. The Basic and Intermediate Workshops qualifies hypnotherapists to use hypnosis with their clients. The hypnosis training acquired by therapists who use hypnotherapy with their client varies from little or no formal training to advanced levels of training including certification in clinical hypnosis.

The graduate assistant also completed the Basic and Intermediate Workshops. The third voice used for the recorded hypnotherapy sessions is an ASCH Certified Clinical Hypnotherapist.

After completion of the first session, all participants returned for a second session. The two sessions occurred one to two weeks apart. The second session was conducted just like the first session except it used a different hypnosis script. This second script followed the same structure as the first one. At the end of the second session, participants in both groups received via email the same recording of a hypnosis session for test anxiety. Participants in both groups were instructed to listen to the recording three times per week for the next four weeks.

Both the hypnotherapy sessions and recording followed scripts, developed by the primary investigator, which specifically addressed test anxiety. The scripts were developed from sample scripts included in the *Handbook of Hypnotic Suggestions and Metaphors* (Hammond, 1990), which is recommended by the ASCH. The scripts were also developed using recommendations from an ASCH Certified Clinical Hypnotherapist. The scripts used in this study included induction, suggestion, and re-alerting components. The scripts also contained suggestions for

increasing concentration and relaxation. Three versions of the recorded scripts were made using three different voices.

One month later, participants were contacted and asked to complete a survey online. Participants completed the Westside Test Anxiety Scale again. All participants were given five dollars at the first session, again at the second session, and last after completing the postintervention measure. This was a way for the researcher to show appreciation for the participants' time. In order to assure consistency and fidelity to the protocol, the primary investigator and the graduate assistant audio-recorded themselves during live hypnosis sessions. Eight of these recordings were rated by the other on a checklist to determine if the facilitator consistently facilitated the hypnosis sessions (Appendix J). Four of the recordings were assessed halfway through data collection. If the checklists demonstrated inconsistency, the rater gave feedback to assure consistency in the future. Four more recordings were assessed at the conclusion of data collection.

At the conclusion of the first hypnosis session, participants were given contact information for university counseling centers (Appendix I). This form also included the email address of the primary investigator to request a copy of the overall results of the study once it was completed. Websites that can be used to contact local practitioners, including ones who used hypnosis in their practice, were also on the form.

Assessment Tools

Participants in each group received the Westside Test Anxiety Scale (WTAS; Driscoll, 2007). The WTAS (Appendix C) includes six questions assessing incapacity and four questions assessing worry and dread that interfere with concentration, specifically during examinations. This assessment was developed with questions similar to those used on the Cognitive Test

Anxiety Scale (CTAS; Cassady & Johnson, 2002) and the Alpert-Haber Achievement Anxiety Test (AAT; Alpert & Haber, 1960), (Driscoll, 2007). The WTAS is a 10 question inventory which includes six items evaluating impairment and four items assessing cognitive worry (Driscoll, 2007). These 10 questions are rated on a Likert scale from one to five. The total score is calculated by dividing the sum of the 10 responses by 10, and so total scores range from one to five. Driscoll created the following classifications for total scores on the WTAS. Scores ranging from 1.0 to 1.9 suggest the student has comfortably low test anxiety. WTAS scores ranging from 2.0 to 2.4 suggest the student has normal or average test anxiety. WTAS scores ranging from 2.5 to 2.9 suggest the student has high normal test anxiety. WTAS scores ranging from 3.0 to 3.4 suggest the student has moderately high test anxiety. WTAS scores ranging from 3.5 to 3.9 suggest the student has high test anxiety. WTAS scores ranging from 4.0 to 5.0 suggest the student has extremely high anxiety.

Because previous research suggests that test anxiety is negatively correlated with achievement test scores, test anxiety measures are commonly validated by demonstrating that they can be used to identify students with lower test performance (Cassady & Johnson, 2002; Driscoll, 2007; Sapp, 2004; von der Embse & Witmer, 2014). Driscoll (2007) reported that reductions in test anxiety scores on the WTAS have a moderate correlation of $r = 0.44$ with gains in achievement test scores. This correlation of $r = 0.44$ was determined based on combining previously found significant correlations of $r = 0.49$ and $r = 0.40$. Changes in WTAS scores also account for 20% of the change in achievement test scores (Driscoll, 2007). Additionally, Rajiah and Saravanan (2014) found in their study that the WTAS had an alpha reliability of 0.89. This data suggests that the WTAS is a valid measure of test anxiety. The WTAS has been used in a

variety of previous studies on test anxiety (Green et al., 2016; Larson et al., 2010; Miller et al., 2016; Rajiah & Saravanan, 2014).

The WTAS has high face validity, as it contains questions related to cognitive and impairment factors. The WTAS has also been shown to have a negative correlation with academic performance. This supports that the WTAS measures test anxiety because test anxiety is negatively correlated with academic performance (Stanton, 1993; Sapp, 2004; von der Embse & Witmer, 2014). The correlation between reduced anxiety scores on the WTAS and test gains was found to be $r = .40$ ($df = 32$, $p < .01$), where test gains were measured using standardized state test scores, and $r = .49$ ($df = 23$, $p < .01$), where test gains were measured using classroom exams, for two different samples (Driscoll, 2007; Larson, et al., 2010).

Chapter 3: Analysis

This study collected the following materials from each participant at the start of the study: age, sex, ethnicity, year in college, and WTAS score. Using these variables, the two groups were compared to assure they were similar using a two-tailed T-Test at the 0.05 level.

The independent variable in this study was the method of hypnotherapy presentation (live versus an audio recording delivery) and the main dependent variable was the change in participants' WTAS score from the first to second administration. Three analyses were conducted. First a correlational test was used to assess the relationship between the method of hypnotherapy presentation and the change in participants' WTAS scores. The first hypothesis was that both groups would see a significant decrease in their test anxiety scores. If this hypothesis were true, then WTAS scores in both groups would significantly decrease at postintervention from preintervention. This would suggest that both live and recorded hypnosis can help reduce test anxiety in college students.

The second hypothesis was that the degree of change in the two groups' WTAS scores would not significantly differ. If this hypothesis were true, both groups would show a reduction in their test anxiety and the differences in the group's final scores would not significantly differ. This would suggest that hypnosis presented live and recorded are equally as effective at reducing college students' test anxiety. Finally, an ANOVA was conducted to determine whether sex, age, ethnicity, or year in college differences significantly affected the effectiveness of these methods in treating test anxiety.

Chapter 4: Findings

Setting

This study took place in a study room inside the library of Xavier University of Louisiana. Additionally, recruitment of participants took place on Xavier University of Louisiana's campus.

Demographics

Twenty-three participants completed the study. As previously noted, potential participants needed to score at least a 2.0 on the WTAS to participate in the study. None of the potential participants scored less than a 2.0 on the measure. The live hypnosis group had 12 participants (nine females and three males), and were 19.8 years of age on average (SD = 2.6), with seven being college freshmen, one being a college sophomore, one being a college junior, one being a college senior, and two being graduate students. Three participants identified themselves as being multi-ethnic, one as Caucasian, and eight as Black or African American. One additional participant in the live hypnosis group took part in the first hypnosis session, but did not attend the second one; as a result, their data was not included in the analysis. The primary investigator facilitated hypnosis for nine of the participants in the live hypnosis group. The graduate assistant facilitated hypnosis for three of the participants in the live hypnosis group.

The recorded hypnosis group had 11 participants (nine females and two males), and were 20.5 years of age on average (SD = 3.1), with four being college freshmen, three being college sophomores, three being college juniors, and one identifying their college status as other. Three participants identified themselves as being multi-ethnic, two as Caucasian, and six as Black or African American. The recorded hypnosis group had 100% retention throughout the study. The primary investigator was the voice on the recordings presented to two of the participants in the

recorded group. The graduate assistant and the ASCH Certified Hypnotherapist were the recorded voices for two and five participants respectively for the recorded hypnosis group.

Results

A two-tailed T-Test assessed whether the two groups differed in their ages. The Levene's Test for Equality of Variance had an F = 0.562 and a p = 0.462. Because this value is greater than 0.05, equal variance is assumed. Results suggest the participants' ages were not significantly different [t(21)=-0.516, p=0.611].

The live hypnosis group was made up of 75% female participants and 25% male participants. The recorded hypnosis group was made up of 81.82% female participants and 18.18% male participants. A Fisher's Exact Test was used to determine whether the two groups significantly differed in gender. The results suggest that the two groups were not significantly different (p=1.000, two-sided).

The live hypnosis group had a mean score of 3.53 (SD=0.73) and the recorded hypnosis group a mean score of 3.96 (SD=0.50) on the first administration of the WTAS. The scores on the first administration of the WTAS ranged from 2.2 to 4.5 for the live hypnosis group and ranged from 3.0 to 4.7 for the recorded hypnosis group. A two-tailed T-Test was conducted to compare the first administrations of the WTAS between the live hypnosis and recorded hypnosis groups. The Levene's Test for Equality of Variance had an F=2.139 and a p=0.158. Because this value is greater than 0.05, equal variance is assumed. Results suggest that the pretest WTAS scores between the two groups were not significantly different [t(21)=-1.625, p=0.119].

An ANOVA was run to determine whether participants' year in college or ethnicity affected the reduction in their WTAS scores. The change in WTAS scores from preintervention to postintervention was used as the dependent variable. Ethnicity and year in college were each

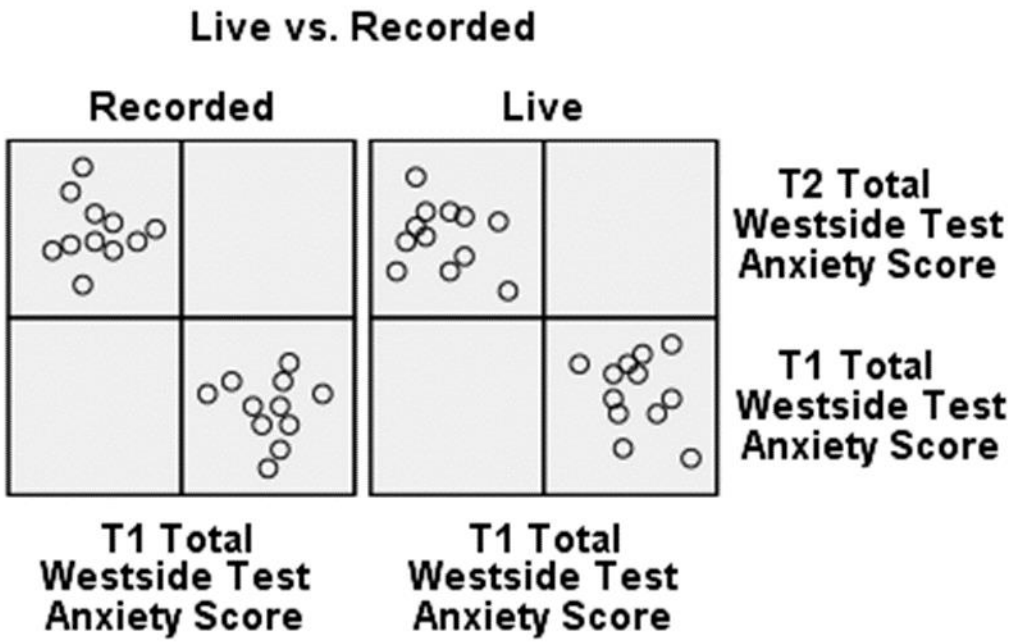
used as the fixed factor. The ANOVA for year in college had an F=0.299 and p=0.907. The ANOVA for ethnicity had an F=0.760 and p=0.481. Because year in college and ethnicity did not have a significant p-values, neither significantly affected participant's reduction in their WTAS scores.

The assumption of normality was tested using Shapiro-Wilk's test. The first administration of the WTAS had a p-value of p=0.141 (p=0.730 for the recorded hypnosis group, p=0.397 for the live hypnosis group) and the second administration had a p-value of p=0.542 (p=0.651 for the recorded hypnosis group, p=0.910 for the live hypnosis group). Because none of the p-values were significant, the scores on both the first and second administrations of the WTAS were normally distributed for both groups.

A matrix scatter plot graph was made to test the assumption of linearity. Based on the graph, it appears that the assumption of linearity was met for the live hypnosis group. The data from the recorded hypnosis group however, appears to have violated the assumption of linearity (see Figure 1).

Figure 1

Matrix Scatter Plot Graph



Note: This graph tests the assumption of linearity.

The assumption of homogeneity of regression slopes was tested using the Test of Between-Subject Effects. The preintervention WTAS scores and randomly assigned intervention group had a non-significant interaction (p=0.547), which suggests the assumption of homogeneity of regression slopes was met. Homogeneity of variance was tested using Levene's Test of Equal Error Variance. This test had an F=1.670 and p=0.210. Because the p-value is greater than 0.05, the assumption of homogeneity of variance was met.

Eight live sessions were recorded and assessed for consistency using the Live Hypnosis Reliability form (Appendix J). Five of the recordings had less than five words read incorrectly and three of them had between five and nine words read incorrectly. None of the recordings had 10 or more words read incorrectly.

A Paired Samples T-Test was conducted for each of the two experimental groups to determine whether their postintervention WTAS scores were significantly different from their preintervention WTAS scores. The live hypnosis group demonstrated a significant reduction in their WTAS scores $t(11)=3.819$, $p=0.003$. The mean WTAS score reduction from preintervention to postintervention for the live hypnosis group was 0.93 (SD=0.84). The recorded hypnosis group also demonstrated a significant reduction in their WTAS scores $t(10)=3.014$, $p=0.013$. The mean WTAS score reduction from preintervention to postintervention for the recorded hypnosis group was 1.02 (SD=1.12).

Table 2

Mean WTAS Scores

	Live Hypnosis	Recorded Hypnosis
Mean Preintervention WTAS Score	3.53	3.96
Mean Postintervention WTAS Score	2.61	2.95
Mean WTAS Score Reduction	0.93	1.02

This table shows the average pre and post intervention WTAS scores for the two groups. It also includes the average WTAS score reduction for each group.

An ANOVA was run using the WTAS score reductions from preintervention to postintervention as the dependent variable and whether the participant was randomly assigned to the live or recorded hypnosis group as the fixed factor. The ANOVA had an $F=0.052$ and

p=0.823. Because the p-value was not significant, there was no significant difference between the two groups in terms of their WTAS score reductions.

Chapter Summary

The two groups demonstrated no significant differences in participant gender, age, ethnicity, year in school, or preintervention WTAS scores. The results suggested that both the recorded hypnosis and live hypnosis groups demonstrated a significant reduction in their WTAS scores at postintervention, and that there was no significant difference between the two groups in score reduction.

Chapter 5: Discussion and Conclusions

Introduction

This study assessed the effectiveness of live introductions versus recorded introduction of hypnosis in reducing test anxiety for college students. Hypnosis has traditionally been offered live by a trained hypnotherapist in a therapy office. However, there are many apps available that offer self-help interventions using audio recordings of hypnosis scripts for a range of problems (Luxton, et al., 2011; Sucala et al., 2013). This study assessed the potential effectiveness of such apps as self-help interventions.

Interpretation of Findings

There were two hypotheses. The first hypothesis was that both the live and recorded groups would each show a significant decrease in their test anxiety scores. The results showed that each group had a significant reduction in their WTAS scores at postintervention. The second hypothesis was that the degree of change in the two groups' WTAS scores would not significantly differ. The results showed that the two groups did not significantly differ in the degree of change in their WTAS scores; thus, the second hypothesis was also accepted. The results suggest that both hypotheses were correct.

These results support previous findings that hypnosis can significantly reduce test anxiety (Ainsworth et al., 2010; Boutin & Tosi, 1983; Sapp, 1991; Stanton, 1993, 1994). Results of this study showed no significant difference in benefit between live and audio recorded hypnosis for college students' test anxiety. Given that between 25% and 40% of college students suffer from test anxiety at some point during college, results suggest that many of these students could benefit from hypnosis, and could benefit equally from a recorded or live hypnosis intervention (Gerwing et al., 2015; Salend, 2011).

Future Research

Given that this study was conducted at Xavier University of Louisiana, the majority of participants likely were students of Xavier University of Louisiana. One limitation of this study is that there were 18 female and only five male participants. Females tend to score higher on test anxiety measures than males (Cassady & Johnson, 2002; Chapell et al., 2005; Gerwing et al., 2015). The degree to which live and recorded hypnosis decreases test anxiety may be different for males and females due to this gender disparity. Additionally, some research has also shown that males benefit more from hypnosis for smoking cessation than females (Green, Lynn, & Montgomery, 2006; 2008). This disparity in hypnosis for smoking cessation success may be because males tend to have greater quit rates than females with smoking cessation techniques in general (Green, Lynn, & Montgomery, 2008). Future research should replicate this study, and include more male participants in order to examine whether there are gender differences in effectiveness.

A second limitation of this study is the sample size of 23 participants. Increasing the number of participants to at least 30 would lead to greater generalizability of the results. Future studies comparing different delivery models of hypnosis should include more participants and a greater percentage of male participants. This also would strengthen the generalizability of the study.

Future researchers should replicate this study with the addition of a control group. All participants in the study knew they were taking part in a study focused on reducing their test anxiety. The addition of a control group would assess for placebo effects. The addition of an achievement test for a replication study would also be beneficial because test anxiety is

negatively correlated with achievement test scores (Sapp, 2004; von der Embse & Witmer, 2014).

Therapists who use hypnosis often personalize their scripts for each client. However, apps that present recorded hypnosis typically do not. This study used two standard scripts that were presented to all participants regardless of group designation. Future researchers should compare the effectiveness of standard and personalized scripts for test anxiety. This comparison should be studied for both live and recorded hypnosis. Future research should also replicate this study with other difficulties such as chronic pain, weight loss, and smoking cessation. This would assess the effectiveness of recorded hypnosis for other concerns.

This study included hypnotherapists with different levels of training. It is recommended that future studies compare the effectiveness of different levels of hypnosis training. This could be done by conducting a study on hypnosis for test anxiety where hypnotherapists with different levels of training facilitate hypnosis with participants with the goal of reducing test anxiety.

It would be beneficial to ask participants in future studies about their previous experiences with psychotherapy or hypnosis. Participants who have previous exposure to psychotherapy or hypnosis may respond differently to hypnosis. Participants with previous anxiety diagnoses may also respond differently. It would also be interesting to ask participants about their current course loads to see if that makes a difference it how much hypnosis reduces their test anxiety.

Some fidelity checks should also be added to future studies. First, a program should be used where researchers can see how often participants listen to recordings at home. Another fidelity check would be to add a question to the follow-up inventory asking participants if they were interrupted while listening to the recording and if so, how often this occurred.

Mobile Application Recommendations

After exploring the generalizability of these findings, the next step will be to develop an effective hypnosis app for test anxiety. Some recommendations should be taken into account when developing this app to make sure it is as effective as possible. First, the training and credentials of the recorded hypnotist should be presented in the app. This will give users an idea of the level of training of the hypnotist. Presenting the credentials of the recorded hypnotist could also make it more likely that users trust the app. Users who trust the hypnotist based on their credentials may be more likely to find the app effective. Second, the reading level of the app should be at or below a sixth-grade reading level (Smith et al., 2015). A lower reading level would make it easier for users understand everything written and spoken in the app.

Third, app developers should include a section in the app where users can learn how to find local therapists. This would show users how to find additional resources that the app cannot provide such as therapy for other concerns outside of test anxiety. Fourth, many apps also regularly update or new apps takes their place. This hypnosis for test anxiety app should let users know in advance of updates and exactly what changes have been made. This would give users a chance to consider whether they wish to update, and how to properly prepare for these changes.

A fifth suggestion for this app is to include a section where users can enter their anxiety symptoms. This can be done by users selecting symptoms from a list of common anxiety symptoms and ranking the severity of each one. Inputting symptom information would help users track their progress. The sixth and final suggestion is that the app must be encrypted to protect the user's private information. Users should also be informed who, if anyone, would have access to their private information. App creators could also use this information, with the user's permission, to show whether users report a significant decrease in their test anxiety symptoms as

a result of using the app. This would help developers determine whether the app is effective in reducing test anxiety. If the app is effective, information about the effectiveness rates could be provided to users. If the app is not effective, developers should assess what updates can be made to make the app more effective.

Implications

As previously noted, there are currently a variety of hypnosis-based self-help apps available which rely on audio recordings. Future research must be done to confirm whether a hypnosis-based app is beneficial in reducing test anxiety. If future research shows that these types of apps are effective at reducing test anxiety, the next step would be to determine when it is appropriate for individuals to use them.

This type of app could be useful for therapists with long wait-lists. There are less than 25 licensed psychologists per 100,000 people in Louisiana (American Psychological Association, 2014). This is below the national average of 34 licensed psychologist per 100,000 people (American Psychological Association, 2014). Psychologists who work in areas with fewer mental health providers often put potential clients on wait-lists because many providers do not have unfilled appointments in their schedules. However, therapists with long wait-lists could offer to consult with a new client to determine the appropriateness of recommending an app for self-help. For example, it may be more appropriate to recommend an app only to clients with mild or moderate test anxiety. Therapists with long wait-lists could also refer clients to a support group for clients using a self-help app for test anxiety.

A self-help app for test anxiety may also be a cheaper option for people who cannot afford frequent therapy sessions. Some therapists could recommend that clients using a self-help test anxiety app attend monthly individual or group therapy sessions to monitor and treat their symptoms. These clients would use the self-help app throughout the month between appointments. Attending one session each month while using a self-help app would be a cheaper option than attending weekly or biweekly therapy session.

Self-help apps may also be useful for clients to use before they start therapy. This would teach them relaxation techniques that therapists can build on. This could make it more likely that clients would return for future therapy sessions because therapists are building on what clients have already been taught. Clients can also use a symptom tracking section in the app to show their therapist their symptoms prior to beginning therapy. This would provide therapists with valuable information they can use when constructing a personalized treatment plan.

Further research should focus on assessing the effectiveness of hypnosis apps for other concerns. It is possible that researchers will find that hypnosis apps are more effective when promoting less complex behavioral change. These less complex concerns may include weight loss and smoking cessation instead of more complex concerns such as PTSD and personality disorders. Future researchers should focus on these less complex concerns. It is likely that self-help hypnosis apps would be less effective in treating more complex problems.

Conclusion

There are many self-help apps using audio recordings of hypnosis scripts for a range of problems. This study compared the potential effectiveness of live and recorded hypnosis in reducing test anxiety among college students. The results showed that both the live and recorded

hypnosis groups had significant reductions in test anxiety at postintervention. The results also showed that the two groups did not significantly differ in the degree of change in test anxiety.

Future research on hypnosis presented via an audio recording should include a control group to test for placebo effects. The addition of fidelity checks to future studies is also recommended. It is recommended that future researchers compare the effectiveness of personalized and standardized scripts for test anxiety as well as assessing whether the amount of hypnosis training by the hypnotist alters the effectiveness of hypnotherapy.

Future research must be done to confirm whether a hypnosis-based app is beneficial in reducing test anxiety. A self-help hypnosis app may be an effective tool to help clients with less complex concerns such as test anxiety and weight loss. This type of app could be a way to introduce relaxation techniques to wait-listed clients while they wait to be scheduled for in-person sessions. Furthermore, listening to an audio recording of a hypnosis script may be an effective way to reduce test anxiety among college students. This study was one step for future work in this area as it provided promising evidence regarding the potential effectiveness of self-help hypnosis apps.

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Appendix A: Comprehensive Literature Review

Introduction

Hypnosis is a technique used to treat a range of medical problems, including psychiatric conditions such as anxiety and phobias and more traditional medical disorders like insomnia (Alladin, 2012; Galovski et al., 2016). Hypnosis has been used in behavioral change, such as in weight loss and smoking cessation interventions (Alladin, 2012). Hypnosis has also been commonly used in the treatment of medical concerns including burns and chronic pain (Askay et al., 2007; Jensen, 2009). Outside of traditional medical diagnoses, hypnosis has been shown effective in treating test anxiety (Ainsworth et al., 2010; Dundas et al., 2013; Sapp, 1991; Stanton 1993, 1994).

Treatment using hypnosis has commonly been offered live by a trained hypnotherapist, and conducted in a therapy office. Hypnotherapists generally begin therapy by establishing rapport with their patients, and then explain what hypnosis is as well as how it will be used to treat their presenting problems. Hypnotherapists generally interview clients at the start of therapy to determine the kind of imagery to use during hypnosis.

There are, however, many smartphone and tablet applications that offer self-help interventions for a range of problems, and many use audio recordings of hypnosis (Luxton et al., 2011; Sucala et al., 2013). These mobile applications present with benefits and challenges. Benefits include low cost and the freedom to use them whenever convenient (Sucala et al., 2013). Challenges include determining whether the recording might be beneficial to the user. For example, few applications disclose the credentials or training, if any, of the person designing the hypnotherapy script or offering the intervention in the audio recording (Sucala et al., 2013).

There is a question also as to whether hypnotherapy delivered by a recording is just as effective as that delivered by a person. If hypnosis presented in an audio recording is just as effective for treatment of test anxiety, then a mobile application using hypnosis could be an effective treatment. This question was tested in this study by comparing outcomes for hypnosis presented in an audio recording to outcomes for hypnosis presented live by a hypnotherapist.

Research Strategy

61 journal articles were cited in this study and were obtained from the ProQuest and PsycINFO databases. Key terms used in the search were *hypnosis*, *hypnotherapy*, and *test anxiety*, as well as *hypnosis* and *mobile applications*. One additional article on the number of licensed psychologists in the United States was obtained from the American Psychological Association's website. Information regarding hypnosis scripts, uses of clinical hypnosis, and hypnosis training were obtained through the American Society of Clinical Hypnosis' website (https://www.asch.net) and two books which discuss clinical hypnosis. The List of States by Population website was also reviewed to obtain statewide population data (https://state.1keydata.com/state-population.php).

Definitions of Key Terms

Hypnosis comes from the Greek root word *hypnos*, or sleep. The ancient Greeks thought that individuals who underwent hypnosis were in a "sleep-like state" (Upshaw, 2006); however, the hypnotic state is not related to sleep at all (Chowdhary & Gopinath, 2013; Upshaw, 2006). *Hypnosis* can be defined more generally as helping a person reach "a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion" (Elkins et al., 2015, p. 382). However, determining a more

specific definition, one that takes into account the different theories of how hypnosis works, is a difficult task (Elkins et al., 2015; Hammond, 1998).

It may be more productive to teach patients about hypnosis by letting them experience it. Spiegel & Greenleaf (2006) suggest that it would be difficult to simply provide a comprehensive definition of hypnosis. Patients who undergo a hypnotic trance for therapeutic purposes have their own unique experience (Hammond, 1998). Hammond indicated that some patients are more capable of experiencing different hypnotic phenomena than other patients. This demonstrates that it may be easier for individual patients to give a definition of hypnosis that works for them rather than for clinicians to create a definition of hypnosis that covers all patients' experiences. One way for patients to create their own definition of hypnosis is by having them undergo a short hypnotic induction. It is common for practitioners to use short hypnotic inductions to help clients better understand hypnosis.

Hypnotic induction is "a procedure designed to induce hypnosis" (Elkins et al., 2015). The hypnotherapist can help clients reach a hypnotic state using a variety of techniques, such as deep breathing, counting, and imagery (Hammond, 1998). Elkins and colleagues defined *hypnotizability* as an individual's ability to respond to induction, enter a state of trance, and experience alterations in physiology, sensations, emotions, thoughts, or behavior as a result of suggestions during hypnosis. *Hypnotherapy* refers to using hypnosis for the treatment of medical and psychological concerns (Elkins et al., 2015).

In summary, hypnosis can be defined as "a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion" (Elkins et al., 2015). However, a definition of hypnosis may not describe the

experience of being hypnotized for clients. As a result, hypnotherapists commonly induce a short hypnotic trance with clients before using hypnosis in treatment.

A Brief History of the Development and Practice of Hypnosis

Ancient Use of Hypnosis

The use of an altered state of awareness or trances has been around since ancient times, and has been seen in many cultures including the Greek, Roman, Hebrew, and Egyptian cultures as a means of alleviating patients' pain (Sthalekar, 2000; Upshaw, 2006). The Bible even alludes to presentations of hypnotic phenomena (Durbin, 2001; Hammond, 1998). An example of this comes from the book of Acts where Paul healed a man's legs by gazing into his eyes and talking to him (Durbin, 2001).

Hypnosis in Europe in the 1800s

Franz Anton Mesmer is credited by many scholars as the father of modern hypnosis (Upshaw, 2006). In the eighteenth century, Mesmer believed that all living beings had a universal fluid within them that could transfer from one part of the body to another (Upshaw, 2006). Mesmer created a tub of iron filings to treat patients who had an imbalance in their "fluids" (Upshaw, 2006). Mesmer would touch his patients in a stroking motion with a wand that would facilitate a trance. The patients who were able to go into this trance state were allegedly cured of their presenting ailments (Hammond, 1998; Upshaw, 2006). This method of eliciting a trance was known as "mesmerism" (Sthalekar, 2000). Though mesmerism was used by many physicians during this time, Mesmer was considered by the medical community to be a "quack" (Sthalekar, 2000). His idea of using a trance state to treat patients was further studied by later practitioners (Sthalekar, 2000).

James Esdaile, an English surgeon in the 1800s, studied Mesmer's theories (Hammond, 1998; Upshaw, 2006). He used hypnosis as a means of anesthesia with three thousand surgical patients (Hammond, 1998, 2008). He found that his patients' mortality rates during surgery decreased from about 50% to 5%, and that many of his patients recovered more quickly with the help of hypnosis (Hammond, 1998; Upshaw, 2006). Esdaile also stated that using hypnosis as an anesthesia reduced blood loss during surgery (Hammond, 2008). Esdaile's success with hypnosis as an anesthesia became widely known by medical doctors in Europe and America which led to many other medical doctors employing hypnosis in their practices (Hammond, 1998; Upshaw, 2006). The use of hypnosis as an anesthesia became less common among medical doctors in the 1840s when chemical anesthetic agents were developed and became widely used (Upshaw, 2006). It is hard to determine whether Esdaile's success was due more to the use of hypnosis or to the improvements in surgical technology, as he did not use a control group. More recent studies suggest that hypnosis can be used as an adjunctive intervention either to decrease the amount of anesthesia used or to improve the effectiveness of a local anesthesia (Hammond, 2008). This would be beneficial for people who are allergic to chemical anesthesia.

In France in the late 1800s, hypnosis was used to treat psychiatric disorders. There was even a journal at the time that published items related to hypnosis called *Journal du Magnétisme* (Tramontana, 2016). Sigmund Freud, known for his work in psychoanalysis, also used hypnosis to recover patient's repressed memories (Sthalekar, 2000). He appeared to have trouble leading his patients to a trance state (Upshaw, 2006). One theory of why Freud had difficulty with hypnosis is that he appeared more invested in some of his patients than others (Kluft, 2018). An example of this is that he accompanied an affluent female patient of his on a trip to visit a German colleague, whereas he wrote personal correspondence while facilitating hypnosis with

another one of his patients (Kluft, 2018). He also believed that hypnosis interfered with transference and countertransference reactions; Freud gave up using hypnosis in favor of free association and other psychoanalytic techniques (Hammond, 1998).

Hypnosis in America

Clark Hull played a major role in establishing hypnosis in America (Hammond, 1998; Sthalekar, 2000). In the 1930s, Hull ran a laboratory at the University of Wisconsin where he studied hypnosis (Sthalekar, 2000). One of his students, Milton Erickson, developed a variety of hypnotic techniques that are still used today, such as well-timed pauses and permissiveness (Hammond, 1998; Sthalekar, 2000). Erickson also is popularly known for using metaphors during hypnosis (Hammond, 1998; Sthalekar, 2000).

The Society for Clinical and Experimental Hypnosis (SCEH) was founded in 1949 by Jerome Schneck, a psychiatrist (Upshaw, 2006; Hilgard, 1993). In 1957, The American Society of Clinical Hypnosis (ASCH) was founded with Milton Erickson as its first president (Hammond, 1990). Milton Erickson intended ASCH to compete with SCEH (Hilgard, 1993). These two societies eventually started cooperating with each other, and many psychologists have historically held membership in both organizations (Hilgard, 1993). In 1969, the American Psychological Associated developed a specialty division (Division 30) for hypnosis called Psychological Hypnosis (Hammond, 1998; Hilgard, 1993). In the 1980s, membership in \Division 30 grew at higher rate than that of the APA's general membership (Hilgard, 1993). These three organizations lead the work of clinical hypnosis in America (Hammond, 1998; Hilgard, 1993).

In summary, while hypnosis has existed since the days of ancient Greeks, Mesmer is considered the father of modern hypnosis based on his work during the 1800s (Hammond, 1998;

Upshaw, 2006). By the 1930s, Hull had established a foothold for hypnosis in America (Hammond, 1998; Sthalekar, 2000). One of his students, Erickson, was the founding president of the American Society of Clinical Hypnosis (ASCH) (Hammond 1990, 1998). ASCH, along with the Society for Clinical and Experimental Hypnosis and APA's Division 30, are considered the three major clinical hypnosis organizations in America in terms of training and research (Hammond, 1998; Hilgard, 1993).

La Société: Hypnosis in New Orleans

New Orleans, Louisiana has its own unique history in regards to hypnosis. In the 1830s there was an informal group of individuals in New Orleans who discussed Mesmer's work (Tramontana, 2016). This group adopted a constitution in 1845 and became La Société du Magnétisme de la Nouvelle Orléans. The society held weekly meetings where they would discuss the newest treatment, and present case studies involving their use of "mesmerism" (Tomlinson & Perret, 1974; Tramontana, 2016). The organization grew to 71 members by 1848 (Tomlinson & Perret, 1974).

The New Orleans Society was internationally known, and many of its activities were published in the *Journal du Magnétisme* (Tramontana, 2016). Baron du Potet, a leader in Paris' Mesmerism organization, stated that the Society was the most successful Mesmerism organization outside of Paris, France (Tramontana, 2016). The New Orleans Society disbanded in 1861, but this was not the end of hypnosis in New Orleans (Tomlinson & Perret, 1974).

In the early 1970s, Dabney Ewin, M.D. and a few colleagues decided to revive the New Orleans Society (Tramontana, 2016). They originally kept the French name, but later changed the name to the New Orleans Society of Clinical Hypnosis (NOSCH) (Tramontana, 2016). NOSCH helped host the ASCH convention in New Orleans, and was granted status as a

component section of ASCH (Tramontana, 2016). NOSCH has since thrived as an organization for professionals in New Orleans interested in clinical hypnosis.

American Society of Clinical Hypnosis and Certification

Proper education in clinical hypnosis is essential for clinicians to offer patients effective hypnotherapy. As previously noted, ASCH was founded in 1957, and is currently the largest hypnosis organization in North America (Hammond, 1990). A major objective of ASCH is to provide and encourage education about clinical hypnosis. ASCH provides educational programs including hypnosis training for practitioners and students in the fields of medical, mental, and dental health.

ASCH also provides certification in clinical hypnosis for those who meet requirements (American Society of Clinical Hypnosis, 2015). Requirements include completion of the Beginning and Intermediate Workshops, 20 hours of approved individualized training, and at least two years of experience using hypnosis. Requirements also include an advanced degree, licensure or certification to practice, membership in a professional society consistent with the practitioner's field (American Society of Clinical Hypnosis, 2015).

Misunderstandings About Hypnosis

An individual's beliefs about hypnosis has also been shown to alter the person's hypnotizability (Golden, 2012). In other words, a client's perception of hypnosis can affect the effectiveness of hypnotherapy with that client. This means that it is important to correct these myths and misunderstandings before working with clients. This section includes a review of myths and misunderstandings about hypnosis, and how these have changed over time.

Hypnotherapy has been criticized in the past by the public and members of the medical community for being ineffective, but research demonstrates that this is not true (Dwivedi &

Kotnala, 2014; Elkins et al., 2012; Upshaw, 2006). There is plenty of empirical research that suggests hypnosis is an effective intervention for specific goals such as smoking cessation, reducing anxiety, and reducing chronic pain, but little is known about how hypnosis works (Alladin, 2012; Carmody et al., 2008; Elkins et al., 2012; Upshaw, 2006).

Many people appear to have had negative perspectives of hypnosis in the past. For example, in the book *The Manchurian Candidate*, a soldier is captured by communists who uses hypnosis to "brainwash" him into becoming a hitman for them (Upshaw, 2006). During the 1960s and the Cold War with Russia, American citizens were afraid of being brainwashed, and this book (which later became a movie) seemed to support their fears. Research suggests that hypnosis does not lead patients to taking part in involuntary behaviors (Walling & Levine, 1997; Upshaw, 2006). Any perceived involuntariness by patients appears to be due to their perceptions of the hypnotic situation (Orne, 1972; Walling & Levine, 1997).

Some of the misunderstandings about hypnosis may come from stage hypnotists. Many people do not realize that stage hypnotists selectively choose audience members who are cooperative and somewhat exhibitionistic (American Society of Clinical Hypnosis, 2015). This may lead audience members to believe that hypnotherapists have the power to make anyone perform behaviors they normally would not, such as clucking like a chicken or barking like a dog. In truth, hypnosis cannot make individuals take part in behaviors that they do not want to take part in (Upshaw, 2006).

Some believe that while in a hypnotic trance, individuals lose consciousness and acquire amnesia (American Society of Clinical Hypnosis, 2015). The American Society of Clinical Hypnosis has written that the large majority of individuals who go into a hypnotic trance

remember everything that occurs during the hypnotic session. In fact, successful hypnotherapy requires the patient to remember much of what was suggested during the hypnotic trance.

In recent years, the negative perception surrounding hypnosis has faded as more practitioners and clients appear willing to consider hypnosis as an effective intervention (Krouwel et al., 2017). Many types of professionals including physicians, dentists, and psychologists currently use hypnosis as a treatment tool with varying degrees of effectiveness depending on the specific problem. Research suggests that the public is now open to using hypnosis to treat their psychological and medical ailments, as long as research supports the effectiveness of hypnosis for their problem and the hypnotherapist holds the proper qualifications (Krouwel et al., 2017). This positive public perception of hypnosis will likely continue to grow as research in the area of hypnosis continues to grow.

In summary, there are many misconceptions about hypnosis. For example, some believe that hypnosis can lead to mind control, while others believe that people lose consciousness and acquire amnesia while hypnotized. However, there is little evidence for these beliefs (Upshaw, 2006). In the past, these misconceptions may have dissuaded some people from considering hypnosis as a form of treatment. Today, these kinds of misconceptions are much less common, and the general population now trusts trained professionals to use hypnosis in their treatment (Krouwel et al., 2017).

Outcome Studies Supporting the Effectiveness of Hypnosis

Hypnosis has been demonstrated through empirical research to be an effective treatment option for a variety of specific psychological issues (Spiegel, 2013). This section introduces some of the outcome studies using hypnosis in the treatment of anxiety, depression, and fear as well as smoking (Alladin & Alibhai, 2007; Carmody et al., 2008; Hammond, 2010; Schoenberger et al., 1997; Spiegel, 2013).

Outcome studies have shown differing results when comparing Cognitive Behavioral Therapy (CBT) alone to CBT combined with hypnosis (CBT+H) for treatment of anxiety and depression (Alladin & Alibhai, 2007; Bryant et al., 2005; Hammond, 2010; Schoenberger et al., 1997). Bryant and his colleagues (2005) studied civilian trauma survivors following a nonsexual assault or a motor vehicle accident who met diagnostic criteria for acute stress disorder and underwent one of three treatments: six sessions of CBT alone, CBT+H, or supportive counseling (Support). The CBT group attended six sessions that focused on cognitive restructuring; the group participated in imaginal exposure exercises during the sessions and were assigned live exposure exercises for homework. The CBT+H group followed the same structure as CBT, but with the addition of listening to a 15 minute audio tape of a hypnotic induction prior to each imaginal exposure exercise. The hypnotic induction presented suggestions that "participants could engage fully in the exposure exercise and experience as much affective and sensory detail as possible." The Support group was taught about trauma and some general problem solving skills for six sessions, and asked to keep a diary keeping of symptoms and moods for homework.

Bryant et al. (2005) reported that the CBT and the CBT+H groups showed a similar number of participants who still met criteria for PTSD upon completion of the study (13% and 9% respectively). CBT and CBT+H decreased participants' PTSD symptoms significantly more

than Support, as 46% of participants in the Support group still met criteria for PTSD upon completion of the study. After a six-month follow-up, the CBT and CBT+H groups again showed a similar number of participants who still met criteria for PTSD (21% and 22% respectively). These rates were significantly lower than those for the Support group (59%). CBT and CBT+H participants demonstrated similar levels of anxiety at the completion of the study and after a six-month follow-up. There was however a non-significant trend indicating that the CBT+H participants reported fewer intrusive memories posttreatment than the CBT participants.

Some studies have demonstrated that CBT+H is more effective than CBT alone in reducing depression and anxiety when outcomes were assessed using the Beck Anxiety Inventory (BAI), Beck Depression Inventory II (BDI-II), and Beck Hopelessness Scale (BHS) (Alladin & Alibhai, 2007; Hammond, 2010; Schoenberger et al., 1997). In a study by Alladin & Alibhai (2007), 98 participants with a diagnosis of chronic major depressive disorder took part in either CBT or CBT+H treatment. Those in the CBT+H group showed a 5% greater reduction on BDI-II scores over and above the reductions for participants in the CBT group (46% and 55% reduction from baseline scores for CBT and CBT+H respectively). Though smaller, these gains remained at the 12-month follow-up. This study also found similar results on participants' BAI and BHS scores. Participants in the CBT+H group had a 16% greater reduction on BAI scores and 8% greater reduction on BHS scores compared to participants in the CBT group. These BAI and BHS score differences were maintained after a 12-month follow-up.

Schoenberger et al. (1997) found similar results when they compared the effectiveness of CBT and CBT+H in decreasing fear of public speaking. The CBT group was presented with relaxation training while the CBT+H group was presented with relaxation-based hypnosis. The key difference between relaxation training and relaxation-based hypnosis was that the hypnosis

group included hypnotic inductions. Another difference was that in the CBT+H group, maladaptive and adaptive thoughts were referred to as negative and positive self-suggestions. Both groups took part in five two-hour sessions. Both groups completed the Personal Report of Confidence as a Speaker (PRCS), the Fear of Negative Evaluation (FNE), the Anxiety Expectancy scale (AE), and the Subjective Units of Disturbance Scale (SUDS) before and after taking part in the sessions. The participants in the CBT+H group had significantly greater reductions on all four posttreatment assessments.

Schoenberger et al. (1997) also measured pulse rates as a behavioral measure of anxiety. Pulse rates were measured at the beginning of the posttreatment speech, and the three groups did not significantly differ. However, participants reported afterward that their anxiety had decreased over the course of the speech, and participants in the CBT+H group reported quicker decreases than those in the CBT group.

Snow et al. (2012) note that anxiety can often make patients more sensitive to pain, and so efforts to reduce anxiety before and during bone marrow aspirations and biopsies might lead to lower levels of reported pain. In their study, participants took part in a hypnotic induction focusing on relaxation and reduction of sensation in the area of needle insertion following the administration of a local anesthetic during the procedure. Snow et al. assessed participants' levels of both pain and anxiety. The reported levels of pain for the hypnosis group were slightly lower than those reported in the control group, but not significantly so. This may be due to the procedure itself. A biopsy is a longer procedure that involves removing more tissue, whereas a bone marrow aspiration is a briefer procedure that involves the removal of very little tissue. As a result, the sensory pain associated with biopsies is more prolonged, whereas the pain associate with bone marrow aspirations is briefer. Snow and colleagues suggested that as a result, there

was little pain reduction that could occur for patients undergoing biopsy. The reported levels of anxiety, however were significantly lower for the hypnosis group for both procedures.

Carmody et al. (2008) compared nicotine replacement therapy with hypnosis (NRT+H) to nicotine replacement therapy with behavioral intervention (NRT+BI). 287 current smokers who reported smoking at least 10 cigarettes per day and were interested in quitting smoking took part in the study. Participants in the NRT+H group participated in two 60-minute face-to-face hypnosis sessions, and were given an audiotape of the session to practice with at home. Participants in the NRT+BI group attended two 60-minute face-to-face sessions where the dangers of smoking and the benefits of quitting were reviewed. Participants in the NRT+BI group also learned self-management techniques to counter relapse, and potential barriers to quitting were discussed. Participants in both groups were given a two-month supply of nicotine patches.

Carmody et al. (2008) defined quitting smoking as not smoking a single cigarette in the previous seven days. Telephone follow-ups were used to determine quit rates, and saliva samples were obtained and tested for cotinine levels for participants who reported that they quit smoking to validate their report. Among participants without a history of depression, those receiving NRT+H demonstrated quit rates of 21.1% and 16.1% at six and 12-month follow-ups respectively, compared to those receiving NRT+BI who showed 22.5% ND 13.9% respectively. These rates appear very similar. However, among participants with a history of depression, those receiving NRT+H demonstrated quit rates of 35.6% and 27.3% at six and 12-month follow-ups, compared to those receiving NRT+BI who showed 12.2% and 16.3% respectively. This suggests that NRT+H is probably as effective as NRT+BI for most people; however, NRT+H is a much more effective intervention for people with a history of depression. In a replication study

(discussed below), the authors did not find different outcomes for those with a history of depression.

Carmody et al. (2017) compared hypnosis to behavioral counseling to help former smokers to remain abstinent. Participants were 78 former smokers who took part in a previous smoking cessation intervention and were able to quit smoking for at least three days (Carmody et al., 2017). They were randomized into either the hypnosis or behavioral counseling group for a smoking relapse prevention study (Carmody et al., 2017). Both relapse prevention groups took part in two 60-minute face-to-face sessions and four 20-minute follow-up phone calls (Carmody et al., 2017).

Participants in the behavioral group learned self-management techniques to cope with relapse triggers (Carmody et al., 2017). The behavioral group also received a compact disk of relaxation exercises to practice at home (Carmody et al., 2017). Participants in the hypnosis group took part in hypnotic inductions (Carmody et al., 2017). While in a hypnotic state, participants were presented with suggestions for relaxation, commitment to quitting smoking, mood management, development of a healthy lifestyle, and self-imagery as a non-smoker (Carmody et al., 2017). The participants in the hypnosis group also received an audio recording of the two face-to-face sessions and were encouraged to listen to them at home (Carmody et al., 2017). At 26 weeks follow-up, 35% of the hypnosis group and 42% of the behavioral group were still abstinent, based on biochemical confirmation or report of a family member (Carmody et al., 2017). At 52-weeks follow-up, 29% of the hypnosis group and 28% of the behavioral group remained abstinent based on biochemical confirmation or report of a family member (Carmody et al., 2017). This suggests that hypnosis and behavioral counseling are equally effective in preventing smoking relapse (Carmody et al., 2017).

In a study of participants with a fear of flying, 52% of the participants reported that their fear was either diminished or completely mastered after a single 45 minute-session of hypnotherapy (Spiegel et al., 2014). In this study administered by Spiegel et al., participants were taught self-hypnosis and were instructed during the hypnosis session to feel themselves floating with the plane instead of trying to avoid, struggle with, or ignore their fear. 27% of participants reported that they had "complete mastery" over their fear of flying upon follow-up. Follow-ups were obtained between six-months and ten-and-a-half years following treatment. One limitation of this study was that the follow-ups were conducted as self-reports and did not include questions about how much participants believed the self-hypnosis training decreased their fear of flying. This study also did not consider whether participants received other fear reduction interventions following the self-hypnosis training.

These were just a handful of studies demonstrating the effectiveness of hypnosis in some particular areas of therapy. Empirical research has shown hypnosis to be an effective treatment for phobias, anxiety, and trauma (Duparc-Alegria et al., 2018; Iglesias & Iglesias, 2006; Shirley, 2012). Additionally, some studies involved presenting participants with an audio recording of hypnosis scripts as part of their procedures (Bryant et al., 2005; Carmody et al., 2008). Studies have also demonstrated that hypnosis can be an effective adjunctive treatment with CBT in reducing patients' anxiety (Schoenberger, 2000).

Test Anxiety

Research suggests that 25% to 40% of students experience test anxiety (Salend, 2011). One study found that 38.5% of current college students suffered from test anxiety at some point during their collegiate career (Gerwing et al., 2015). Additionally, females demonstrate a higher level of test anxiety, but there is no agreement on what causes this gender difference (Cassady &

Johnson, 2002; Chapell et al., 2005; Gerwing et al., 2015). The number of articles about test anxiety published in scholarly journal articles grew from 1980-1984, but interest in this area has declined since (Putwain, 2008). In recent years, however, the number of journal articles about test anxiety has grown due to new educational policies in North America. In 2010, approximately 28 U.S. states required students to reach a specific level of performance on a standardized test in order to be promoted to the next grade or to graduate (von der Embse & Witmer, 2014). These policies include No Child Left Behind and Common Core, and implementation of these policies has required more standardized tests must be administered to students (Wood et al., 2016).

New policies have placed greater importance on high-stakes standardized tests, and this most likely has resulted in the increased study of test anxiety since its decline in the late 1980s (Wood et al., 2016). Standardized tests now are being administered in more schools than ever before, and to younger students (Wood et al., 2016). Some of the goals of these policies were to improve students' achievement scores while at the same time creating clear standards for school curriculums. An unintended consequence of these policies appears to be an increase in students' test anxiety (von der Embse & Witmer, 2014). Studies have shown that students demonstrate greater anxiety when administered standardized tests compared to when they are administered typical classroom tests (Segool et al., 2013). One study found that students in grades three through five scored significantly higher on two tests of anxiety (the Children's Test Anxiety Scale and the Test Anxiety subscale of the Behavior Assessment System for Children – Second Edition) following two weeks of No Child Left Behind standardized testing than they did following two weeks of typical classroom tests (Segool et al., 2013). This suggests that students perceive high-stakes standardized tests as more stressful than typical classroom tests. One possible reason for this may be that students demonstrate greater fear of academic failure on

standardized tests because a singular standardized test often has a greater effect on students' academic future than a singular typical classroom test (von der Embse & Witmer, 2014).

Putwain (2008) defined test anxiety as anxiety that occurs in evaluative situations and worry over performance. Studies have shown that individuals with higher levels of test anxiety perform relatively lower on various ability tests (Ainsworth et al., 2010). Specifically, previous research suggests that test anxiety scores are negatively correlated with results of achievement measures (Sapp, 2004; von der Embse & Witmer, 2014). This means that students with high test anxiety may obtain lower scores regardless of their knowledge or skill. Thus, these standardized tests may not accurately assess abilities in some students.

Test anxiety is different from anxiety in general in that there is a specific stimulus that causes the anxiety symptoms (Putwain, 2008). Sapp (2004) explained this specific stimulus that causes test anxiety as a fear of academic failure. Cassady and Johnson (2002) found that test anxiety is comprised of two core components: emotionality and worry. Emotionality is described as heightened physiological responses such as increased heartrate or dizziness (Cassady & Johnson, 2002). Worry is described as an individual's cognitive reactions prior to, during, or after an evaluative situation (Cassady & Johnson, 2002). Examples of this worry component include low levels of confidence and negatively comparing one's own performance to that of peers (Cassady & Johnson, 2002). It may be that this increase in emotionality and worry is due to fear of academic failure.

Anxiety about academic performance is normal (Putwain, 2008; Stanton, 1993). In fact, some anxiety helps students focus and earn higher academic scores (Putwain, 2008; Stanton, 1993). However, when the level of anxiety becomes overwhelming, students' academic performances decrease (Stanton, 1993). One study demonstrated that children who presented

with high anxiety scored significantly lower than their low anxiety counterparts on a timed mathematics test. When timed, high anxiety students gave fewer correct answers when compared to low anxiety students. When the time limit was removed, the two groups performed equally well (Hill & Wigfield, 1984). This suggests that students with higher levels of anxiety earn lower scores than children with lower levels of anxiety, and this difference in scores may be the direct result of test anxiety.

Early research on test anxiety in the 1960s and 1970s understood it as a combination of two factors; the first was "heightened physiological activity" (emotionality) and the second was "self-depreciating rumination" (worry) (Cassady & Johnson, 2002). Some researchers suggest that test anxiety may be more complex, and include cognitive, emotional, behavioral, and physiological components (Cassady & Johnson, 2002; Putwain, 2008). This would suggest that because test anxiety causes symptoms in each of these areas, an assessment of test anxiety must include assessment in each of these areas. There is still no consensus as to whether test anxiety is best understood as a simple two dimensional construct or as a construct comprised of four or more factors (Cassady & Johnson, 2002).

Summary

Test anxiety is defined as anxiety that occurs in evaluative situations as the individual worries about their performance (Putwain, 2008). Some anxiety towards academic tests is normal, but too much anxiety can lead to decreased academic performance (Hill & Wigfield, 1984; Stanton, 1993). Test anxiety was heavily studied in the early 1980s, but interest declined soon after (Putwain, 2008). However, new education policies such as No Child Left Behind and Common Core, have resulted in increased use of standardized tests (Wood et al., 2016). A

negative consequence of these policies has been increased test anxiety for students (von der Embse & Witmer, 2014).

Hypnosis for Test Anxiety

For some people, test anxiety can become so severe that they cannot reduce it by simple preparation and studying. Hypnosis may be an effective tool for reducing test anxiety, as one review concluded that hypnotherapy is an effective treatment for test anxiety (Ainsworth et al., 2010).

Participants in one study took part in two 50 minute hypnotherapy sessions to reduce test anxiety (Stanton, 1993). Participants had previously failed their fellowship examinations, and most had failed more than once. The first session was broken down into a five step procedure. Step one was physical relaxation by deep breathing. Step two involved mental calmness through imagery. Step three had the participants imagine sending mental obstacles (such as anxieties, fears, and worries) down a chute to a place from which nothing can return. Step four had participants imagine removing any barriers, such as destructive thoughts that are preventing the students from confronting their examination with confidence. Step five invited the participants to imagine themselves in a place where they feel happy, content, and tranquil. In the second session, a clenched fist technique was used to associate participants' positive experiences with the action of clenching the fist of their dominant hand. Participants were asked to imagine that unpleasant experiences were moving down their non-dominant arm and being released through their non-dominant hand. Test anxiety was measured using the Examination Anxiety Thermometer, a self-report. Stanton (1993, p. 199) deemed the use of a self-report measure appropriate for this study stating, "If people say they are anxious about taking examinations, they are likely to behave in a manner reflecting that anxiety."

10 of the 11 participants were able to reach their goal of passing the exam following the sessions (Stanton, 1993). Nine of the 11 felt less anxious about their impending exam following the two hypnotic sessions, whereas the other two participants reported no change in their level of anxiety. While these results are positive, the study had no control group. The author did not use a measure of hypnotizability or depth of hypnosis because the author believed the success of hypnosis to be unrelated to the results of such measures.

Stanton (1994) replicated this study with the addition of a control group. This study also involved two 50 minute sessions that were approximately one week apart. Participants were 40 high school students between the ages of 12 and 15 years old. Participants were paired based on sex and on their scores on the Test Anxiety Scale for Children (TASC), and then randomly assigned to either the experimental or the control groups. The control group met with the experimenter to discuss ways of reducing their test anxiety, while the experimental group was taught two self-hypnosis techniques. The first technique was the same five step procedure used in the previous study. The second technique involved deep breathing and counting from five down to one to facilitate a hypnotic trance, then imagining themselves succeeding on the test that they were anxious about and finding it to be an easy test. The participants were taught to re-alert themselves by counting from one up to five.

Stanton (1994) described the technique taught to the experimental group as self-hypnosis. All hypnosis can be considered self-hypnosis in the sense that it is a technique taught to patients with the intent that they will learn how to facilitate hypnosis on their own. Some patients request audio recordings of their therapist facilitating hypnosis that they can use by themselves. Listening to a hypnosis recording would be considered self-hypnosis because the patients are alone at the time of facilitating hypnosis.

The TASC was administered after the intervention as well as again six months later (Stanton, 1994). Stanton found that participants in the hypnosis group demonstrated significantly decreased test anxiety scores at posttreatment compared to their pretreatment scores, which was maintained at the six-month follow-up. The TASC scores of the control group did not significantly decrease from pretreatment to posttreatment. Differences in test anxiety scores between the two groups were significant at posttreatment and at the six-month follow-up.

The TASC is commonly used in studies of test anxiety. There is some criticism that the TASC may be more a measure of one's ability to effectively self-evaluate rather than test anxiety (Nicholls, 1976). Nicholls found that the TASC may be more of a measure of self-concept of attainment, or how children attribute their academic successes and failures, than simply test anxiety. Thus, Stanton's results must be confirmed with future research.

A third study measuring the effects of hypnotherapy for test anxiety used a no-treatment control group (Dundas et al., 2013). Dundas et al. compared a CBT, CBT+H, and no-treatment control group. Participants were 73 students between the ages 18 and 46 years old. The Revised Test Anxiety Scale was administered pretreatment and three days prior to their first scheduled examination following the intervention. The CBT and CBT+H participants both began with a three hour CBT group session. In this session, the group focused on positive self-statements such as "I am calm and have access to my knowledge," and an exercise where they imagined themselves successfully completing their examination. Participants were randomly assigned to either the CBT or CBT+H group. The CBT group took part in two additional sessions similar to the prior one, while the CBT+H group took part in two additional sessions in which they learned self-hypnosis to relax and increase their susceptibility to the positive self-statements used in the

first session. The no-treatment control group was made up of non-help-seeking psychology and engineering students.

The CBT+H group did not show a significant decrease in their test anxiety scores at posttreatment compared to pretreatment (Dundas et al., 2013). However, the CBT group demonstrated a significant reduction in test anxiety at posttreatment compared to pretreatment. The CBT group also demonstrated a significant reduction in trait anxiety and an increase in self-esteem. The CBT+H group did not demonstrate significant change in either trait anxiety or self-esteem. CBT+H was, however, able to demonstrate a significant increase in participants' academic self-esteem whereas the CBT group did not. The authors suggest that self-hypnosis may be better suited as a standalone treatment for individuals who do not respond to a cognitive behavioral intervention. Since the no-treatment control group was made up of non-help-seeking students, their test anxiety scores were more than a standard deviation less than the two treatment group at pretreatment. Since the control group demonstrated significantly lower test anxiety scores at pretreatment, it would be difficult to compare this group with the two treatment groups.

Sapp (1991) compared hypnosis to a no treatment control group in reducing test anxiety. The participants were 94 college students who suffered from test anxiety based on four questions. Participants in the hypnosis group took part in four CBT+H sessions over a four week period. The hypnotic scripts incorporated ego-strengthening and emphasized that participants would be well-prepared for their exams. One of the four sessions also focused on desensitization of aversive items on a test anxiety hierarchy. Participants in the control group monitored their study behavior over the four week that the hypnosis group received treatment.

Sapp (1991) assessed test anxiety by administering the Test Anxiety Inventory pre and posttreatment. Academic performance was assessed by comparing participants' midterm grades

in an introductory psychology course to their final course grades. The results showed that the participants who underwent CBT+H demonstrated a significant decrease in test anxiety, which was sustained after a six-week follow-up.

Boutin and Tosi (1983) conducted a study using 60 female nursing students who ranged in age from 16 to 21 years. Participants were assigned to one of four experimental groups: Relational Stage Directed Hypnotherapy (RSDH), hypnosis-only, placebo, or waitlist control. They described RSDH as a CBT+H therapy that included four components: facilitation of a hypnotic trance; the identification, imagination, and experience of self-defeating and self-enhancing self-talk, emotional feelings, autonomic physiological reactions, and behaviors; identifying and disputing irrational beliefs; and guiding these procedures through six stages of progress. Participants in the RSDH group were directed to identify irrational thoughts and then to challenge these irrational beliefs and change them to more realistic thoughts. Participants then underwent a hypnotic trance and imagined the test-taking situation as well as its associated anxiety. Participants were then instructed to visualize the same test-taking situation while also imagining more positive feelings and more rational thoughts.

Boutin and Tosi (1983) had participants in the hypnosis-only group undergo a hypnotic induction. It was suggested to the participants that the induction would be effective and sufficient to help them manage their test anxiety. The hypnosis-only group was hypnotized and told hypnosis would help them relax and that this would reduce their test anxiety. In effect, this group functioned as a control group, allowing the researchers to observe the general effects of hypnosis. The participants in the placebo group were not given any specific guidance to reduce their test anxiety. Instead, they received general suggestions to help them relax, and were told that relaxation and talking about anxiety both would help them manage the physiological

experience of anxiety. Participants in the no-treatment control group did not receive any intervention, but completed the same pre and posttreatment assessments as the other groups. Participants in the RSDH, hypnosis-only, and placebo groups met with the therapist for one hour sessions weekly over a six week period. Participants completed measures one week before the first treatment session (Pre), one week after treatment was terminated (Post I), and eight weeks later (Post II), The Test Anxiety Scale was administered to assess test anxiety.

Boutin and Tosi (1983) assessed participants' hypnotic susceptibility and found it was not associated with participants' results. Overall, the RSDH group demonstrated the greatest reduction on the Test Anxiety Scale at Post I compared to Pre, and maintained these gains at Post II. The hypnosis-only group also demonstrated a significant reduction in test anxiety, but reductions were smaller than those in the RSDH group. The placebo and control groups did not demonstrate significant reductions test anxiety. These results suggests that hypnotic induction alone can reduce test anxiety, as the hypnosis-only group did show significant reductions in test anxiety. However, reductions may be even greater when cognitive and behavioral suggestions are combined with hypnotic imagery and suggestions Boutin and Tosi also assessed the effect of their interventions on participants' grade point averages (GPAs), comparing GPA from the semester before the study the GPA at end of the semester in which the study was conducted. While they do not report mean GPA's for the groups, they report that RSDH and hypnosis-only groups showed statistically significant improvements in GPA when compared to the placebo and control groups; however, as before, results for those in the RSDH groups were significantly better.

Summary

Hypnosis has been shown through empirical research to be significantly effective in reducing test anxiety when compared to no-treatment control groups (Ainsworth et al., 2010; Boutin & Tosi, 1983; Sapp, 1991; Stanton, 1993, 1994). Hypnosis can be an effective treatment option for people who suffer from test anxiety.

Hypnosis Delivered with Mobile Apps

There are many smartphone and tablet applications ("apps") to assist in assessing symptomology, providing mental health education and resources, and analyzing the effectiveness of interventions (Luxton et al., 2011). Prentice & Dobson (2014) reported that there were 7,000 apps related to mental health. Sucala et al. (2013) reported that 870 mental health apps are advertised as including some kind of hypnosis. It is expected that the number has grown since the publication of these articles.

Sucala et al. (2013) reviewed 407 of these apps and found that 83% of them included hypnotic induction using an audio track, and an additional 4% used both an audio track and a visual format. The most common goals of the available hypnosis apps were weight loss, increased self-esteem/confidence, and relaxation and stress reduction. However, none of the descriptions of these apps indicated that they had been tested for efficacy, and less than 14% of the app descriptions reported disclaimers. Since hypnosis is already being presented in an audio-only format on apps, the effectiveness of this mode of hypnosis should be studied.

Offering hypnotherapy via an app could be beneficial because of the accessibility of smart phones and these apps. In 2014, it was estimated that 168 million people in the United States owned smartphones (Lee, 2015). As noted above, there are many apps available, and they can be downloaded and installed in minutes. Further, most are available for less than five dollars

(Sucala et al., 2013). However, attending hypnosis treatment offered by a certified hypnotherapist requires finding a referral, contacting the provider, scheduling an appointment according to the provider's availability, and then waiting until the day of the appointment. Further, treatment can cost between $75 and $200 per session (Stoller-Lindsey, 2017).

Challenges of Hypnotherapy via App

However, there are also several concerns regarding hypnotherapy delivered via an app. First, information about them may not include the training of the hypnotherapist who recorded the audio, making it difficult for consumers to make an informed choice before using the app. Sucala and colleagues (2013) found that only 7% of the descriptions of hypnosis apps stated that the hypnotist was a "doctor," and most did not include the doctor's field or area of expertise. They also found that only 35% of the descriptions stated that the hypnotist was trained and/or certified in hypnosis (Sucala et al., 2013). As a result, for 65% of these apps, the organization and delivery of the intervention may be poorly designed and organized to support effective change (Sucala et al., 2013).

A second challenge is the reading level of these apps. Smith and colleagues (2015) recommend that apps used for therapy purposes be written at or below a sixth grade reading level to ensure that the majority of users will be able to understand the information in the app. However, they reviewed 38 apps and found seven fell at or above twelfth grade level, 13 fell between ninth and twelfth grade level, 16 fell between six and ninth grade level, and only two apps fell at or below a sixth grade level. This is concerning, as it may indicate that the reading level of the hypnosis scripts used in these apps may not be understandable to many app users.

A third challenge of using apps for hypnotherapy is that users do not always know what they need. Most people who seek therapy can identify their problems, though they may not know

how to solve them. In these cases, a therapist helps determine the right mode of treatment for them, and can refer them for more intensive treatment if this is needed. An individual who downloads a hypnosis app may not know what kind of suggestions would work best for their problem. For example, if a man wanted to use a self-help app offering hypnotherapy to reduce his angry outbursts, he may not know which apps would be most effective for him. A trained hypnotherapist would be able to help him determine which hypnosis techniques, and based on this the specific apps, would likely be most effective for him. If the man needed more intensive treatment, an app would not be able to determine this and make referrals. However, a trained hypnotherapist could.

A final key challenge to using apps in place of therapy is that apps are often updated and some may be discontinued as other more effective apps become available (Smith et al., 2015). Of note, Sucala et al. (2013) in their study compiled a list of 870 unique hypnosis apps from the iTunes store for review; 97 of these apps (11%) were removed from the iTunes store during the first months of their review process. This means that users of one of these kinds of apps may be required to update to a new version of the app to continue their self-help efforts, or may have to switch to a different app to continue their self-help efforts, which may cause at least some confusion for the user.

Summary

There are many apps available that use hypnosis to intervene in a range of problems (Sucala et al., 2013). These apps have many benefits, such as low cost and ease-of-use. They also have several challenges. For example, they may not include warnings about their effectiveness, and the language used may not be easily understood by most app users. Further, they may not be

designed or approved by a credentialed hypnotherapist, may not be supported by efficacy research, and cannot advise the user to seek a more effective mode of intervention if needed.

Hypnosis via an Audio Recording in Louisiana

Hypnosis via an app may be especially helpful in Louisiana. In the United States, there are approximately 34 licensed psychologists per 100,000 people (American Psychological Association, 2014). However, there are less than 25 licensed psychologists per 100,000 people in Louisiana (American Psychological Association, 2014). This is well below the national average, and means that it will be more difficult for people to receive help from a licensed psychologist in Louisiana.

This difficulty extends to receiving help from accredited hypnotherapists. In Florida, there are 76 ASCH members, meaning there is one ASCH member to potentially provide services for every 366,727 people. In Illinois this ratio is one ASCH member for every 169,210 people, and in Hawaii it is one ASCH member for every 110,123 people. However, in Louisiana there are only 16 ASCH members, or one ASCH member for every 291,920 people (American Society of Clinical Hypnosis, 2015; List of States by Population, 2015). Of note, there may be additional practitioners in each of these states who use hypnotherapy; however, they would not be certified nor members of ASCH.

These numbers indicate that there are fewer trained clinical hypnotists in Louisiana than in other states. One way to address this shortage would be to provide audio recordings of hypnosis sessions to clients; these are often called “scripts” because they use prepared language and instructions that do not vary. Currently, there is little research comparing the effectiveness of live versus recorded hypnotherapy for any problems. If recorded sessions were effective in the treatment of test anxiety, for example, students in Louisiana with test anxiety would have greater

access to effective treatment. Further, were a study to demonstrate that audio recordings of hypnosis were successful in treating test anxiety, these results would support exploring the efficacy of audio recordings of hypnosis in the treatment of other concerns.

Summary

In Louisiana, there appears to be a shortage of trained clinical hypnotists. There is little research comparing the effectiveness of live versus recorded hypnotherapy. However, if recorded sessions were shown to be effective as live hypnotherapy in, for example, the treatment of test anxiety, then one way to address this shortage would be to provide audio recordings of hypnosis sessions to clients.

Appendix B: Informed Consent

Informed Consent

Investigators: Joshua Lieberman, M.A.
Chemwapuwa Blackman, M.A.
Richard Niolon, Ph.D.

Study Title: Hypnosis for Test Anxiety via an Audio Recording

I am a student at The Chicago School of Professional Psychology. This study is being conducted as a part of my dissertation requirement for Psy.D. in Clinical Psychology.

We are asking you to participate in a research study about hypnosis for test anxiety. You will be asked to complete a questionnaire and take part in two hypnosis sessions. This will take 55 minutes in person. Total time commitment will be 5 hours and 5 minutes. This may cause some negative emotions and there is a risk of breach of confidentiality. Although you may not benefit, it will help to understand the effectiveness of hypnosis for test anxiety.

Please take your time to read the information below and feel free to ask any questions before signing this document.

Purpose: The purpose of this study is to assess the effectiveness of hypnosis for test anxiety.

Procedures: You will be administered a demographics questionnaire. This questionnaire will ask you for your age, ethnicity, gender, year in college, and primary language. This questionnaire should take less than 10 minutes to answer. After that, we will meet for the hypnosis intervention. This should take about 20 minutes. One to two weeks later we will meet again for hypnosis for about 20 minutes. These hypnosis sessions will take place at Xavier University of Louisiana's library. The hypnosis is only supposed to relax you. During the hypnosis sessions, you will listen to a hypnosis script that focuses on relieving test anxiety. One of us, the primary investigator or graduate research assistant, will be present in the room for all hypnosis sessions. We will then send you a recording of the script used in the second hypnosis session via email for you to listen to three times per week for the next four weeks. One month later, I will email you a questionnaire about test anxiety. This should take about 10 minutes to complete. The in person time commitment to participate is 55 minutes. Your total time commitment to participate should be 5 hours and 5 minutes.

Compensation: You will be paid $5 at the end of the first and second hypnosis intervention. You will be paid $5 after completing the questionnaire about test anxiety online. The final $5 will be sent via email as a visa gift card. This will total $15 for participating in this study.

Risks to Participation: Hypnosis can bring up some negative emotions such as anxiety and sadness. We will provide you a list of local therapists in case you decide you need to talk to someone about these feelings. We, the primary researcher and graduate research assistant, received at least intermediate training in hypnosis from the American Society of Clinical Hypnosis. This training will make it less likely that the hypnosis will bring up negative emotions. These trainings taught us how to safely facilitate clinical hypnosis inductions and realerts. The hypnosis scripts used were also kept as general as possible in its description to avoid bringing up any triggering words. Additionally, a psychologist who is certified in clinical hypnosis from the American Society of Clinical Hypnosis reviewed the scripts.

Another potential risk is a breach of confidentiality. You will be assigned a distinct code that will be written on the demographics questionnaire and test anxiety measure. This will minimize the risk of breach of confidentiality. All data will be saved to a password protected computer to minimize this risk.

Benefits to Participants: You will not directly benefit from this study. However, I hope the study may reduce your test anxiety. This study will help to understand the effectives of hypnosis for test anxiety. A potential benefit to the field of psychology is to observe the effectiveness of recorded hypnosis compared to live hypnosis for test anxiety. If this study demonstrates that recorded hypnosis is as effective as live hypnosis in reducing test anxiety, then future studies can compare recorded and live hypnosis to other difficulties. The results of this study could increase the accessibility of hypnosis for individuals.

Alternatives to Participation: Participation in this study is voluntary. You may withdraw from study participation at any time without any penalty. You may contact a local therapist to determine other ways to reduce test anxiety. Participating in the study will not affect your status as a student at the university.

Confidentiality: During this study, I will collect some personal information about you. This includes your name and email address. You will be assigned a distinct code that will be written on the demographics questionnaire and test anxiety measure. This will minimize breach of confidentiality. All study materials will be scanned and uploaded to a password protected computer. Once all the study materials are uploaded, the hard copies will be shredded. The original hard copies of the consent forms will not be destroyed. They will continue to be stored in the locked accordion folder.

Hypnosis sessions will also be audio recorded using one of two password protected cell phones. The intent of the audio recordings is to record investigators' voices. Your voices will be recorded. These recordings will be uploaded from the password protected

phones to a password protected laptop. Once the recordings are transferred from the cell phone to the laptop, they will be deleted off of the phone. Per American Psychological Association guidelines, data will be kept for a minimum of five years. If the data is destroyed after five years, all files will be deleted from the password protected computer and paper documents will be shredded.

It is possible that your data may be used for future research or distributed to another researcher without your consent. However, information that could identify you will be removed.

Your research records may be reviewed by federal agencies whose responsibility is to protect human subjects participating in research, including the Office of Human Research Protections (OHRP) and by representatives from The Chicago School of Professional Psychology Institutional Review Board and Xavier University of Louisiana Institutional Review Board, two committees that oversee research.

Questions/Concerns: If you have questions related to the procedures described in this document please contact Joshua Lieberman, M.A. at jml2264@ego.thechicagoschool.edu or Richard Niolon, Ph.D. at rniolon@thechicagoschool.edu. Dr. Niolon is Mr. Lieberman's dissertation chair.

If you have questions concerning your rights in this research study you may contact the Institutional Review Board (IRB), which is concerned with the protection of subjects in research project. You may reach the IRB office Monday-Friday by calling 312.467.2343 or writing: Institutional Review Board, The Chicago School of Professional Psychology, 325 N. Wells, Chicago, Illinois, 60654.

Consent to Participate in Research

Participant:

I have read the above information and have received satisfactory answers to my questions. I understand the research project and the procedures involved have been explained to me. I agree to participate in this study. My participation is voluntary and I do not have to sign this form if I do not want to be part of this research project. I will receive a copy of this consent form for my records.

_____
Name of Participant (print)

_____
Signature of Participant

Date: _____

_____
Name of the Person Obtaining Consent (print)

_____
Signature of the Person Obtaining Consent

Date: _____

Appendix C: Westside Test Anxiety Scale

Westside Test Anxiety Scale

Rate how true each of the following is of you, from extremely or always true, to not at all or never true.
Use the following 5 point scale. Circle your answers:

5	4	3	2	1
extremely or always true	highly or usually true	moderately or sometimes true	slightly or seldom true	not at all or never true

__ 1) The closer I am to a major exam, the harder it is for me to concentrate on the material.
5 4 3 2 1

__ 2) When I study for my exams, I worry that I will not remember the material on the exam.
5 4 3 2 1

__ 3) During important exams, I think that I am doing awful or that I may fail.
5 4 3 2 1

__ 4) I lose focus on important exams, and I cannot remember material that I knew before the exam.
5 4 3 2 1

__ 5) I finally remember the answer to exam questions after the exam is already over.
5 4 3 2 1

__ 6) I worry so much before a major exam that I am too worn out to do my best on the exam.
5 4 3 2 1

__ 7) I feel out of sorts or not really myself when I take important exams.
5 4 3 2 1

__ 8) I find that my mind sometimes wanders when I am taking important exams.
5 4 3 2 1

__ 9) After an exam, I worry about whether I did well enough.
5 4 3 2 1

__ 10) I struggle with written assignments, or avoid doing them, because I feel that whatever I do will not be good enough. I want it to be perfect.

5 4 3 2 1

Appendix D: Study Flyer

The Chicago School of Professional Psychology at
Xavier University of Louisiana

PARTICIPANTS NEEDED FOR
RESEARCH IN HYPNOSIS FOR TEST ANXIETY

We are looking for volunteers to take part in a study of Hypnosis
You must be at least 18 years old and currently taking college courses.
You must also speak English as your primary language and experience test anxiety.
The purpose of this study is to assess the effectiveness of hypnosis for test anxiety.

As a participant in this study, you will be asked to take part in two hypnosis sessions for test anxiety (each will last 20 minutes) and complete two surveys (each should take 10 minutes). Participants will be audio recorded during the hypnosis sessions. The two hypnosis sessions will be in person and will take place at Xavier University of Louisiana's library. The first completion of the survey will take place at the first in person meeting and include a demographic questionnaire. The second administration of the survey will be administered online. Informed consent will also take place at the first meeting and will take at most 5 minutes. Participants will also be asked to listen to a recording of a hypnosis session three times per week for a month. The in person time commitment for this study is 55 minutes.
The overall time commitment for this study is 5 hours and 5 minutes.

In appreciation for your time, you will receive
$5 after attending each in person hypnosis session and after completing a second online survey.
$15 if the entire study is completed.
For more information or to volunteer for this study,
please contact:
Joshua Lieberman, M.A.
at
Phone number: (504) 722-7827
Email: jml2264@ego.thechicagoschool.edu

The study has been reviewed and approved by the
Institutional Review Board of The Chicago School of Professional Psychology

Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**	**Hypnosis for Test Anxiety (504) 722-7827 Jml2264@ego.thechicagoschool.edu**

Appendix E: SONA Website Post

Study Name: Hypnosis for Test Anxiety

Brief Abstract: My name is Joshua Lieberman, M.A. and I am completing this study for my dissertation. We are looking for volunteers to take part in a study of hypnosis. You must be at least 18 years old and currently taking college courses. You must also speak English as your primary language and experience test anxiety. You will be asked to complete a test anxiety measure and demographics questionnaire. You must score a 2.0 or higher to participate in the study. You will be asked to take part in two hypnosis sessions for test anxiety (each will last 20 minutes) and to complete two surveys (each should take 10 minutes). Participants will be audio recorded during the hypnosis sessions. After the second hypnosis session, you will receive via email an audio recording of a hypnosis session. You will be asked to listen to this recording three times per week for the next four weeks.

The first survey will be administered before the first hypnosis session. The second survey will be administered via email one month after the second hypnosis session. In appreciation for your time, you will receive $5 cash after each hypnosis session and after completing the second survey via email, or $15 if the entire study is completed. If you score below a 2.0 on the first administration of the test anxiety measure, you will be informed that you do not qualify to participate in the study and will receive only the first $5.

The in person time commitment for the study will be 55 minutes. The overall time commitment for the study will be 5 hours and 5 minutes.

For more information or to volunteer for this study, please contact me at jml2264@ego.thechicagoschool.edu or (504) 722-7827.

Appendix F: Letter to Professors

To whom it may concern,

I am a clinical psychology doctoral student at The Chicago School of Professional Psychology at Xavier University of Louisiana. I am currently conducting a study for my dissertation to assess the effects of live versus recorded hypnosis on test anxiety. I am sending this email to ask that you let your students know about my research. I am looking for college students who are at least 18 years old and speak English as a primary language to volunteer to participate in my study. Attached is a flyer that I would appreciate you forwarding to your students. Thank you for taking the time to read this email.

Sincerely,

Joshua Lieberman, M.A.

Appendix G: Demographics Questionnaire

Participant ID: _____

Year in College: Freshman, Sophomore, Junior, Senior, Graduate Student, Other _____

Age in Years: _____ Ethnicity: _____

Gender: _____ Primary Language: _____

Appendix H: Identifying Information Form

Participant ID: _____

Name: _____

Email Address: _____

HYP: _____

Voice:_____

Appendix I: Resources Form

University Counseling Centers:

Xavier University of Louisiana Counseling Center	(504) 520-7315
University of New Orleans Counseling Services	(504) 280-6683
CAPS for Counseling Services at Tulane University	(504) 314-2277
Loyola University of New Orleans Counseling Center	(504) 865-3835

Local Therapists can be found at psychologytoday.com

Local Therapists Certified in Clinical Hypnosis can be found at ASCH.net

Thank you for taking part in this study.

If you have questions please contact Joshua Lieberman, M.A. at jml2264@ego.thechicagoschool.edu or Richard Niolon, Ph.D. at rniolon@thechicagoschool.edu

Appendix J: Live Hypnosis Reliability Check

Participant ID: _____

Session A or B: _____

Voice:_____

Number of words read incorrectly:

10 or more words Five to nine words Less than five words

Time to Read Live Hypnosis Script: