THE EFFECTIVENESS OF THE STAGES OF CHANGE MODEL FOR TAILORING MENTAL HEALTH SUPPORT MESSAGES

by

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ABSTRACT

Individuals who experience mental health issues vary in their engagement in help-seeking behavior when they need it, requiring different types of supportive messages to encourage help-seeking. The Transtheoretical Model (TTM), a theory focused on processes of behavior change, acknowledges that individuals are at different stages of readiness to engage in a given behavior and will have different message needs based on their stage. This study hypothesized that individuals at different stages of change will more positively evaluate social support messages that align with their stage. Informational, emotional, instrumental, and appraisal social support messages were piloted, refined, and then evaluated by participants. Results did not indicate that participants' stage of change was related to specific types of social support messages as predicted. Post hoc analyses show how different types of social support might be helpful to individuals with anxiety. The discussion will address the lack of results related to stages of change and implications for social support messages.

Chapter 1

LITERATURE REVIEW

Developing effective messages that encourage people to engage in health seeking behaviors is difficult. Individuals are often reluctant to seek medical care due to low perceived risk, unfavorable attitudes toward medical institutions, or other barriers to medical care (Taber, Leyva & Persoskie, 2015). This is especially true in the case of mental health struggles, such as anxiety, because they are commonly compounded by avoidance and feelings of helplessness. Social support, defined as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations," has long been recognized as an important predictor of successful management for anxiety (Cobb, 1976). Despite this, much of the existing literature on social support in relation to anxiety treats those diagnosed with anxiety as a largely homogenous group. From a communication perspective, there is a need to gain a better understanding of the way in which messages influence individuals who suffer from such disorders because tailoring of supportive messages is necessary to maximize the impact of health-related support messages (Noar, Harrington & Aldrich, 2009). Theoretically-informed strategies to segment audiences so that supportive messages can be designed for their needs have a better chance of affecting positive change. Specifically, it might be helpful to

examine how the need for support and the response to support for anxiety disorders changes with an individual's current stage of readiness.

The Transtheoretical or Stages of Change (TTM) model, a popular model of behavior change that originated in psychotherapy and used regularly in public health interventions, defines readiness to change as an individual's willingness to adopt a targeted health-seeking behavior, and proposes a four-stage process for acknowledging a health problem and seeking help (Prochaska, Velicer, DiClemente, & Fava, 1988). Although the TTM has largely been used for smoking cessation and weight management (Prochaska & DiClemente, 1983; O'Connell & Velicer, 1988), recent research has shown some success in predicting help-seeking behavior, the effectiveness of treatment, and the dropout rate for treatment when examining treatment for anxiety disorders (Dozois, Westra, Collins, Fung & Garry, 2004). The TTM can be used as an audience segmentation strategy for tailoring mental health social support messages for individuals experiencing different levels of readiness.

This research aimed to test the effectiveness of using the TTM to predict responses to different types of social support messages within the context of anxiety disorders. A sample of college-aged students responded to a survey that assessed participants' current state anxiety, current readiness to change in relation to their anxiety-related behaviors, and measured how supportive and helpful participants rate different types of supportive messages identified in the TTM. This manuscript first reviews relevant literature related to mental health, social support, and the TTM.

Anxiety and Social Support

Anxiety disorders are marked by excessive fear or anxiety to the point of distress to the subject or the hindrance of daily activities (Wolman, & Stricker, 1994), and include a range of disorders such as General Anxiety Disorder, Panic Disorder, Social Anxiety Disorder, Specific Phobia, and Post-Traumatic Stress Disorder (Wolman & Stricker, 1994). They are amongst the most commonly diagnosed psychiatric disorders worldwide and are estimated to impact anywhere from 4.8-30% of the global population during their lifetime (Kessler, Angermeyer, Anthony, De Graaf, Demyttenaere, Gasquet & Kawakami, 2007). Individuals who have been diagnosed with anxiety score significantly lower on tests of emotional health and are more likely to attempt suicide when compared with a control group (Massion, Warshaw & Keller, 1993). Anxiety disorders can also have implications on the individual's quality of life beyond physical or mental health, and there are numerous social implications to anxiety disorders. Individuals with anxiety disorders report impairments in workplace and social functioning, decreased self-esteem, and lower levels of perceived social support (Blazer, Hughes, George, Swartz & Boyer, 1991; Lunney & Schnurr, 2007; Telch, Schmidt, Jaimez, Jacquin, & Harrington, 2005) . When left untreated, anxiety disorders may be associated with increased rates of depression and substance abuse, as well as decreased life satisfaction (Roohafza, Afshar, Keshteli, Mohammadi, Feizi, Taslimi & Adibi, 2014).). Finally, anxiety disorders can affect an individual's overall productivity. Those who have been diagnosed with an anxiety disorder report missing more work and require higher

levels of public assistance when compared with control groups (Stein, Roy-Byrne, Craske, Bystritsky, Sullivan, Pyne, & Sherbourne, 2005; Zatzick, Marmar, Weiss, Browner, Metzler,, Golding & Wells, 1997). Overall, anxiety can have a significant impact on a person's overall quality of life.

Although diagnosed cases of anxiety are increasing, only an estimated 20.6 to 38% of sufferers in the United States seek treatment for their anxiety disorder (Bandelow & Michaelis, 2015). This is a problem that greatly impacts college students. According to a survey conducted in 2013, anxiety was the most common concern amongst students utilizing campus counselling services in the participating schools, affecting 41.6% of the students who sought help (American Psychological Association, 2013). Although an estimated 63% of college students felt overwhelming anxiety within the past year, only 23% had a formal diagnosis of an anxiety disorder, suggesting that college students may not be seeking medical treatment for anxiety disorders (American College Health Association, 2018). Due to the increasing prevalence of anxiety disorders, and the great impact that anxiety can have on the affected individual, it is necessary to gain a better understanding of how to provide support to individuals, which can help them to manage the symptoms of such disorders. One key factor which has been associated with successful coping amongst individuals with anxiety is social support or the perception that the subject has resources available from other people in their life to assist them (Wills, 1991).

Social Support

Social support has been a rich field of inquiry in the Communication discipline. Communication research on social support has focused largely on the buffering hypothesis (Cohen & Wills, 1985), network influences (Veiel & Baumann 1992), and computer mediated contexts for provision of support (Wright, 2000). One major area of study in social support involves the mechanisms through which social support affects positive health outcomes. Early research in social support presupposed that support directly leads to positive health outcomes, but some evidence suggests that support has a positive impact by reducing the negative influence of stressors (Cohen & Wills, 1985). Some studies have found partial support for both the direct effect and buffering hypothesis, suggesting that support may act simultaneously on multiple pathways to reduce stress (Gerin, Milner, Chawla, & Pickering, 1995). Research has found that those individuals who have greater network support are more likely to seek professional help for mental distress, particularly if their social network consists of people who directly encourage help-seeking behavior, or of people who have sought professional help themselves (Vogel, Wade, Wester, Larson& Hackler, 2007). Some researchers examine social support through an examination of a person's social network as a whole. The size and variety of a person's social network can have a significant impact on their ability to cope overall (Norbeck, 1981). For example, although marital support is a great predictor for successful coping with life transitions, it was less successful at predicting coping associated with relational stress (Simons, 1993). The size of the social support network is important as well. Large social

support networks are associated with higher quality of life in adults, and even when controlling for the number of communications, those with large support networks report a higher level of received support (Chan & Lee, 2006). Although some researchers have been highly critical of the use of computer-mediated communication for reducing elements of direct interpersonal communication in support, many studies have found that online support networks confer similar benefits to face-to-face social support (Furlong, 1989; Kraut, Lundmark, Patterson, Kiesler, Mukhopadhyay & Scherlis, 1998). Other research has examined social support in terms of person-centeredness where messages are specialized to message recipients' feelings and attempt to better understand their perspective (Burleson, 1982). A meta-analysis found the use of verbal person-centered (VPC) messages was universally associated with increased perception in message quality and in experience of positive outcomes after hearing the message (High & Dillard, 2012). Overall, social support has proven to be very beneficial at promoting help-seeking behavior. The current research aims to add to the social support literature by leveraging different types of social support messages to encourage help seeking behavior.

Social support is generally organized into instrumental, informational, appraisal, and emotional types of support. Any offer of tangible resources or related services would be defined as "instrumental support" (Malecki & Demaray 2003). For example, making someone a meal or taking a person to an appointment would be considered an instrumental social support strategy. "Informational aid" refers to any information on coping mechanisms, or suggestions on possible external resources

(Malecki & Demaray 2003). For example, providing a brochure or pointing to a website that might help someone would be considered an informational social support strategy. Information that is provided to someone that can be used for self-evaluation is considered an "appraisal" strategy (Malecki & Demaray 2003). For example, providing information about a person's progress or giving them feedback about how they are doing would be considered an appraisal social support strategy. The final strategy, emotional support, refers to verbal expressions of empathy for someone, including acknowledgments of their stress, or questions regarding their wellbeing (Malecki & Demaray 2003). Telling individuals you are worried about them, giving them words of encouragement, and/or asking them how they are doing are examples of emotional support. Each type of support is unique in its content, and might be more effective for different recipients based on their needs.

Social support audience segmentation.

According to Slater (1991), audience segmentation in the health communication context consists of specializing a message to most effectively impact either an individual or a group of people so that unique characteristics of the audience are taken into account. Person-centeredness is an example of a type of audience segmentation strategy that involves tailoring at the individual level rather than a group level. While person-centeredness is good for tailoring, it may also be the case readiness to seek support also is helpful in identifying and providing specific types of support messages. Although person-centeredness has proven effective for successful support messages, the message-sender may not always have enough information to

craft highly person-centered messages. For example, one might want to provide support to another person who is uncomfortable communicating in detail about their mental health. This study strives to use the TTM as an additional approach to provide high-quality, targeted support messages in contexts in which creating person-centered messages is impossible or impractical.

Transtheoretical Model of Change

The TTM suggests that the messages that are useful to an individual who desires to change a health-related behavior are dependent on their current attitude toward the target behavior. This model has successfully been applied to the acquisition of positive behaviors, such as adopting the use of sunscreen or condoms or engaging in a regular exercise routine, as well as the cessation of negative behaviors such as drug use or a high-fat diet (Borschmann, Lines & Cottrell, 2012; Evers, Paiva, Johnson, Cummins, Prochaska, Prochaska & Gökbayrak, 2012; Greene, Redding, Prochaska, Paiva, Rossi, Velicer & Robbins, 2013; Naar-King, Wright, Parsons, Frey, Templin, & Ondersma, 2006; Prochaska & Marcus, 1994). According to TTM, there are five key stages toward adopting a new health-related behavior. Each of these stages marks a unique perspective toward the target behavior, and different processes are effective at encouraging continued progress at each of these stages.

Precontemplation

The first of these stages, precontemplation, is marked by an individual that has no intention of making a behavioral change within the next 6 months (Prochaska & DiClemente, 1983). Individuals in the precontemplation stage are not ready

to consider change, and are frequently unaware or in denial of the fact that they are engaging in unhealthy behavior. People stay in the precontemplation stage for a variety of different reasons, ranging from rationalization for their behaviors to ignorance of the risks (DiClemente, Prochaska, Fairhurst, Velicer, Velasquez & Rossi, 1991). However, that doesn't mean that people in the precontemplation stage are necessarily entirely unaware of a problem in their life surrounding their maladaptive behavior. For example, some researchers examining TTM found that individuals in the precontemplation stages for mood disorders did sometimes seek therapy (McConnaughy, DiClemente, Prochaska & Velicer, 1989). Individuals in this category frequently noticed the negative impacts associated with their disorders but misattributed the blame to the environment or others in their life (McConnaughy et al., 1989). This might explain how some remain in the precontemplation stages for anxiety treatment, despite the overwhelming physical symptoms associated with the disorder, as they attribute difficulty managing anxiety with external stressors rather than a manageable mental health condition. According to Prochaska and DiClemente, the most vital change to move past this stage into contemplation is for the individual to increase the perceived positives around making a health change (1991). In the case of anxiety, this might involve education on the impact of anxiety disorders in general, or raising awareness around the actual impact that anxiety may be having on an individual's quality of life or on the people who support them.

Contemplation

This is followed by contemplation, a stage in which the individual is considering a behavioral change within the next 6 months (Prochaska & DiClemente, 1983). Although the individual is not yet ready to make the change at the current time, they are usually open to the idea of the behavioral change. During this stage, the individuals are receptive to learning about the positive outcomes associated with change, and the negatives that may result from maintaining their current behavior. However, Prochaska found that this change in attitude did not lead directly to a change in behavior (1989). There are a number of reasons that people remain in the contemplation stage, even once they begin to see the positive elements of adapting the health-related behavior. For example, individuals commonly avoid seeking professional help due to distrust of medical providers or perceived barriers to healthcare (Byrne, 2008). In the current study, lack of help-seeking behavior is further augmented by the fact that avoidance is a common coping mechanism in anxiety disorders, making the idea of seeking treatment even more overwhelming. Interestingly, although many researchers predicted that the confidence of being able to adapt the healthy behavior would increase steadily over the stages of change, several studies show that the perceived ability to adapt the healthy behavior is lower during this stage than in precontemplation (Baumann, Gaertner, Schnuerer, Bischof, John & Freyer-Adam, 2013). This is possibly due to a heightened self-efficacy during precontemplation. For example, a smoker in denial may think that quitting would be easy, but once the individual begins to seriously consider quitting, he overestimates the difficulty. The strongest predictor for a successful progression from

the contemplation stage involves lowered perceptions of the cons associated with adopting that behavior.

Action and Maintenance

When an individual has decided definitively to adopt a behavioral change, they move on to the preparation stage, during which they are educating themselves about the specific actions needed to make the change (Prochaska & DiClemente, 1983). During this time, the individual views the pros of the change to outweigh the cons and usually plans to begin the change within a month. Once the individual begins taking steps toward a behavioral change, they are in the action stage. At this stage, educational messages are no longer the most effective form of health communication, as individuals generally have the knowledge that they need to support their change. Rather, individuals benefit from messages from those who are accepting of their new lifestyle. For example, an individual suffering from anxiety in the action may no longer benefit as greatly from further information on mindfulness techniques if they have successfully found healthy coping mechanisms for panic attacks. Rather, they may benefit more from messages showing that others in their life accept or appreciate the changes they've made in their life. Depending on the supportiveness of their former social circle to their lifestyle change, this often involves developing new social contacts.

The final stage, maintenance, occurs after 6 months of engaging in the target behavior. This process is not linear, however. People may regress from one stage to a previous one, or even relapse entirely and need to progress through all of the former

stages again in order to re-establish the desired behavior (Prochaska & DiClemente, 1982).

Processes of Change

According to the TTM, one of the benefits of understanding the stages of change involves a better understanding of the mental processes which drive a subject from one stage to another. These are known as the processes of change, and they allow health communication experts to better tailor messages to individuals at each stage and have the best chance at successfully influencing positive change. The processes of change tend to revolve around changing perceptions during the early stages of change, and on the development of new habits and patterns during the latter stages of change. For example, early processes of change include consciousness-raising, self-reevaluation and environmental reevaluation which focus on shifting the individual's perceptions on the topic of the target behavior (Prochaska & Velicer, 1996). Later processes of change include the development of supportive social networks and the implementation of substitute behaviors and rewards (Prochaska & Velicer, 1996).

Inconsistent TTM Findings

Although TTM is a widely utilized model in the field of health communications, some research has noted mixed levels of success in implementing the TTM. For example, a 2009 study found support for stage-based interventions, but criticized the overall utility of the model (Armitage, 2009), suggesting the need to reconceptualize the action and maintenance stages of change. Armitage also notes that the literature disproportionately focuses on the stages of change, with little research on

other components of the model such as the processes of change. The current study seeks to test the efficacy of matching support needs based on the processes of change at the most appropriate stage of change, potentially adding to the literature on how processes of change are aligned with TTM stages. While evidence on the efficacy of stage-based interventions are mixed (Aveyard, Massey, Parsons, Manaseki & Griffin, 2009; Bridle, Riemsma, Pattenden, Sowden, Mather, Watt & Walker, 2005; Cahill, Lancaster & Green, 2010; Horowitz, 2003; Riemsma, Pattenden, Bridle, Sowden, Mather, Watt, & Walker, 2003), other research suggests that the inconclusive findings regarding the efficacy of stage-based models may be a product of inconsistent methods of implementation in research methods, rather than a weakness of the model itself (Riemsma, Pattenden, Bridle, Sowden, Mather, Watt & Walker, 2003). Directly related to the current research are challenges related to discrete classifications for attitudinal and behavioral patterns in the TTM as a person may not be easily categorized into a single stage (Littell & Girvin, 2009). Despite these potential weaknesses in the theory, the TTM serves a functional purpose for this study by allowing researchers to segment the audience by their predominant beliefs and attitudes towards a target health behavior, and assess their needs based on this information. For example, even if a person doesn't perfectly fit into a specific stage of TTM, it still may be the case that they will respond most positively to messages tailored to the stage that most accurately reflects their current struggles.

Chapter 2

HYPOTHESES AND RESEARCH QUESTION

In the TTM, each of the stages of change is closely related to processes of change, or activities that help the individual progress their attitudes and beliefs in relation to a specific health behavior (Prochaska & DiClemente, 1983). These processes of change may help guide interventions tailored to individuals in a specific stage of change.

Early Stages and Informational Support

One of the original ten processes of change includes "consciousness-raising." This behavior involves education aimed at increasing knowledge of healthy behavior. According to the theory, this process of change is most effective when it occurs during the contemplation and preparation stages (Prochaska & Velicer, 1996). During the contemplation stage, consciousness-raising is important to weigh the pros and cons of changing and help the individual make an informed decision on why change may be desirable. During the preparation stage, consciousness-raising helps the individual better understand the specific steps necessary to make the change to a healthy behavior. Due to the importance of education during the early steps of the stages of change, informational support should be specifically helpful during the contemplation and preparation stages. For example, a college student who is experiencing anxiety and thinking about getting some additional support might be

particularly responsive to a friend who provides information about campus counseling services. However, as the individual's awareness increases over the course of the stages of change, informational support may be less effective as a source of support and have diminishing returns later in the stages of change. In fact, some research shows that too much informational support can diminish the relationship between the recipient and the supporter, potentially having an inverse relationship on the individual's perceived social support (Brock & Lawrence, 2009). For example, repeatedly providing information about counseling services and resources to someone who is experiencing anxiety might be perceived as peer pressure rather than peer social support.

H1: Informational support will be perceived to be more helpful for individuals in the contemplation and preparation stages of change when compared with individuals in the mid and late stages of change

Midstages and Appraisal Support

According to Prochaska and DiClemente, during the preparation and action stages of change, the individual must work toward developing self-efficacy, or confidence that they are able to successfully implement changes. During this period, appraisal support should be of importance because this form of support is aimed at increasing the individual's ability to evaluate themselves (Prochaska & Velicer, 1996). This form of support will empower the individual to interpret their success and better assess their progress toward their specific health goals. For example, if a friend gives her college roommate who suffers anxiety some feedback about how hard she

sees the roommate working to accomplish personal goals, this would be considered appraisal support. This form of support should be less helpful in the contemplation stage because individuals in this stage have not yet taken any specific actions toward their health goals. According to the Transtheoretical Model, most individuals should have achieved self-efficacy by the maintenance stage, potentially decreasing the efficacy of appraisal support.

H2: Appraisal support will be perceived to be more helpful for individuals in the preparation stage of change when compared with individuals in the early and late stages of change.

Late Stages and Emotional Support

Another vital process of change according to Prochaska and DiClemente involves developing helping relationships during the action and maintenance stages of change. This involves seeking people who are supportive of the individual's changed behavior. At this stage, informational support will likely be less useful to the individual as they have spent the previous stages developing the knowledge base necessary to manage their health behaviors. Similarly, appraisal will likely be less valuable to the individual at this stage due to the development of self-efficacy, or the individual's confidence that they will be able to successfully cope with risks associated with the health behavior (Prochaska & Velicer, 1996). This is not to say that informational support and appraisal will not be helpful during other stages of change, merely that they are particularly crucial during their matched stages.

H3: Emotional Support will be perceived to be more helpful for individuals in the action and maintenance stages of change when compared with individuals in the early and mid stages of change.

Instrumental Support

Despite the fact that many types of social support are closely related to processes of change, it is not the case that all support is necessarily linked associated with a specific stage of change. Unlike other forms of support, instrumental support is largely based on the individual's current tangible needs, external from their current attitudes or behaviors regarding the target health behavior. For example, if an individual is lacking a consistent means of transportation, the provision of a ride to the therapist's office might be hugely beneficial. However, if the individual has easy access to transportation, the offer would likely be less helpful, and may even be seen as condescending.

RQ: Is there a relationship between readiness to change and perceived helpfulness of instrumental support?

Chapter 3

METHODS

This study was approved by the University of Delaware Institutional Review Board. It tested hypotheses and answered a research question related to participants' readiness to change and different types of social support messages with an online survey approach. Participants (N=366) were recruited from undergraduate classes at the University of Delaware and were compensated for their time with extra credit in their courses. All participants were at least 18 years of age.

Procedures

After providing informed consent, students completed a three-part survey. The first section evaluated their current levels of state anxiety. Participants were then asked to fill out another survey to determine their willingness to change based on a validated scale adapted for seeking treatment for anxiety, and then were asked to rate a series of statements on the perceived helpfulness, supportiveness, applicability to the subject, and level of encouragement.

Individuals were compensated with extra credit in their communications classes and were provided with an alternative assignment to ensure that they did not feel undue pressure to participate in the survey. Following participation, participants were debriefed and directed towards counseling resources on campus that they may utilize if they are impacted by anxiety. This was intended to offset any

potential harm or distress that the participants may experience by taking part in the experiment.

Development of Message Stimuli

A pre-test was conducted to ensure that participants could discern different types of social support messages. Nineteen messages were operationalized from conceptual definitions of social support so that five messages represented either instrumental, informational, appraisal, or emotional support (see Table 1 for a complete list). Each support statement, written for an individual suffering from anxiety, was modeled after Heaney and Isreal's framework of support (2008) and demonstrated one type of support. Those messages intended to signify *informational support* offered the individual information or sources of information on the treatment of management of their anxiety disorder. The *appraisal* statements revolved around the individual's progress toward treating their anxiety. They gave direct feedback on the individual's improvement or provided a method for the individual to track their own progress. The *instrumental support* items involved an offer for concrete assistance to help the individual in the management of their anxiety, such as an offer for a car ride to treatment. Finally, *emotional support* statements focused on letting the individual know that they have an active social network available to help them.

Pre-test results. Pre-test participants (N=87) responded to 19 questions that asked them to indicate if the statement provided instrumental, informational, appraisal, or emotional support. Participants then evaluated how natural and how relatable the messages were by using semantic differential scales. Results indicated which

messages the majority of participants identified correctly, and which messages were most natural and relatable (see Table 1). Messages for the study were selected based primarily on the correct identification of the message type. The target for inclusion was a minimum of a 75% correct identification in the pretest. Of the selected questions, only one fell below this target. The statement "Here's a list of mindfulness exercises I found which might help you cope when having an anxiety attack" was intended as informational aid, and was correctly identified 74% of the time. As 23.4% of respondents identified the statement as instrumental aid, the question was rephrased "This website has a list of mindfulness exercises which might help you cope when having an anxiety attack," to remove language suggesting the exchange of a tangible list which might indicate instrumental aid. We also collected information on how natural the support statements sounded to the respondents. Of the questions selected, all scored above the target 4.0 score on relatability out of a 7 point scale, with the exception of one statement. Based on this feedback, the statement "Just think of all the progress you've made over the past few months!", which initially received a 3.99 rating of naturalness, was rephrased to "You've made a lot of progress over the past few months."

Measures

The survey instrument includes the STAI (Spielberger, 1983), University of Rhode Island Change Assessment (URICA) Scale (DiClemente, Schlundt & Gemmell, 2004), Likert scales to assess 12 support messages, and demographic information.

State-Trait Anxiety Inventory: One method used to measure anxiety in communications research is the STAI, a 40-question survey used to evaluate the current train anxiety and trait anxiety of an individual (Spielberger, 1983). The survey consists of a number of questions regarding current mindset and behavioral patterns associated with anxiety level. For the purposes of this study, the 20 questions pertaining to trait anxiety were used to measure the anxiety that the participants felt overall. Past studies using STAI have shown high reliability, with Chronbach's Alpha values of .86-.95 for each of the subscales (Spielberger, 1983).

URICA. One of the most commonly used methods to determine readiness to change involves the URICA Scale (DiClemente et al, 2004). This scale was developed in order to measure a subject's readiness to change and includes scoring items on both their attitudes and behaviors regarding the adoption of health-related behavior. Such scales have commonly been used to measure readiness to change in relation to drug use, weight loss, psychotherapy, and seeking help from domestic violence. The URICA scale is adapted to specific health behaviors, and many versions of the measurement tool are available on the public domain. An adaption of this scale was used to determine the participant's current readiness to change in relation to their anxiety. Past studies using URICA have shown high reliability,
with Chronbach's Alpha values of .79-.84 for each of the subscales (Carney & Kivlahan, 1995; Pantalon, Nich, Frankforter, & Carroll, 2002)

Supportiveness, Helpfulness, and Sensitivity: The 12 support statements selected during the pretest were provided and the perceived supportiveness, helpfulness, and

sensitivity of each question will be measured via self-report on a 7 point Likert scale. These qualities were based on a literature review by Goldsmith & Albrecht in which researchers attempted to expand on the concept of enacted social support (2011). They noted that many previous studies utilized unidimensional scales based on perceived supportiveness, helpfulness or sensitivity of the message and noted that considering a combination of the three qualities gave a more complete picture of the enacted supportiveness of a message.

Chapter 4

RESULTS

Data were analyzed using SPSS v26. The data set was cleaned and assessed for missing data and mean replacement was used for variables where missing data was under 5%. The study examined whether gender and COVID-19 concern should be included as covariates in analyses. When they were controlled for in analyses, there were no significant effects for those variables. Therefore, they were not included in final hypothesis testing. The STAI scale (α= .92), URICA scale (α=.80), and measures of supportiveness (α=.86) all showed high reliability.

Hypothesis One

H1 predicted that informational support would be perceived to be more helpful for individuals in the early stages of change when compared to individuals in the mid and late stages of change. A one-way ANOVA did not support a significant difference between groups regarding the perceived supportiveness of informational support [F(2, 363)= .96, P=.38]. The observed power for this analysis indicated that we were underpowered and thus unable to detect differences.

Hypotheses Two

H2 predicted that appraisal support would be perceived to be more helpful for individuals in the mid stages of change when compared to individuals in the early and late stages of change. A one-way ANOVA did not support a significant difference between groups regarding the perceived supportiveness of appraisal support

[F(2, 363)= 1.01, P=.37]. The observed power for this analysis indicated that we were underpowered and thus unable to detect differences.

Hypotheses Three

H3 predicted that emotional support would be perceived to be more helpful for individuals in the late stages of change when compared to individuals in the early and middle stages of change. A one-way ANOVA did not support a significant difference between groups regarding the perceived supportiveness of emotional support [F(2, 363)= .06, P=.94]. The observed power for this analysis indicated that we were underpowered and thus unable to detect differences.

Research Question

RQ1 questions the existence of a relationship between stages of change and perceived supportiveness of informational messages. A one-way ANOVA did not support a significant difference between groups regarding the perceived supportiveness of emotional support [F(2, 363)= 1.01, P=.37]. The observed power for this analysis indicated that we were underpowered and thus unable to detect differences.

Post Hoc Analyses

Although this goal of this study was to examine relationships between the stages of change and the perceived supportiveness of different types of social support messages, additional post hoc tests to examine other potential effects were conducted. Ultimately, the goal of TTM involves the adoption of a targeted health behavior. Given the constraints of the study, it wasn't possible to examine the direct effects of

the messages on the individual's behavior. Rather, the survey included a measure of the individual's intention to seek social support, both before and after viewing the support messages. A paired samples t-test was conducted to measure intention to seek social support both before and after viewing the messages. There was a significant difference in intention to seek support before (M=2.68, SD=1.14) and after (M=3.40, SD=1.25) viewing the social support messages; t(365)=2.18, p=.00.

A Pearson Correlation was conducted to examine the relationship between the perceived supportiveness of informational messages, appraisal messages, instrumental messages, and emotional messages, and intention to seek help after viewing the messages. There were positive correlations between the perceived supportiveness of informational messages and intention to seek social support (r=1.26, n=366, p=.016) as well as perceived supportiveness of appraisal messages and the intention to seek social support (r=1.68, n=366, p=.001). However, there was no significant correlation between the intention to seek social support and the perceived supportiveness of emotional support messages (r=.073, n=366, p=.165) or the perceived supportiveness of instrumental support messages (r=.08, n=366, p=.128).

Another post hoc test examined the relationship between anxiety level and perceived supportiveness of the messages. Because the support messages in the study were tailored specifically to anxiety, the prediction was that the high-anxiety group would perceive the messages as being more supportive across all message types. This stemmed from the belief that those with anxiety would find the messages more relatable, and therefore, more supportive. An independent sample t-test found that

there was no relationship between the perceived supportiveness of emotional support messages in high and low anxiety groups (p=.09). However, an independent sample t-test found a significant difference between the high anxiety and low anxiety conditions in instrumental (Mean Difference=.24, p=.01), informational (Mean Difference=.32, p=.01), and appraisal (Mean Difference=.27, p=.01) support messages. Counter to the predictions, the high-anxiety condition rated the messages higher in perceived support than the low-support condition.

Chapter 5

DISCUSSION

Anxiety is a growing mental health challenge across the United States, particularly among college students (Misra & McKean, 2000). Peers, family members, mental health advocates, and counselors strive to provide social support and encourage help seeking so that individuals feel supported and seek help when they need it. The provision of such support can be one of the best predictors for the adoption of help-seeking behavior, but identifying the right messages can be difficult. Understanding that individuals are at different stages of readiness to consider social support and help seeking, the TTM might be helpful in identifying the types of messages that are perceived to be the most supportive during a particular stage. Information, instrumental, appraisal, and emotional types of social support messages are part of a "toolbox" of potential messages that could be more or less helpful to individuals. This study seeks to find alternative methods of tailoring social support messages for those struggling with anxiety by using the TTM as an audience segmentation strategy for individuals.

TTM Hypotheses

This study sought to examine the effectiveness of the TTM as a basis for message design of social support messages in relation to anxiety. Participants were classified into a stage of change based on the URICA scale, and predicted to respond variably based on the processes of change that were operationalized in the format of informational, instrumental, emotional, and appraisal messages. In other

words, TTM stages were predicted to be perceived as more or less supportive based on the different types of support messages. Results, however, were unable to establish a relationship between SOC and the perceived supportiveness of support messages. One possible reason for this finding includes the uneven sample distribution regarding the stages of change. Of the 246 students in the high-anxiety condition, only 15 were classified in the early stages of precontemplation or contemplation according to their responses on the URICA measure, and another 41 participants were found to be in the preparation stage. This left 190 participants in the late stages of change, meaning that this group comprised 77.2% of the high-anxiety condition. With this demographic breakdown, the study lacked the power needed to establish a relationship between SOC and perceived supportiveness of each type of support message. It is also possible that the stages truly don't provide a useful approach, as previous research has indicated that people are difficult to classify into stages and may not clearly belong to one.

Based on this study, the lack of support for the TTM hypotheses suggests that practitioners should not use the stages of change as a basis for the creation of social support messages. However, as a descriptive tool to consider what people might need to hear to support their mental health needs, the TTM might still hold promise as there is an intuitive appeal to the model and other research has supported its utility in influencing people in different stages. For now, other approaches such as person-centered messaging might be the most useful approach. And in the absence of a complex understanding of a person's orientation towards their feelings of anxiety,

the best method to create high-quality messages might be to seek greater understanding, rather than to seek alternate methods of message targeting. From a theoretical perspective, more research is needed to determine other methods of segmentation to tailor support messages. One method would be to seek more continuous methods of segmentation, rather than the discrete categorization of the stages of change.

Post Hoc Analyses

Although the hypotheses were not supported, the post-hoc analysis suggests that exposure to high-quality social support messages, as assessed in the pilot study, is significantly correlated with increased intention to engage in help-seeking behavior. Students were significantly more likely to report that they intended to seek further social support following exposure to the messages. This effect is particularly strong when the subject perceives the messages to be high in informational or appraisal support. Although this does not speak to improved targeting, this does provide practical information for those who would like to create high-quality support messages. This suggests that health practitioners may increase the efficacy of their support messages by focusing on creating messages which provide feedback on their patient's health, or by providing information on resources for their patient's mental health.

The relationship between anxiety level and perceived supportiveness ran counter to the post hoc prediction that those with high anxiety would rate the messages higher in supportiveness due to relatability. This could be consistent with

findings that social support is a predictor for successful coping with anxiety, and that high received support is associated with successful coping. Although it is not possible to determine directionality, one possible interpretation of this finding might suggest that individuals that perceive messages to be lower in supportiveness are more likely to report feelings of anxiety. If feelings of anxiety are caused by a lack of perceived, rather than received, support, merely increasing the offered support might not be effective for lowering anxiety. A better understanding of the factors which influence the perception of support messages is necessary.

Limitations

One of the most severe limitations to this study was the uneven sample distribution regarding the stages of change. With the demographic breakdown discussed above, the study lacked the power needed to establish a relationship between SOC and perceived supportiveness of each type of support message. This breakdown may have been caused by sampling bias. The sample was drawn from undergraduate students on a university campus, which provides resources for mental health awareness and support. The comparative availability of such resources may mean that students with anxiety are more likely to engage in help-seeking behavior when compared to a broader demographic. One potential area for further research might involve conducting the experiment with a larger and more demographically varied sample to offset this effect.

Conclusion

The results of this research seems to indicate the TTM has descriptive, but not predictive utility as a strategy to target social support messages. While hypotheses for TTM were not supported, the usefulness of high quality types of social support messages is clear. Specifically, exposure to messages supported further encouraged support seeking, indicating that support messages do confer benefit. Although TTM did not appear to be an effective method for targeting messages, future research should strive to consider other ways to reach individuals effectively with social support messages.

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Appendix A

INSTRUMENTATION

STAI Trait Anxiety Survey

1. I feel pleasant.
2. I feel nervous.
3. I am satisfied with myself.
4. I wish I could be as happy as others seem to be.
5. I feel like a failure.
6. I feel restless.
7. I feel "cool, calm, and collected."
8. I feel that difficulties are piling up so much that I cannot overcome them.
9. I worry too much over something that really doesn't matter.
10. I am happy.
11. I have disturbing thoughts.
12. I lack self-confidence.
13. I feel secure.
14. I make decisions easily.
15. I feel inadequate.
16. I feel content.
17. Some unimportant thoughts run through my mind and bother me.
18. I take disappointments so seriously that I can't put them out of my mind.
19. I am a steady person.
20. I get upset as I think over my recent concerns.

(Source: Spielberger, C. D. (2010). State-Trait anxiety inventory. *The Corsini encyclopedia of psychology*, 1-1.)

URICA Questionnaire (Readiness to Change)

Rate each statement on a scale of 1-5 [1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree]

1.	As far as I'm concerned, I don't have any problems that need changing.	
2.	I think I might be ready for some self-improvement.	
3.	I am doing something about the problems that had been bothering me.	
4.	It might be worthwhile to work on my problem.	
5.	I'm not the problem one. It doesn't make much sense for me to be here.	
6.	It worries me that I might slip back on a problem I have already changed, so I am seeking help.	
7.	I am finally doing some work on my problem.	
8.	I've been thinking that I might want to change something about myself.	

9.	I have been successful in working on my problem but I'm not sure I can keep up the effort on my own.	
10.	At times my problem is difficult, but I'm working on it.	
11.	Being here is pretty much a waste of time for me because the problem doesn't have to do with me.	
12.	I'm hoping this place will help me to better understand myself.	
13.	I guess I have faults, but there's nothing that I really need to change.	
14.	I am really working hard to change.	
15.	I have a problem and I really think I should work at it.	
16.	I'm not following through with what I had already changed as well as I had hoped, and I'm here to prevent a relapse of the problem.	

17.	Even though I'm not always successful in changing, I am at least working on my problem.	
18.	I thought once I had resolved my problem I would be free of it, but sometimes I still find myself struggling with it.	
19.	I wish I had more ideas on how to solve the problem.	
20.	I have started working on my problems but I would like help.	
21.	Maybe this place will be able to help me.	
22.	I may need a boost right now to help me maintain the changes I've already made.	
23.	I may be part of the problem, but I don't really think I am.	
24.	I hope that someone here will have some good advice for me.	
25.	Anyone can talk about changing; I'm actually doing something about it.	

26.	All this talk about anxiety is boring. Why can't people just forget about their problems?	
27.	I'm here to prevent myself from having a relapse of my problem.	
28.	It is frustrating, but I feel I might be having a recurrence of a problem I thought I had resolved.	
29.	I have worries but so does the next guy. Why spend time thinking about them?	
30.	I am actively working on my problem.	
31.	I would rather cope with my faults than try to change them.	
32.	After all I had done to try to change my problem, every now and again it comes back to haunt me.	

(Source:Dozois, D. J., Westra, H. A., Collins, K. A., Fung, T. S., & Garry, J. K. (2004). Stages of change in anxiety: Psychometric properties of the University of Rhode Island Change Assessment (URICA) scale. Behaviour research and therapy, 42(6), 711-729.)

Appendix B.
IRB EXEMPTION

Institutional Review Board
210H Hullihen Hall
Newark, DE 19716
Phone: 302-831-2137
Fax: 302-831-2828

DATE:	December 2, 2019
TO:	Caroline McKenney
FROM:	University of Delaware IRB
STUDY TITLE:	[1519846-1] The Effectiveness of the Stages of Change Model for Tailoring Mental Health Social Support Messages
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
EFFECTIVE DATE:	December 2, 2019
REVIEW CATEGORY:	Exemption category # *(2)*

Thank you for your New Project submission to the University of Delaware Institutional Review Board (UD IRB). According to the pertinent regulations, the UD IRB has determined this project is EXEMPT from most federal policy requirements for the protection of human subjects. The privacy of subjects and the confidentiality of participants must be safeguarded as prescribed in the reviewed protocol form.

This exempt determination is valid for the research study as described by the documents in this submission. Proposed revisions to previously approved procedures and documents that may affect this exempt determination must be reviewed and approved by this office prior to initiation. The UD amendment form must be used to request the review of changes that may substantially change the study design or data collected.

Unanticipated problems and serious adverse events involving risk to participants must be reported to this office in a timely fashion according with the UD requirements for reportable events.

A copy of this correspondence will be kept on file by our office. If you have any questions, please contact the UD IRB Office at (302) 831-2137 or via email at hsrb-research@udel.edu. Please include the study title and reference number in all correspondence with this office.

Appendix C

TABLES

Table C.1

Pretest Results-Perceived Type of Aid of Support Messages

	Informational	Emotional	Instrumental	Appraisal
Informational				
I just read a great book about stress management that you might be interested in.	92.2	1.3	5.2	1.3
Have you considered seeing one of the counselors here on campus? Appointments are free, and they might be able to help with stress management	81.8	2.6	15.6	--
Here's a list of mindfulness exercises I found which might help you cope when you have an anxiety attack	74.0	2.6	23.4	--
This website helped me when I was trying to find the most affordable place to find my medication. I thought it might be useful for you.	69.2	3.8	24.4	2.6
My doctor's office is starting a group therapy session for students with anxiety. I brought you this brochure if you're interested.	64.9	1.3	33.8	--
Emotional				
We love you and only want the best for you.	1.3	77.9	1.3	19.5
I'm here for you if you'd ever like to talk about your anxiety	5.2	82.4	5.2	5.2
How have you been feeling lately? Are you still having	2.6	92.2	--	5.2

a hard time with your anxiety?				
I know that the past few weeks have been tough for you, but if you can get through that, you can get through anything!	5.2	51.9	--	41.9
Instrumental				
I can bring over dinner so that you don't have to worry about cooking during finals week.	1.3	10.4	87.0	1.3
Do you need a ride to your therapy appointments while your car is in the shop?	1.3	2.6	96.1	--
I can cover your shift at work this weekend if you have too much on your plate.	2.6	6.5	89.6	1.3
Can I give you any help around the house? I know it can be hard to stay on top of things when you're stressed.	1.3	19.5	77.9	1.3
If the conflict with your roommate is stressing you out, you're always welcome to crash on my couch for a night.	1.3	20.8	77.9	--
Appraisal				
You've been handling your workload really well lately.	1.3	6.5	1.3	90.9
It seems like the work you've been putting into managing your stress has been paying off				
I'm really proud of the work that you've been putting in at your therapist's office.	1.3	11.7	--	87.0

Just think about all the progress you've made in the past few months!	5.2	10.4	--	84.4
How's yoga going? It seems like you're feeling better since you started.	3.9	37.7	--	58.4
I know you're worried about this project, but you'll do great. You're detail-oriented and have all the skills you need to get an 'A.'	5.2	27.3	1.3	66.2

Table C.2

Pretest Results-Natural and Relatable

	Natural Mean (SD)	Relatable
We love you and only want the best for you.	6.05 (1.27)	5.99 (1.32)
I know you're worried about this project, but you'll do great. You're detail-oriented and have all the skills you need to get an 'A.'	5.07 (1.52)	5.27 (1.46)
I can bring over dinner so that you don't have to worry about cooking during finals week.	5.09 (1.52)	4.32 (1.85)
I just read a great book about stress management that you might be interested in.	4.80 (1.56)	4.01 (1.86)
Have you considered seeing one of the counselors here on campus? Appointments are free, and they might be able to help with stress management	5.11 (1.57)	4.58 (1.89)
This website helped me when I was trying to find the most affordable place to find my medication. I thought it might be useful for you.	4.91 (1.59)	3.97(1.80)
Do you need a ride to your therapy appointments while your car is in the shop?	5.47(1.42)	3.91 (2.03)
I'm here for you if you'd ever like to talk about your anxiety.	5.62 (1.47)	5.42 (1.62)
Here's a list of mindfulness exercises I found which might help you cope when you have an anxiety attack.	4.40 (1.67)	4.11 (1.77_
My doctor's office is starting a group therapy session for students with anxiety.	4.25(1.67)	4.39 (1.77)
I brought you this brochure if you're interested.		
I can cover your shift at work this weekend if you have too much on your plate.	5.39 (1.64)	4.77 (1.98)
If the conflict with your roommate is stressing you out, you're always welcome to crash on my couch for a night.	5.85 (1.27)	5.11 (1.81)
You've been handling your workload really well lately. It seems like the work you've been putting into managing your stress has been paying off	4.63 (1.68)	4.53 (1.66)
How's yoga going? It seems like you're feeling better since you started.	5.43 (1.57)	4.71 (1.84)
How have you been feeling lately? Are you still having a hard time with your anxiety?	4.79 (1.84)	4.62 (1.81)
I'm really proud of the work that you've been putting in at your therapist's office.	4.25 (1.68)	3.48 (1.84)

Can I give you any help around the house? I know it can be hard to stay on top of things when you're stressed.	5.01 (1.44)	4.60 (1.65)
Just think about all the progress you've made in the past few months!	3.99 (.98)	3.74 (1.05)
I know that the past few weeks have been tough for you, but if you can get through that, you can get through anything!	5.39 (1.42)	5.44 (1.26)

Table C.3
Means, SDs for Dependant Variables

	Mean	Significance
Informational Support Messages	3.83	1.02
Emotional Support Messages	3.93	1.00
Instrumental Support Messages	4.42	.86
Appraisal Support Messages	4.09	.90

Table C.4
Anxiety Level and Perceived Supportiveness

	P-Value	Low-Anxiety (Mean)	High-Anxiety (Mean)
Informational Support Messages	.01	4.05	3.73
Emotional Support Messages	.09	4.06	3.89
Instrumental Support Message	.01	4.59	4.35
Appraisal Support Messages	.01	4.28	4.01