PARTICIPANT PREFERENCE IN INTERVENTIONS IN OCCUPATIONAL HEALTH PSYCHOLOGY: POTENTIAL IMPLICATIONS FOR AUTONOMY

Kristin A. Horan

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Committee:

Clare Barratt, Advisor

Cynthia D. Bertelsen Graduate Faculty Representative

Steve Jex

Dara Musher-Eizenman

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ABSTRACT

Clare Barratt, Advisor

Research in fields who aim to improve individual health demonstrates that allowing a participant to choose their intervention or treatment approach is typically associated with beneficial outcomes. However, this topic has not yet been researched in Occupational Health Psychology (OHP). This study examines the effects of incorporating participant preference into treatment selection for an OHP intervention and tests increased autonomy as a mediator that explains enhanced treatment outcomes. Hypotheses were tested in a randomized control trial comparing the effects of random assignment vs. self-selection into one of two stress management modules in a sample of 328 employed individuals recruited through Amazon's Mechanical Turk. The effects of incorporating participant preference were evaluated using both proximal (selfefficacy to manage work stress, intentions to follow program recommendations, and adherence to program recommendations) and distal (psychological health) outcome variables. A path analysis approach based on a group code mediator variable approach, which uses structural equation modeling to test mediators of experimental effects, was used to analyze data. Results indicate that autonomy mediated the relationship between preference and intervention outcomes for intention, adherence, and psychological health, but only when autonomy was measured with a single item measuring global autonomy with a sliding response scale. Results indicate that, despite some inconsistencies between models, there may be benefits to incorporating participant preference into OHP research or practice utilizing interventions.

Keywords: Interventions; Preference; Autonomy; Self-Determination Theory

This manuscript is dedicated to the two loves of my life – my husband, Shane Horan, and my son, Griffin Horan. I cannot thank you both enough for the ways that you inspire me and motivate me.

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CHAPTER I. INTRODUCTION

Interest in interventions to improve health and well-being is growing in Occupational Health Psychology. Increased attention to intervention research was named as a future direction of the field more than a decade ago (Schaufeli, 2004), and this sentiment has been echoed in recent work (e.g. Spector & Pindek, 2016). This recommendation is based on sound rationale, given that interventions represent a strategy that aims to translate knowledge gained from empirical research into measurable and significant improvements for employees and organizations (Cox, Taris, & Nielsen, 2010), bridging the efforts of both researchers and practitioners. Additionally, the practice of intervention is named as one of the seven core professional practice areas in Industrial and Organizational Psychology (Society for Industrial and Organizational Psychology [SIOP], 2017a) and is a strategy that can be used to achieve the missions of both Industrial and Organizational Psychology and Occupational Health Psychology: to understand and *improve* well-being in organizational contexts (SIOP, 2017b; Society for Occupational Health Psychology [SOHP], 2012).

However, researchers also encourage that future research on interventions be guided by a focus on process variables (Nielsen, Taris, & Cox, 2010). That is, it is not enough to develop an intervention that produces the desired outcomes. Researchers must also develop an understanding of *how* and *why* an intervention produces desired outcomes. Although the idea of looking for mediators that explain treatment effects is not new (Judd & Kenny, 1981), the examination of process variables has increased in recent years (Linnan & Steckler, 2002). The use of process evaluation in intervention research is beneficial for several reasons (Linnan & Steckler, 2002). First, an understanding of drivers of variance explained in outcome variables can help researchers isolate the most potent targets for change in complex interventions. Second,

inclusion of mediators of the treatment-outcome relationship is an important step in creating theory-informed interventions. Finally, process evaluation can contribute to success in the dissemination of an intervention by identifying the contextual variables that must be present for an intervention to produce desired effects (Linnan & Steckler, 2002). The present study examines a contextual variable that could partially explain the relationship between intervention treatment and outcomes: the incorporation of *participant preference* in treatment selection.

Participant Preference

Participant preference, often called patient preference in medical fields, refers to a system of beliefs that underlie a choice for treatment when an individual is presented with treatment options (Thornett, 2001) or a positive or negative attitude toward a particular treatment approach (TenHave, Coyne, Salzer, & Katz, 2003). While some limited attempts have been made to identify factors that influence preferences, such models tend to be specific to the disorder or medical condition. For example, Thornett (2001) presents a model of factors that influence patient preference for treatment of depression, which states that preferences are a function of the patient's previous treatment experiences, perceptions of media reports, the views of family and friends, experience in the current depressive episode, welcome and unwelcome effects of medication, changes in medication use, and whether or not unwelcome effects are balanced. As interest in participant preference continues to grow, more research is needed that identifies factors that influence opinion formation and decision making.

Beneficial outcomes of participant preference. While research on the formation of preferences is limited, more research exists on outcomes of incorporation of preference into treatment. Its advocates cite numerous benefits that have been observed. First, research that allows for patient preference into treatment selection tends to produce improved attraction,

adherence, and retention to treatment (TenHave et al., 2003). Low levels of attraction, adherence, and retention not only negatively impact validity in research studies, but the effectiveness of treatments with behavioral components depend on patient adherence to treatment protocol. When participants select a treatment based on their preference, there is a greater likelihood that they find the option desirable, which can influence their willingness to participate, remain in, and engage in the intervention (TenHave et al., 2003).

Second, research has demonstrated that incorporation of patient preference into medical treatment influences the relationship between the patient and the healthcare practitioner. For example, in a study comparing pharmacotherapy and psychotherapy for depression, patients who received the treatment option opposite of their initial preference reported diminished therapeutic alliance over time (Iacoviello et al., 2007). The relationship between the patient and healthcare practitioner has important implications for treatment success, given that evidence from meta-analysis suggests that alliance demonstrated a consistent, moderate, positive relationship with treatment outcomes (Martin, Garske, & Davis, 2000). Third, allowing participants to select their treatment based upon preference is also consistent with the current view of the healthcare consumer (e.g. Coulter, 1999), which favors partnership over paternalism. Whereas healthcare has treated the medical encounter as guided solely by the medical professional for decades, a variety of social forces have shaped the medical encounter to now accommodate the preferences of patients, who are seen as capable of making informed decisions regarding their health (Charles, Whelan, & Gafni, 1999).

The final benefit associated with allowing for participant preference is enhanced treatment outcomes in some cases. This research question is complicated by the fact that patient preferences could apply to research on a number of different conditions, professions, treatments, and outcome variables. Thus, an attempt is made to briefly summarize major findings regarding preference and treatment outcomes across a variety of professions. In clinical psychology and psychotherapy, a meta-analysis of 26 studies found that there was a small significant effect such that patients who received their preferred treatments demonstrated greater improvement in a variety of outcome variables such as depression and anxiety symptoms, weight loss, and addictive behaviors (Swift & Callahan, 2009). In medical professions, a systematic literature review suggests that increasing patient engagement in clinical decision-making (which incorporates patient preferences in shared decision-making) is associated with positive patient experiences, improvements in patient knowledge and improvements in service utilization, although the evidence suggests that there is no consistent positive effect on health behaviors or health status (Coulter & Ellins, 2007).

In health promotion fields such as health education, interventions that offer a "menu of options" and allow participants to select their preferred program are identified as "best practice" interventions that consistently deliver the best outcomes in terms of health risk reduction and return on program investment (which implies reductions in healthcare costs; Goetzel, 2005). Together, this body of research suggests that although the relationship may vary across professions, conditions, and outcome variables, there is evidence to suggest that incorporation of patient or participant preference into treatment selection is associated with enhanced treatment outcomes.

Although the benefits of incorporating preference have been given increasing attention in many fields aiming to promote health and well-being (Leventhal, Weinman, Leventhal, & Phillips, 2008), the idea of preference has not yet been examined in the literature in Occupational Health Psychology. Given that Occupational Health Psychology represents the intersection of public health and medicine within an organizational context (Quick, 1999), our discipline would benefit from joining the conversation on participant preference.

Key assumptions for research on participant preference. Introducing research on the benefits of interventions that allow for participant preference is based upon several key assumptions. The first assumption is that preference-focused research must be positioned within an appropriate phase in a program of research. Specifically, this research question is only appropriate in areas of research in which multiple treatment or intervention approaches have been developed, and the effectiveness of each approach has already been documented using randomized experiments with a control group. While allowing participants to choose their approach may incorporate selection bias, meeting this first assumption would allow researchers to be certain that the validity of an entire approach is not sacrificed if a randomized control trial with high internal validity has already been performed in earlier research.

The second assumption is that preference does not refer to an individual's decision to participate in an intervention or not. The opportunity for treatment selection occurs after the individual has expressed desire to participate in an intervention.

Opportunities for preference in OHP research and practice. Some conceptual work highlights the importance of attention to participant preferences in organizational interventions aiming to improve health. For example, in their review article on health promotion programs in the workplace, Shain and Kramer (2004) list attention to participant preferences as one of the prerequisites of an effective program. Despite recognition of this idea, to date there is no work evaluating its utility in research or in practice within the Occupational Health Psychology or Industrial and Organizational Psychology literature. However, a line of research has examined the utility of a similar construct: *participatory intervention development*.

Participatory strategies in intervention development refer to gathering of employee input in the design phase of a workplace intervention. This strategy involves eliciting collective reflection and knowledge generation from employees and using their input to identify priorities for change in the workplace and to develop intervention strategies for achieving change (Heaney, 2003). In short, the employees assume an active role in developing the intervention. Interest in participatory design strategies have grown due to the observation that this approach was a common element in the most effective Occupational Health Psychology interventions (Nielsen, Randall, Holten, & Gonzalez, 2010). Systematic approaches have been developed to guide interventions developed and evaluated through participatory design, and advocates of this approach cite the benefits of leveraging existing employee knowledge to identify salient issues and opportunities, enhanced buy-in, and establishing an organizational environment that is supportive of the intervention (Robertson et al., 2013).

Participatory design strategies and incorporating participant preference are similar in that they can both be considered "bottom-up approaches" in which the participant is given some level of discretion over some aspect of their intervention experience. However, these approaches can be contrasted in the timing and level of participant input. That is, participatory design strategies incorporate employee input early in the intervention life cycle (i.e. selecting a focus, developing a list of intervention alternatives and implementation timeline; Robertson et al., 2013), whereas incorporation of participant preference occurs in the intervention selection phase, when a participant is given the option to choose from multiple interventions that have been developed and are ready to be implemented. Additionally, participatory design may involve varying levels of input from employees, with the most input being gathered from employees who are members of a design or steering committee (Robertson et al., 2013). In contrast, incorporation of participant preference allows for the same level of input across all employees, given that all participants are permitted to select their preferred intervention. The incorporation of participant preference into treatment selection could be combined with participatory approaches, potentially maximizing the benefits of both strategies.

Although work in Occupational Health Psychology has established the benefits of obtaining participant input in the design of an intervention, no work has examined the effects of allowing for participant preference in intervention selection, even though this topic is gaining recognition in other health-focused fields. More research is needed that allows Occupational Health Psychology to join the discussion within the larger body of health promoting fields that have begun to see value in accounting for participant or patient preference. In addition to examining the effects of preference on treatment outcomes, it is also important to understand the underlying mechanisms behind preference-focused intervention. Interventions that encourage active involvement and participant control (such as the participatory design approaches previously described) have been described as health enhancing in and of themselves (Israel, Baker, Goldenhar, & Heaney, 1996). This observation refers to the health-promoting effects of *autonomy*, a potential mediator between intervention selection and intervention outcomes.

Self-Determination Theory & Autonomy

Based on Self-Determination Theory (Deci & Ryan, 1985), I expect that enhanced perceptions of autonomy will explain the positive effects of incorporating participant preference into an intervention treatment. This theory of human motivation and well-being argues that the psychological well-being and optimal functioning necessary for goal-directed behavior depends on the satisfaction of three basic psychological needs. The first, the need for *competence*, refers to the need to deal with one's environment in an effective way. The second, the need for *relatedness*, refers to the need to develop close relationships with others and develop a sense of belonging within a group. The third, the need for *autonomy*, refers to the need to exert control and influence over one's own life.

Self-Determination Theory has been applied to many fields interested in motivated or goal-directed human behavior, including organizational sciences (Gagné & Deci, 2005), education (Niemiec & Ryan, 2009), and sports psychology (Frederick & Ryan, 1995). The theory also has an established history of use in the health promotion field. Specifically, the theory has been used to understand the determinants of motivated healthy behavior (e.g. Teixeira, Carraça, Markland, Silva, & Ryan, 2012) or as a guiding framework for interventions designed to increase health behaviors or improve health status (Ryan, Patrick, Deci, & Williams, 2008). Meta-analytic path analyses have supported the utility of Self-Determination Theory for understanding and improving motivation for health-related behaviors (Ng et al., 2012).

According to Self-Determination Theory, the drive to fulfill these basic psychological needs is essential in explaining both the content and process of goal pursuit (Deci & Ryan, 2000). Specifically, the psychological well-being and optimal functioning necessary for goal pursuit depends on the fulfillment of these needs, and the thwarting of any of these needs will result in functional costs that may negatively influence goal attainment (Deci & Ryan, 2000; Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). The satisfaction or thwarting of the basic psychological need of autonomy is the most relevant to the current study. Incorporating participant preference into treatment selection is *autonomy satisfying*, given that it increases participant control and discretion over efforts to improve health.

Based on Self-Determination Theory, satisfaction of the basic psychological need of autonomy is health enhancing for several reasons, which are outlined by Deci and Ryan (2000). Those who fulfill basic psychological needs, including need for autonomy, are described as "self-determined individuals." These people tend to pursue goals with intrinsic motivation and regulation or internalized extrinsic motivation and regulation, which is defined as participating in goal striving for reasons that are internal to the individual (such as finding the task enjoyable) or because an extrinsic reward has become linked to a valued internal reason, respectively. Similarly, self-determined individuals also tend to possess an internal locus of causality, meaning that they attribute the causes of their behavior to internal reasons (Deci & Ryan, 2000). Goal striving and goal pursuit that meets these criteria tends to be more effective for motivated behavior, personal growth and development, and well-being.

Previous theoretical and empirical research supports the positive effects of autonomy and similar constructs on motivation and on mental and physical health. For example, autonomy and control at work or decision latitude have been included in conceptual models of work that is organized in such a way that promotes health (e.g., Grawitch, Gottschalk, & Munz, 2006; Wilson, Dejoy, Vandenberg, Richardson, & Mcgrath, 2004.). Decision latitude is also a component of the Job Demands – Control Model, an influential model in occupational health psychology that argues that jobs with high demands and low control predict strain (Karasek, 1979). Meta-analyses that summarize these bodies of literature reveal that autonomy at work and related constructs are related to mental health (Stansfeld & Candy, 2006), physical symptoms (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011), and with risk factors associated with physical health (Pieper, LaCroix, & Karasek, 1989). Thus, from a conceptual standpoint it is clear that autonomy at work promotes mental and physical health, and this has also been demonstrated empirically. Although work autonomy is a more molar construct than general

autonomy measured in the present study, this literature does demonstrate the positive healthrelated benefits of exerting control over your environment.

Based on Self-Determination Theory and previous research, I hypothesize that enhanced perceptions of autonomy will explain enhanced treatment outcomes for participants who are permitted to select their intervention. Additionally, given that work understanding factors that influence preference is limited, the study will also use exploratory methods to assess strategies that are used to inform intervention choice for those in the experimental group. Perhaps certain selection strategies to select an intervention lead to better outcomes, or increased autonomy could be overwhelming if a participant does not possess a strong preference or sound rationale for selecting an intervention. A better understanding of factors that influence treatment preference and selection would allow researchers to answer such questions. The exploratory methods will allow the researcher to identify salient issues that may drive preferences such as interest, confidence, and self-efficacy.

Hypothesis 1: Participants who are permitted the choose their intervention (experimental group) will achieve significantly greater improvements in intervention outcome variables than participants who are assigned to an intervention (control group).

Hypothesis 2: Enhanced perceptions of autonomy will explain enhanced treatment outcomes for experimental group participants, such that autonomy will mediate the relationship between experimental condition and intervention outcomes.

Research Question 1: What strategies will participants in the experimental group report using to inform their choice of interventions?

Intervention Selection for the Present Study

The present study does not seek to test the efficacy of a single intervention, but rather to test a strategy of intervention delivery that could be applied to any treatment approach. Thus, I chose to test the hypotheses using stress management interventions with an established presence and documented success in the Occupational Health Psychology literature. A focus on stress management is alive and well in both research and practice, which is not surprising given the large humanitarian and economic burden of work stress (Ganster & Rosen, 2013). Specifically, stress continues to be a major topic of interest in both Occupational Health Psychology and Industrial and Organizational Psychology journals (Spector & Pindek, 2016; Cascio & Aguinis, 2008). Additionally, a large percentage of U.S. employers offer a lifestyle management program, and 52% of those offer programming related to stress management (Mattke et al., 2013).

Despite the prevalence of efforts in research and practice aiming to mitigate the negative effects of occupational stress, there is still room for improvement in occupational stress management interventions. For example, meta-analyses examining the effects of stress management interventions have found effect sizes varying from small to large (e.g. van der Klink, Blonk, Schene, & van Dijk, 2001; Richardson & Rothstein, 2008). Thus, leveraging the benefits of participant preference that have been observed in other fields could reduce variability in effects and enhance treatment outcomes in occupational stress interventions.

Intervention selection for the present study was based on a meta-analysis of occupational stress management interventions by Richardson and Rothstein (2008), who reviewed 36 experimental studies comprised of 55 interventions. Although intervention content and delivery varied by study, they grouped interventions according to the following categories: cognitive-behavioral, relaxation, alternative, organizational, and multi-modal. Cognitive-behavioral and

"alternative" interventions were chosen for the present study given that they can be delivered and evaluated using online methodologies, they will allow me to isolate the effect of autonomy at the individual level intervention (rather than at both the individual and organizational level), and both categories yielded large comparable effect sizes (1.16 for cognitive-behavioral and 0.91 for alternative interventions). Additionally, they yield comparable effect sizes in the lowest dose category when Richardson and Rothstein (2008) performed a moderator analysis for intervention length (1.48 for CBT and 1.22 for alternative interventions), indicating that the interventions are comparable, both overall and when only considering interventions of short duration. Both types of interventions are described in further detail below. Note that although Richardson and Rothstein (2008) use the label "alternative" to describe a category of intervention, for the remainder of the paper I will use the label "skills training," which is a more accurate of description of the content from the meta-analysis that will be applied to this study.

Cognitive behavioral therapy (CBT) for occupational stress. CBT refers to a therapeutic approach that is based on the idea that various conditions related to individual distress are sustained by maladaptive cognitions and that replacing them with more adaptive cognitions will result in reductions in distress (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012). Participants in CBT interventions are educated regarding the role of thoughts and emotions in condition management and are taught to identify negative thoughts and replace them with more positive or helpful thoughts (Richardson & Rothstein, 2008). A review of multiple meta-analyses of CBT interventions supports that CBT is effective for treating a variety of disorders relevant to the clinical context, including general stress (Hofmann et al., 2012). The utility of CBT for treating stress could explain why CBT is a popular workplace intervention for occupational stress (Giga, Cooper, & Faragher, 2003).

Although CBT protocols can vary by disorder, a basic treatment protocol will involve teaching individuals to (1) identify and respond to dysfunctional cognitions, (2) emphasize positive cognitions, and (3) to facilitate cognitive or behavioral change (Beck, 2011). Applied to example related to occupational stress, an employee could identify a problematic thought that is causing stress ("I'll never be prepared for this big presentation") by replacing the thought with a more helpful one ("A few nerves will actually be a good thing. It will help me stay on my toes during the presentation") and engage in approach-oriented behaviors (referred to as behavioral activation in CBT) to promote desired change (practicing the presentation and eliciting feedback from their supervisor).

Skills training interventions for occupational stress. Although there was variability among the types of interventions that were coded as "alternative" in the Richardson and Rothstein (2008) meta-analysis, several of the interventions related to skills training. Skills training components give individuals an opportunity to develop skills that can help manage demands that contribute to stress (Richardson & Rothstein, 2008). Examples of components that could be present in skills training include decision-making and communication skills (Hayes & Eddy, 1985), time-management and goal-setting skills (Richardson & Rothstein, 2008), or skills relevant to a specific occupational setting (e.g. classroom management skills training for teachers; Sharp & Forman, 1985). Applied to an example relevant to occupational stress, timemanagement skills training would be provided to an employee who is feeling stressed due to high workload or high time pressure through coaching on scheduling, prioritizing, selfmonitoring, and related areas.

CHAPTER II. METHOD

Protocol Development and Pilot

In order to select an intervention protocol, I reviewed the studies included in the Richardson and Rothstein (2008) meta-analysis and selected the intervention protocol delivered in a doctoral dissertation by Collins (2004). This intervention was classified as a multi-modal intervention by Richardson and Rothstein (2008), as it contained sessions that featured educational, relaxation, cognitive-behavioral, and communication and workload management skills training components. In the current study, material and exercises were adapted from the educational, CBT, and skills training sessions to be compatible with an online format. Specifically, an intervention script was audio recorded and set to animated informational materials created with a multimedia content creation tool, Visme. This tool allowed for animated audio and visual content to be delivered to participants with Internet access. Supplemental guided reflection questions, handouts, and worksheets and activities were created as downloadable content.

Prior to the experimental procedures, the intervention protocols were reviewed by a doctoral candidate in clinical psychology that is experienced in skills training and CBT approaches for both individual and group therapy. The intervention modules and descriptions of the interventions were piloted among six subject matter experts, who were graduate students in two Occupational Health Psychology labs and research groups, to ensure that the intervention descriptions did not significantly differ in terms of perceived attractiveness and that the interventions were approximately equal in terms of perceived helpfulness. Both in the pilot and main study, the programs were randomly assigned non-descriptive names ("Ideal Work Life"

and "Optimal Work Life") to mitigate selection bias. The order of presentation of intervention descriptions were counterbalanced to prevent order effects.

Although the small number of subject matter experts was prohibitive of using a t-test, an examination of mean responses revealed that scores for perceived intervention attractiveness based on the intervention title and description for the CBT program (M= 3.67, SD= 1.03) and skills training program (M= 3.83, SD= .75) were approximately equal. The scores for perceived intervention helpfulness based on the intervention videos, guided reflections, handouts, and worksheets for the CBT program (M= 4.33, SD= .82) and skills training program (M= 4.66, SD= .52) were approximately equal.

Based on feedback from the pilot study, the following changes were made to the intervention content: correction of spelling and grammatical errors, providing participants with a program outline and transcript to increase opportunities for exposure to the content, formatting changes to increase utility of worksheets, and providing participants with feedback on the guided reflection questions. Note that personalized feedback was not possible due to the sample size. Instead, participants were provided with a standardized document that offered example answers and answers to questions that participants typically ask in fact-to-face CBT or skills training programs (according to the Clinical Psychology subject matter experts).

The finalized programs featured 15 minutes of video content, a supplemental transcript and outline, five minutes of guided reflection, two handouts, and three worksheets. Participants were encouraged, but not required, to utilize the handouts and worksheets on a weekly basis.

Participants

Employed adults residing in the United States were recruited through a Human Intelligence Task (HIT) posted on Amazon's Mechanical Turk (MTurk) that described a research survey on online job stress management programs. The use of crowdsourced surveys to sample for applied psychological research is associated with both advantages and disadvantages. The unique features of an internet freelancing arrangement have prompted a number of methodological criticisms of surveys utilizing MTurk. For example, in their evaluation of the use of MTurk in organizational psychology research, Cheung, Burns, Sinclair, and Sliter (2017) summarize potential threats to validity associated with the use of MTurk, including but not limited to subject inattentiveness, selection biases, demand characteristics, and concerns about sample representativeness and appropriateness.

On the other hand, there are advantageous features of crowdsourced surveys, such as the opportunity to increase randomized experimentation (Highhouse & Zhang, 2015). Several review and recommendation pieces have been published on the appropriateness of MTurk for organizational research, and the consensus tends to be that researchers should recognize that most organizational samples are convenience samples, not automatically dismiss MTurk as an inappropriate recruitment and data collection tool (Landers & Behrend, 2015), and should proactively minimize threats to validity based on a series of methodological recommendations (e.g. using MTurk Qualification features to control sample representativeness and appropriateness; detecting and screening inattentive responses; Cheung et al., 2017).

A target sample of 500 was set based on an RMSEA minimum sample size calculator for nested models by Preacher and Coffman (2006). Four-hundred and sixty-two session one surveys were completed. Surveys were excluded if they came from a single Mturk ID (n=16) or IP address (n=18), if the Qualtrics location ID indicated that the response came from outside of the United States (n=15), they failed two out of three attention checks (n=1), or their response was flagged for more than one these exclusion reasons (n=43). Additionally, 41 baseline surveys and

8 follow-up surveys were excluded because the participant's response on one or more of the global autonomy slider scale questions was zero or 100, which could potentially be indicative of a careless response. The final sample consisted of 320 employed adults, which fell short of the targeted sample size for a structural equation modeling approach. Modifications to the hypothesized model to ensure adequate power are further discussed in the analytic strategy section.

Among the final sample of 320 participants, 52.5% were female, many reported being married (45.0%), most reported a bachelor's degree as their highest education attainment (42.5%), reported an annual household income between \$25,000 and \$49,999 (34.4%), and the majority were white (82.5%). Their average age was 36.01 years (SDage = 9.66). They reported working for their organization for an average of 5.99 years (SDtenure = 4.78) and work an average of 41.22 hours per week (SDwork hours = 7.57). A variety of industries were represented within the sample, with retail trade (12.8%), educational services (10.7%), and professional, scientific, and technical services (9.8%) being the industries that were reported most often. Full information on sample characteristics can be found in Table 1.

Within the sample, 156 participants were randomly assigned to the control group (48.8%) and 164 participants were randomly assigned to the experimental group (51.2%). Across conditions, 169 participants completed the CBT intervention (52.8%) and 151 participants completed the skills training intervention (47.2%).

Procedure

Experimental procedures are summarized in Figure 1. Specifically, a HIT (Human Intelligence Task) was posted on MTurk to recruit participants and interested individuals completed a short screening questionnaire to ensure that they met eligibility criteria and provided

informed consent. Participants then completed a baseline questionnaire that contained measures of psychological health and self-efficacy to manage work stress. Note that state autonomy was also included as a baseline measure but was presented in the screening questionnaire in order to increase the time between measurements of state autonomy and minimize careless responding.

Participants were subsequently randomly assigned using the randomization feature of Qualtrics survey platform into either the control or experimental condition. All participants were given short descriptions of the CBT and skills training interventions, which were randomly assigned the names "Ideal Work Life" and "Optimal Work Life" respectively. The control group was informed that they would be randomly assigned to one of the two interventions, while the experimental group was asked to choose the intervention that they would like to receive. Following random assignment, participants completed a measure of state autonomy. Participants in the experimental group were asked to describe the rationale for their choice in the open-ended question. Participants in the control condition were asked which program they would have chosen if they had been given a choice.

Participants then completed their assigned or chosen intervention depending on their condition. Following participation in the module, participants completed a post-treatment survey that contained measures of self-efficacy to manage work stress and intentions to follow the behavioral recommendations of the program. Finally, participants were contacted for a follow-up survey one month after participation in the intervention. The follow-up survey contained measures of state autonomy, adherence to the intervention recommendations, and psychological health. Participants were paid \$3.50 for their participation in the initial HIT and \$.50 for their participation in the follow-up HIT. Each participant was sent an initial email informing them that

it was time to complete their follow-up survey and two reminder emails. The follow-up response rate was 63.4%, as 203 participants completed the follow-up survey.

An attrition analysis was performed in which a MANOVA tested for significant pre-test differences in continuous baseline variables between those who did complete the follow-up survey and those who did not. The overall MANOVA was significant, F (7, 312) = 2.72, p< 0.05, Wilks' $\Lambda = 0.94$, partial $\eta^2 = 0.06$. The tests of between-subjects effects revealed that those who completed the follow-up survey reported higher levels of intention to follow program recommendations (F (1, 318) = 7.89, p<0.01, partial $\eta^2 = 0.03$) at baseline. There were no other significant differences between those who did and did not complete the follow-up survey based on a modified p-value that accounted for the number of comparisons (p < 0.007). A chi-square test revealed that there were no significant differences in attrition among the control and experimental group, $\chi^2(1, N= 320) = 1.33$, p = 0.30.

Measures

Based on methodological recommendations for MTurk studies, attentional check items (e.g., "Please answer this question strongly disagree") were included in each survey to screen for careless responding.

Autonomy. State autonomy was measured using the autonomy subscale of the Basic Psychological Need Satisfaction and Frustration Scale – General Measure (Chen et al., 2015). This eight-item measure contains four items that assess the satisfaction of basic psychological need of autonomy, such as "I feel a sense of choice and freedom in the things I undertake," and four items that assess the frustration of autonomy, such as "I feel forced to do many things that I wouldn't choose to do." Participants rate the degree of truth of each statement on a scale from one ("not at all") to five ("completely true"). The instructions and items have been modified to refer to state autonomy perceived at the present moment, rather than autonomy in general. Modifications of the scale were guided by reviewing the instructions in the diary version of the Basic Psychological Need Satisfaction and Frustration scale (Chen et al., 2015; van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017).

Participant reports of state autonomy obtained following the experimental manipulation were used for a manipulation check. Inclusion of a manipulation check is a recommended practice for designing experimental designs that maximize all types of validity, not just internal validity (Highhouse, 2009). Checking manipulations can increase confidence that experimental manipulations induced the anticipated effect, thus ensuring adequate construct validity. In the context of the present study, an increase in state autonomy after condition selection in the experimental group would demonstrate that being permitted to select their intervention did lead to an increase in autonomy for participants in the treatment condition.

This scale has been found to be reliable and valid based on past research. Specifically, confirmatory factor analyses support that items within the autonomy subscale load onto a two-factor need satisfaction and need frustration solution (Chen et al., 2015). Although some past research has found internal consistency at be at a marginal level (e.g. 0.69 in Chen et al., 2015), other studies have reported Cronbach's alphas that meet recommendations for acceptable levels (e.g. 0.70 in Campbell et al., 2015). Because two of the measures of autonomy (baseline and following condition assignment) ocurred close together in time, I also included an additional item measuring state autonomy with a slider scale from one to 100. It is expected that this type of response scale is more sensitive to smaller changes in autonomy because it provides participants with more options to fit their current perception.

Distal outcome variable. Self-reported psychological health, measured with subscales of depression, anxiety, and stress, were chosen as outcome variables in the primary analysis because they both demonstrate large effect sizes of comparable magnitude for CBT and skills training interventions (Richardson & Rothstein, 2008). Stress measures yielded an effect size of 1.01 for CBT and 1.37 for skills training interventions and mental health measures yielded an effect size of .71 for CBT and .62 for skills training interventions (Richardson & Rothstein, 2008). Psychological health over the previous month was measured using the 21-item Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). This scale measures a general distress higher-order factor with three lower-order factors of depression, anxiety, and stress. Sample items include "I felt down-hearted and blue" (depression), "I felt I was close to panic" (anxiety), and "I found it hard to wind down" (stress). This scale has been found to be reliable and valid in previous research (e.g. Henry & Crawford, 2005; Osman et al., 2012)

Proximal outcome variables. Although the primary focus of the research question was to examine the effects of the participant preference on psychological health at the one-month follow-up survey, data were collected on several proximal outcome variables. This may shed light on the temporal processes associated with incorporation of preference into intervention selection by examining effects immediately after the intervention and in the time between the intervention and follow-up.

Adherence. Given that the intervention was delivered in an online format, rather than the weekly meeting format that most job stress interventions conform to, it is important to measure adherence to intervention recommendations during the time in between the intervention followup. The five General Adherence Items from the Medical Outcomes Study (MOS) Measures of Patient Adherence (Hays, 1994) were included in the one-month follow-up to measure perceived adherence to intervention recommendations over the past month. The scale instructs participants to rate the frequency of experiences such as "I followed my doctor's suggestions exactly" on a scale from one ("none of the time") to five ("all of the time"). For the purposes of the present study, the instructions and the items were modified to refer to "the work stress program" rather than "my doctor." The General Adherence Items of the MOS Measures of Patient Adherence have demonstrated adequate test-retest reliability (Hays, 1994) and internal consistency (Sherbourne, Hays, Ordway, DiMatteo, & Kravitz, 1992) in previous research.

Intention. Intention refers to a plan or objective to participate in a behavior or strive toward a goal, and it is a strong predictor of future behavior according to the Theory of Planned Behavior (Ajzen, 1985). Intention to participate in the behavioral recommendations associated with their intervention was measured with a scale created based on the "Constructing a Theory of Planned Behavior Questionnaire" technical report (Ajzen, 2006). An example item is "I intend to review my handouts for the next four weeks." Participants will be instructed to rate the level of likelihood of performing that behavior on a scale from one ("very unlikely") to five ("very likely").

Self-efficacy. Self-efficacy for management of work stress was measured at baseline and in the post-intervention questionnaire and included in the analysis as a proximal outcome variable. Self-efficacy is defined as confidence to meet the demands of a situation (Romppel et al., 2013), and research indicates that higher levels of self-efficacy are associated with success in behavior change efforts (Holloway & Watson, 2002). The six-item short form of the General Self-Efficacy Scale (GSE-6; Romppel et al., 2013) was used to measure self-efficacy in the present study. I asked participants to rate how true each statement is of them on a scale from one ("not at all true") to five ("very true"). A sample item is "It is easy for me to stick to and accomplish my aims and goals." In order to tailor the scale to the management of work stress, the instructions and items will be modified to include a reference to work stress. Previous research has found that the scale demonstrated high internal consistency and is valid in predicting psychological health and methods of adaptively coping with stress (Romppel et al., 2013).

Analytic Strategy

I used an adapted version of the "group code" mediator variable technique described by Russell, Kahn, Spoth, and Altmaier (1998). Although currently underutilized, SEM is advantageous for analyzing experimental data, as opposed to more traditional ANOVA and ANCOVA techniques, because this approach allows the researcher to test mediators that may explain experimental outcomes (Russell et al., 1998). Additionally, the research question at hand might pose some analytic challenges in ANOVA framework, given that allowing participants to choose their preferences could result in unequal cell sizes. This issue is not present in an SEM framework, given that distributional assumptions (which can be violated when cell sizes are unequal) only apply to endogenous variables (Kline, 2012). Although Russell and colleagues (1998) describe a latent variable approach, I utilized a path analytic approach due to sample size constraints. Although the sample size may be minimally acceptable based on several rules of thumb for maximum likelihood estimation (e.g. Bentler & Chou, 1987), robust maximum likelihood estimation is necessary in the present study due to non-normality in the study variables (a Shapiro-Wilke test for normality revealed that all variables were non-normal) and the presence of missing data in the follow-up survey (Savalei & Bentler, 2005). The sample size falls short of minimum recommendations for structural models estimated using robust maximum likelihood (Savalei & Bentler, 2005), necessitating the use of path analysis.

In the group code mediator variable technique, the nested model that does not specify a direct relationship between the experimental condition and the intervention outcome is tested against an alternative model that specifies a direct relationship between the two variables. If the difference in model fit as measured by the chi-square statistic is not significant based on the difference in the degrees of freedom between the two models, then the researcher would conclude that the model that specifies only an indirect relationship between experimental condition and outcomes through the proposed mediator fits the data as well as the constrained model and a mediational hypothesis is supported (Russell et al., 1998). I evaluated differences in model fit based on the Satorra-Bentler Scaled Chi-Square statistic, which is necessary when robust maximum likelihood estimation is used (Satorra & Bentler, 1994).

Data cleaning, descriptive analyses, and exploratory factor analyses were performed in IBM SPSS Statistics Version 23.0 (IBM Corp., 2015) while path analyses were performed in MPlus 7 (Muthén & Muthén, 1998-2012). Exploratory factor analyses were performed that specified principal axis factoring as the extraction method with Varimax rotation (Conway & Huffcutt, 2003) in order to assess the degree to which data collected in this study conformed to factor structures observed in previous research. Decisions regarding number of factors were made based on multiple criteria, including eigenvalues, percentage of variance explained by a factor, the scree plot, and the magnitude and interpretability of factor loadings.

Results of the exploratory factor analyses can be found in Tables 2 - 6. All criteria supported a single factor solution for baseline self-efficacy, post-intervention self-efficacy, and intention to follow program recommendations. Previous research would suggest a two-factor solution for the autonomy in which items load onto autonomy satisfaction and autonomy frustration factors. All criteria conformed to these expectations for baseline autonomy. However,

the initial analysis for post-intervention and follow-up autonomy were less clear. A single factor was extracted based on the eigenvalue and percentage of variance explained, although the scree plot and magnitude and interpretability of factor loadings would have been more suggestive of a two-factor solution. Therefore, another analysis was run for post-intervention and follow-up autonomy specifying two factors as the minimum number of factors to be extracted and all criteria in the revised analysis was suggestive of a two-factor solution. Finally, a three-factor solution would be expected for psychological health in which items load onto depression, anxiety, and stress factors. Although some items do load onto multiple factors, eigenvalues, variance explained, and the scree plot for psychological health at both baseline and follow-up are supportive of the three-factor solution that would be expected based on previous research. The results of the exploratory factor analysis may be explained by findings in previous research that state that scale factors tend to be strongly associated with one another (e.g. Osman et al., 2012).

Qualitative data were analyzed using QDA Miner Lite (Provalis Research, 2016), a software program that performs content analysis on qualitative data. Specifically, text segments in responses to the question asked to experimental group participants, which asked them to describe the rationale behind selecting their chosen program, were coded by the author. The analysis involved grouping text segments according to major categories and analyzing the frequency of reporting.

CHAPTER III. RESULTS

Manipulation Check

An ANCOVA was performed to assess whether the experimental group reported significantly higher levels of post-intervention autonomy after controlling for baseline levels of autonomy. Both the analysis for the autonomy scale score computed from the Chen et al. (2015) measure, F(2, 316) = 0.00, p= 0.95, and the slider scale measure of global autonomy, F(2, 316) = 0.08, p= 0.77, revealed no significant differences between the control and experimental group. The absence of a significant difference between groups also occurred at follow-up for both the scale score, F(2, 199) = 0.05, p= 0.82, and the global slider measure of autonomy, F(2, 199) = 0.16, p= 0.69. Given that the manipulation check does not provide support for the superiority of one measure of autonomy, results are provided for both types of measures.

Test of Hypotheses

Descriptive statistics, correlations for study variables, and internal consistencies can be found in Table 7. Variable means reveal that participants tended to report high levels of autonomy satisfaction and moderate levels of autonomy frustration and global autonomy. Participants reported low levels of depression and anxiety, and moderate levels of stress. Mean levels for self-efficacy to manage work stress were higher at post-intervention than at baseline and participants reported high levels of intention to follow the recommendations of their intervention program.

Correlations among session one variables revealed that experimental condition was not significantly related to any study variables and intervention program was only significant related to stress (r= -.15, p< 0.01), such that those who reported a higher level of stress at baseline were more likely to participate in the CBT intervention program. Consistent with the propositions of

Self-Determination Theory, autonomy satisfaction and global autonomy at all time points were negatively related to indicators of poor psychological health (-.20 < r < -.66, p< 0.01) and self-efficacy (.33 < r < .48, p< 0.01). Additionally, autonomy frustration was positively related to indicators of poor psychological health (.23 < r < .56, p< 0.01) and self-efficacy (-.30 < r < -.40, p< 0.01).

Those who reported poorer psychological health at baseline tended to report lower selfefficacy to manage work stress, both before (-.44 < r < -.58, p< 0.01) and after (-.38 < r < -.49, p<0.01) the intervention, although the magnitude of the correlations decreased slightly after the intervention. Stress at baseline (r= .13, p< 0.05) and post-intervention self-efficacy (r=.20, p<0.01) were both positively related to intentions to follow the recommendations of the intervention.

Correlations among baseline and follow-up variables revealed that those with better psychological health tended to report higher levels of adherence to program recommendations at baseline (-.13 < r < -.26, p< 0.05) and at follow-up (-.20 < r < -.39, p< 0.01). Poor psychological health at follow-up was negatively related to autonomy satisfaction (-.19 < r < -.58, p< 0.01) and global autonomy (-.37 < r < -.66, p< 0.01), and positively related to autonomy frustration (.24 < r < .56, p< 0.01).

Self-efficacy. Results of the analysis for self-efficacy to manage work stress with autonomy measured using the Chen et al. (2015) measure are presented in Figure 2. The nested model provided good fit to the data based on some fit indicates (CFI = 0.98; SRMR = 0.03), although it did not provide acceptable fit based on other fit indices (RMSEA = 0.08, 90% confidence interval for RMSEA = 0.03 - 0.14; χ^2 (4, N=320) = 12.67, p< 0.05). The standardized coefficient for the path between preference and post-assignment autonomy is insignificant (β = -

0.01, p= 0.86), although the path coefficient for the relationship between post-intervention autonomy and post-intervention self-efficacy is significant (β = 0.13, p< 0.01). This indicates that those with higher levels of post-assignment autonomy were more likely to report higher levels of self-efficacy to manage work stress after the intervention.

The constrained model also provided good fit according to some fit indices (CFI = 0.99; SRMR = 0.03) but did not provide acceptable fit according to others (RMSEA = 0.08, 90% confidence interval for RMSEA = 0.02 - 0.14; χ^2 (3, N=320) = 8.38, p< 0.05). The standardized path coefficient for the direct relationship between experimental condition and post-intervention self-efficacy was significant (β =0.08, p< 0.05), indicating that those who were permitted to select their intervention were more likely to report higher levels of self-efficacy to manage work stress after the intervention. This supports hypothesis one through the mechanism of a direct effect. The Satorra-Bentler Chi-Square Difference Test revealed that model fit was significantly different among the two models, $\Delta \chi^2(1) = 4.58$, p< 0.05, indicating that hypothesis two was not supported when autonomy is measured using the Chen et al. (2015) measure.

Results of the analysis for self-efficacy to manage work stress with autonomy measured using the single item slider scale are presented in Figure 3. The nested model provided good fit to the data according to all fit indices (CFI = 1.00; SRMR = 0.02; RMSEA = 0.03, 90% confidence interval for RMSEA = 0.00 - 0.19; χ^2 (4, N=320) = 4.79, p=0.31). The relationship between preference and post-assignment autonomy was in the expected direction but was insignificant (β =0.01, p=0.68) and the relationship between post-assignment autonomy and post-intervention self-efficacy was significant (β =0.11, p< 0.05).

The constrained model provided good fit to the data on all fit indices (CFI = 1.00; SRMR = 0.01; RMSEA = 0.00, 90% confidence interval for RMSEA = 0.00 - 0.07; χ^2 (3, N=320) =
1.42, p=0.70). The direct relationship between preference and post-intervention self-efficacy was significant (β =0.09, p< 0.05), indicating that those who were permitted to select their intervention tended to report high levels of post-intervention self-efficacy to manage work stress. This is supportive of hypothesis one through the mechanism of a direct effect. The Satorra-Bentler Chi-Square Difference Test revealed that model fit was significantly different among the two models, $\Delta \chi^2(1) = 5.20$, p< 0.05, indicating that hypothesis two was not supported when autonomy is measured using a single item with a sliding scale.

Intention. Results of the analysis for intention to follow intervention recommendations with autonomy measured using the Chen et al. (2015) measure are presented in Figure 4. The models are different from those tested in the self-efficacy analyses in that it is impossible for a person to possess "baseline levels of intention to follow the intervention recommendations" because there is no way for the participant to know what the recommendations are before participation in the intervention. In essence, this variable does not exist at baseline. Therefore, only intention reported after the intervention was measured at modeled. The nested model provided good fit to the data based on some criteria (CFI = 0.97; SRMR = 0.03) but did not provide acceptable fit based on other criteria (RMSEA = 0.10, 90% confidence interval for RMSEA = 0.03 - 0.17; χ^2 (2, N=320) = 7.86, p< 0.05). There was no significant relationship between experimental condition and post-assignment autonomy (β = -.01, p=0.86), or between post-assignment autonomy and intention (β = 0.06, p=0.25).

The constrained model provided good fit to the data based on some criteria (CFI = 0.97; SRMR = 0.02) but did not provide acceptable fit based on other criteria (RMSEA = 0.15, 90% confidence interval for RMSEA = 0.25 - 0.26; χ^2 (1, N=320) = 7.90, p< 0.01). The standardized path coefficient for the direct relationship between experimental condition and intention was not significant (β =0.04 p=.53). The Satorra-Bentler Chi-Square Difference Test revealed that model fit was significantly different among the two models fit was not significantly different among the two models, $\Delta \chi^2(1) = 0.39$, p=0.53, indicating that there is an indirect effect. However, because the relationship between preference and autonomy was negative, hypotheses one and two were not supported.

Results of the analysis for intention to follow program recommendations with autonomy measured using the single item slider scale are presented in Figure 5. The nested model provided good fit to the data based on some indices (CFI = 0.99; SRMR = 0.02), although it did not demonstrate acceptable fit based on other indices (RMSEA =0.08, 90% confidence interval for RMSEA = 0.01 - 0.16; χ^2 (2, N=320) = 6.31, p< 0.05). The relationship between preference and post-intervention autonomy was in the expected direction, although insignificant (β = 0.01, p=0.68) and the relationship between post-intervention autonomy and intention not significant (β = 0.05, p=0.39).

The constrained model provided good fit to the data based on some indices (CFI = 0.98; SRMR = 0.01), although it did not demonstrate acceptable fit based on other indices (RMSEA =0.13, 90% confidence interval for RMSEA = 0.05 - 0.24; χ^2 (1, N=320) = 6.55, p< 0.05). The direct relationship between preference and intention was not significant (β = 0.04, p=0.51). The Satorra-Bentler Chi-Square Difference Test revealed that model fit was not significantly different among the two models, $\Delta \chi^2$ (1) = 1.64, p=0.20, indicating that there is an indirect effect. Researchers have debated whether significant predictor-mediator (*a*) and mediatoroutcome (*b*) paths are necessary to conclude a mediation effect exists, as would be required by a traditional causal steps approach. However, contemporary views suggest that "statistical significance of *a* and *b* are not requirements of mediation by current thinking" (Hayes, 2017, p. 116). Thus, because all paths are in the expected direction, despite being insignificant, hypotheses one and two are supported through the mechanism of an indirect effect for intention to follow program recommendations when autonomy is measured with a sliding scale.

Adherence. The results of the analysis for adherence with autonomy measured using the Chen et al. (2015) measure are presented in Figure 6. The models tested for adherence are similar to those for intention in that the construct of adherence did not exist at baseline, so only adherence measured at baseline is modeled. The nested model provided good fit to the data based on all fit criteria (CFI = 1.00; SRMR = 0.02; RMSEA = 0.00, 90% confidence interval for RMSEA = 0.00 - 0.10; χ^2 (2, N=320) = 1.22, p=0.54). There was no significant relationship between preference and post-assignment autonomy (β = -0.01, p=0.86). The relationship between post-assignment autonomy and adherence to intervention recommendations was significant (β = 0.22, p<0.01), indicating that those with higher levels of post-assignment autonomy were more likely to report following the recommendations of their program.

The constrained model provided good fit to the data based on all fit criteria (CFI = 1.00; SRMR = 0.01; RMSEA = 0.00, 90% confidence interval for RMSEA = 0.00 - 0.14; χ^2 (1, N=320) = 0.78, p=0.38). The direct relationship between preference and adherence was not significant (β = -0.05, p=0.51), meaning that hypothesis one was not supported. The Satorra-Bentler Chi-Square Difference Test revealed that model fit was not significantly different among the two models, $\Delta \chi^2$ (1) = 0.43, p=0.51, which indicates the presence of an indirect effect. However, because the relationship between preference and autonomy was negative, hypotheses one and two were not supported.

Results of the analysis for adherence to program recommendations with autonomy measured using the single item slider scale are presented in Figure 7. The nested model

demonstrated good fit to the data based on all fit criteria (CFI = 1.00; SRMR = 0.01; RMSEA = 0.00, 90% confidence interval for RMSEA = 0.00 - 0.08; χ^2 (2, N=320) = 7.78, p=0.68). The relationship between preference and post-intervention autonomy was in the expected direction, although insignificant (β = 0.01, p=0.68). The relationship between post-intervention autonomy and follow-up adherence was significant (β = 0.22, p<0.01).

The constrained model demonstrated good fit to the data based on all fit criteria (CFI = 1.00; SRMR = 0.01; RMSEA = 0.00, 90% confidence interval for RMSEA = 0.00 – 0.13; χ^2 (1, N=320) = 0.46, p=0.50). The direct relationship between preference and follow-up adherence was in the opposite of the expected direction, although insignificant (β = -0.06, p = 0.58). The Satorra-Bentler Chi-Square Difference Test revealed that model fit was not significantly different among the two models, $\Delta \chi^2$ (1) = 0.31, p=0.58, indicating the presence of an indirect effect. Similar to the interpretation of the slider model for intention, although the paths are insignificant, their conformity to the expected direction and contemporary views on criteria for mediation (Hayes, 2017) provide support for hypotheses one and two through the mechanism of an indirect effect for adherence when measured with a slider scale.

Psychological Health. The analyses for psychological health with autonomy measured using the Chen et al. (2015) are presented in Figure 8. The models are hybrid models in that baseline and follow-up psychological health are modeled as latent construct on indicators of depression, anxiety, and stress. Thus, the latent construct measures poor psychological health. Consistent with Russell et al. (1998), indicators of latent constructs at baseline were allowed to correlate with indicators of latent constructs at follow-up (i.e. baseline depression with follow-up depression, baseline anxiety with follow-up anxiety, and baseline stress with follow-up stress).

The nested model demonstrated good fit according to some fit indices (CFI = 0.97; SRMR = 0.05) but did not provide acceptable fit based on other indices (RMSEA = 0.09, 90% confidence interval for RMSEA = 0.06 - 0.11; χ^2 (21, N=320) = 69.30, p<0.01). The relationship between preference and post-assignment autonomy was not significant (β = -0.01, p=0.86) and the relationship between post-assignment autonomy and follow-up psychological health was not significant (β = -0.05, p=0.35).

The constrained model demonstrated good fit according to some fit indices (CFI = 0.97; SRMR = 0.05) but did not provide acceptable fit based on other indices (RMSEA = 0.09, 90% confidence interval for RMSEA = 0.07 - 0.11; χ^2 (20, N=320) = 68.13, p<0.01). The direct relationship between preference and follow-up psychological health was not significant (β = -0.04, p=0.34). The Satorra-Bentler Chi-Square Difference Test revealed that model fit was not significantly different among the two models, $\Delta \chi^2(1) = 0.94$, p=0.33, which indicates the presence of an indirect effect. However, because the relationship between preference and autonomy was negative, hypotheses one and two were not supported.

Results of the analysis for psychological health with autonomy measured using the single item slider scale are presented in Figure 9. The nested model demonstrated good fit to the data for some fit indices (CFI = 0.98; SRMR = 0.04) but did not demonstrate acceptable fit according to other indices (RMSEA = 0.07, 90% confidence interval for RMSEA = 0.05 – 0.10; χ^2 (21, N=320) = 57.68, p<0.01). The relationship between preference and post-assignment autonomy was in the expected direction but was not significant (β = 0.01, p=0.68) and the relationship between post-assignment autonomy and follow-up psychological health was not significant (β = -0.02, p=0.71). The constrained model demonstrated good fit to the data for some fit indices (CFI = 0.98; SRMR = 0.04) but did not demonstrate acceptable fit according to other indices (RMSEA = 0.08, 90% confidence interval for RMSEA = 0.05 – 0.10; χ^2 (20, N=320) = 56.42, p<0.01). The relationship between preference and follow-up psychological health was in the expected direction but was not significant (β = -0.04, p=0.32). The Satorra-Bentler Chi-Square Difference Test revealed that model fit was not significantly different among the two models, $\Delta \chi^2$ (1) = 1.04, p=0.31, which indicates the presence of an indirect effect. Similar to the interpretation of the slider model for intention, although the paths are insignificant, their conformity to the expected direction and contemporary views on criteria for mediation (Hayes, 2017) provide support for hypotheses one and two through the mechanism of an indirect effect for psychological health when measured with a slider scale.

Qualitative Research Question

The results of the qualitative data analysis performed in QDA Miner Lite, which are described in Table 8, revealed several categories of reasons that participants reported for selecting their chosen intervention in the experimental group. Participants reported using their *beliefs* to guide their decision, including beliefs about their causes of their stress (22.0%) or beliefs about the possibility of proposed changes (8.5%). For example, a participant stated, "I feel like it would give me more control over what stresses me out so that I can eliminate the root factors" and "I feel like the stressors will always be present in my job, so I would rather change my interpretation."

Several participants seemed to use a *desired outcome* to guide their decision making, either citing a desire to promote a positive outcome (14.0%) or avoiding negative outcomes (8.5%). It follows that participants felt that a certain program was more likely to help them

achieve their desired outcome, although many didn't explicitly state this. For example, participants stated, "I would become more productive and increase my happiness" or "It will minimize unpleasant things." Participants also displayed a degree of *subjective liking* of a program that influenced their decision. For example, 11.0% of participants described a certain approach as appealing ("This just seemed to appeal to me more") and 3.0% described an interest in learning more about the material ("I felt the thesis of the program… would be potentially more interesting").

A number of *perceptions* guided decision making, with perceived helpfulness (9.1%) and perceived practicality of an intervention's approach (3.0%) being cited most often. For example, a participant stated, "I feel it is more naturally inclined to help" and "I believe the strategies contained in this program would be more realistically able to be implemented". Some participants also allowed their *envisioned use* of the intervention to guide their decision, citing a specific work environment (e.g., "It's an FDA-related field and it's so strict that you have to go along with the process;" 7.9%), a specific problem or outcome (e.g., "It would help with anxiety;" 3.0%), or a specific work situation or stressor (e.g., "Helps me in the situation I am in now;" 2.4%) that their chosen intervention seemed more suited to address.

Some participants described their chosen intervention in terms of *fit*, whether that be fit with their desires ("I want to interpret in a more healthy manner;" 6.1%), needs ("I need help to control my negative thoughts at work and to learn how to improve my work behavior;" 4.3%), or with their personality ("I think I would be better suited to a program that focuses more on workplace stressors;" 3.0%). Finally, participants used their *knowledge and experience* to guide decision-making. For example, some participants reported already developing the skill or

approach in the intervention that they did not choose (4.9%) in statements such as "I already feel fairly in control of my thoughts and behaviors at work."

CHAPTER IV. DISCUSSION

This study examined the effects of incorporating participant preference into treatment selection for an occupational stress management intervention. While participant or patient preference is gaining recognition as a method to improve treatment outcomes in other fields aiming to promote health, such as medical fields, clinical psychology and psychiatry, and health promotion, Occupational Health Psychology has not yet performed research on the potential utility of incorporating such an approach. A path analytic approach testing autonomy as a mediator of the relationship between preference and enhanced outcomes was supported for intention, adherence, and psychological health when autonomy was measured as a global construct with a single item sliding scale, but not when measured using the Chen et al. (2015).

Differences among these models may reflect the expected sensitivity of the slider scale to small changes in autonomy (although still too subtle to produce significant changes in the manipulation check, yet not too subtle to produce the indirect effect, which measures the product of both the experimental manipulation and the relationship between autonomy and the outcome variable) or could indicate some contamination or deficiency in one measure of autonomy. Closer examination of the items reveals that the Chen et al. (2015) items reference choice and decision-making, while the single item for global autonomy referenced life control. Perhaps the broad global construct is influenced by similar constructs such as empowerment that may better explain the relationship between preference and outcomes. Although the indirect effect was not supported for self-efficacy, preference did directly affect self-efficacy, such that those who were permitted to select their intervention reported higher levels of self-efficacy to manage work stress after the intervention.

The manipulation check revealed that the experimental manipulation did not lead to significant changes in autonomy among participants and did not provide insight into the most useful type of measure for autonomy. This could indicate that the experimental manipulation was too subtle to produce changes in autonomy. The mediation analysis tests the product of the preference-autonomy and autonomy-outcome paths, which could explain why the indirect effect is significant despite the subtle, insignificant changes in autonomy (Hayes, 2017). In other words, the overall indirect effect still indicates that a mediation exists despite the fact that the experimental manipulation did not produce significant changes in autonomy. High levels of internal validity were prioritized in the design of this study, such that every effort was made to offer participants interventions of comparable effectiveness and to describe them and deliver them in consistent ways. It is possible that such a high degree of control resulted in offering participants interventions that were "too comparable." That is, offering participants intervention options that are more different from one another could increase the stakes of having a choice. Additionally, although the instructions and stems of the autonomy measures were contextualized according to the time frame relevant to the hypotheses (e.g. "right now"), it is possible that further contextualizing instructions and item stems to represent the context of interest would increase the relevance of the items to the intended effect of the manipulation (e.g. "Right now, I feel that my decisions regarding how to manage my work stress reflect what I really want").

It may also be possible that those in the control group may systematically differ based on whether or not they received their preferred intervention by chance or were randomly assigned to the intervention that they would not have preferred. A post-hoc ANCOVA revealed that this distinction did not aid in interpreting patterns of means among the groups, such that postassignment autonomy did not differ among groups when measured using the Chen et al. (2015) scale, F(2, 316) = 0.34, p = 0.71, and when measured using the slider measure, F(2, 316) = 0.13, p = 0.88. Follow-up autonomy did not differ among groups when using the Chen et al. (2015) measure, F(2, 199) = 1.19, p = 0.31, or the slider measure. F(2, 199) = 1.58, p = 0.21.

Strengths, Limitations, and Future Research

This study has a number of strengths. First, the study utilized a rigorous methodological design. Randomized experiments are underutilized in Industrial and Organizational Psychology (Spector & Pindek, 2016). Only a randomized experiment will rule out alternative explanations and establish temporal precedence, conditions that must be met in order to make causal interpretations. Second, this study also used rigorous analytical methods. SEM is advantageous for analyzing experimental data, given that it can address the potential issue of unequal cell sizes and can be used to search for mediators that explain treatment effects (Russell et al., 1998). Despite the strengths of this approach, SEM is underutilized in experimental analyses because many researchers misunderstand requirements for distributional assumptions in structural models (MacCallum & Austin, 2000).

Third, this study also utilizes mixed methodology, and there have recently been calls for more research that combine the strengths of both quantitative and qualitative data (Schonfeld & Mazzola, 2012). Finally, this study furthers the practice of process evaluation of intervention data, an approach that brings valuable insights that strengthen intervention development and implementation (Linnan & Steckler, 2002).

The proposed study also has several limitations that should be noted. First, the intervention was delivered online to a sample of MTurk workers although many organizational interventions are delivered in an organizational context. However, delivering the intervention in a heterogenous sample, such as one recruited through MTurk, will ensure that observed effects

are not specific to a certain sample, organization, or occupation. Future research should also replicate any observed effects in homogenous, organizational samples to examine how preference could interact with other contextual variables, such as management or peer support and organizational climate. Baseline means for anxiety and depression may also indicate that range restriction may be of concern. Stated differently, it is possible that this intervention was delivered to a population that did not currently need help. Although intervening in a population before they exhibit strain is consistent with a primary prevention focus often present in OHP (Jex, Swanson, & Grubb, 2013), it may be possible that that a ceiling effect exists such that only those exhibiting a certain amount of strain at baseline will demonstrate improvement within the timeline of evaluation (Nielsen & Randall, 2013).

Additionally, although attentional check items were included to ensure that careless responders to survey questions were used, there was no attentional check to ensure that the participant watched the intervention. In future studies testing online interventions, a question regarding the content of the intervention could be used to estimate the level of attention participants devoted to intervention material and to potentially screen out responses that indicate a participant did not pay attention.

Second, a twenty-minute intervention can be considered low dose compared to most occupational stress management interventions, which can last weeks. However, two metaanalyses have found that analysis found that intervention dose (operationalized as weeks of duration, number of contact hours, and number of sessions) was not a significant moderator (van der Klink et al., 2001; Richardson & Rothstein, 2008), meaning that low dose stress management interventions can still produce desired treatment effects. Although published evaluations of brief interventions are not as common, the studies that do exist suggest that it is reasonable to expect effects to be maintained at a one-month follow-up from a brief instructional session, whether the instruction be related to stress management (e.g. McCraty, Barrios-Choplin, Rozman, Atkinson, & Watkins, 1998) or other health behaviors (e.g. Lippke, Corbet, Lange, Parschau, & Schwarzer, 2016). In fact, significant effects have been observed at a one-month follow-up from a planning intervention to increase physical activity lasting only five to ten minutes (Lippke, Ziegelmann, & Schwarzer, 2004). Future research can combine the literature on intervention dose and intervention preferences to test whether choosing a preferred intervention dose, rather than or in addition to preferred treatment approach, could also produce beneficial outcomes.

Third, the incorporation of participant preference is limited to areas in which multiple effective and efficacious interventions have been developed and tested. Offering multiple treatment options could be difficult in areas in which intervention research is still in its infancy. Offering multiple treatment approaches may be limited by the time and resources that an organization has available to dedicate to the intervention. Future work should address implementation challenges in practice. Fourth, the current study does not incorporate guidance from the practitioner in intervention selection. That is, some participants may not have a strong preference or may be unsure about the advantages and disadvantages of various approaches. It is possible that treatment effects could be further enhanced by incorporating participant preference while allowing an occupational health psychology practitioner to provide guidance or recommendations on the intervention approach that may best fit the participants needs. Future research in applied settings could examine the effects of providing practitioner guidance in participant decision-making.

Additionally, the model tested in the proposed study is limited in terms of its scope. That is, intervention work in practice has been described as "messy" in practice (e.g. Weitzman,

Mijanovich, Silver, & Brecher, 2009) and many environmental or contextual factors may explain some sort of variance in intervention outcomes. Inclusion of all possible mediators or moderators would not be practical, especially given that several accepted goodness-of-fit indices in structural equation modeling reward parsimony (Byrne, 2001). For example, it could be argued that other process variables that have been found to mediate treatment-outcome relationships (such as reach, adoption, implementation, and maintenance in the RE-AIM framework; Glasgow, Vogt, & Boles, 1999) have a place in this model.

Similarly, there are several variables that could moderate the relationship between treatment and outcomes. For instance, previous research has found that intervention engagement moderated the dose-response relationship in a dietary quality intervention, with those who reported medium intervention engagement achieving the greatest improvement in fruit and vegetable consumption (Lippke et al., 2016). One could also argue that moderators such as this should be present in the proposed model. However, given the value of parsimony in SEM (Weston & Gore, 2006) and the high number of potential mediators and moderators in intervention research (Craig et al., 2008), the present model is purposefully crafted to include the strongest predictor of posttest scores (pre-test levels of intervention target; for an example refer to large correlations between pretest and posttest scores and the percent variance accounted for in postintervention outcomes in Russell et al., 1998) and a hypothesized mediator based in theory, autonomy. The results of the qualitative data analysis, in which participants in the experimental group described the rationale that guided their intervention selection, could provide useful insight for future research testing other potential moderators. For example, consistency with beliefs, envisioned use, or complimentary skill building, could be tested as mediators in future research. Additionally, there could be some individual difference variables, such as health locus

of control or preference for decision-making, that could explain which types of participants are more likely to benefit from or appreciate opportunities for preference. The conclusions drawn from the results are also limited in the fact that SEM cannot be used to prove that the tested model is the "right" model. Although the hypothesized indirect mediation was tested against another plausible model, other untested models will also fit the data well. The conclusions drawn from this study are tentative in the fact that they are based one of the many plausible models.

The scope of the current study is also limited in that it does not address the role of organizational preference. Occupational health psychology interventions that are delivered in the workplace have typically have two goals: (1) to improve the well-being of the employee, and (2) to improve organizational outcomes through changes in employee attitudes or behaviors (e.g. increased productivity, reduced absenteeism; Adkins, 1999). Therefore, future research should address the role of organizational preference for treatment approaches. That is, should organizations play a role in deciding which interventions are offered or which intervention the individual selects?

The study may also be limited given that the two treatment approaches may have some conceptual components that overlap. For example, some skill development interventions are created using a cognitive-behavioral framework (e.g. de Jong & Emmelkamp, 2000). In the present study, the interventions are delivered in their purest forms with minimal overlap, but the distinction between interventions may become less clear in future research or in practice if multiple interventions with similar components or theoretical backgrounds are offered to participants. To test the effect of overlapping intervention elements, future studies could include a third experimental condition in which participants are offered a "blended intervention."

Implications

The proposed study has several implications for both academicians and practitioners. For academicians, the study sheds light on the practice of forming interventions based on theory, a practice that is recommended but often neglected (Michie & Prestwich, 2010). Results also suggest that research focusing on preference-focused behavioral intervention strategies would be beneficial for our field. More work is needed that addresses factors that influence participant decision-making, the existence of boundary conditions that may dictate when preference is beneficial, and other variables that may mediate this relationship. Results also indicate that traditional research paradigms that test a single intervention against the presence of a care-as-usual control group are not the end point in a line of research but should be positioned within a line of research that ultimately offers intervention options to participants. Researcher in clinical and health psychology have expanded upon traditional paradigms in a way that allows researchers to better account for preference while still incorporating best practices in research methodology (e.g., TenHave et al., 2003), and our field may benefit from increased utilization of these contemporary research paradigms.

In terms of implications for practitioners, the results indicate that providing employees with multiple intervention options and allowing them to choose their approach may enhance intervention outcomes. Organizations should favor practices that offer participants discretion, such as offering multiple evidence-based approaches to managing work stress, over practices that could be seen as paternalistic or incomprehensive. The results of the qualitative analysis may imply that a needs assessment prior to intervention efforts could aid in developing intervention alternatives that are consistent with their beliefs, compliment their existing knowledge or skills, or are compatible with the situations or context in which they envision using the material.

Conclusion

The present study used rigorous, underutilized methods and analyses to examine a research question that advances theoretical and practical knowledge regarding interventions. Results indicate that a global measure of autonomy indirectly mediates the relationship between preference and intention, adherence, and psychological health, but differences among models estimated with the two types of autonomy measures indicate that this relationship is influenced by the way in which autonomy is measured. These differences could reflect measure sensitivity or some contamination or deficiency in measurement.

This research establishes a foundation for future studies that investigate the benefits of preference-focused intervention strategies and other variables that may explain this relationship. As Occupational Health Psychology researchers join the conversation within health-promoting fields on participant preference, this study can serve as a starting point for explorations of other potential mediating mechanisms.

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APPENDIX A. MEASURES

- A. Screening Questionnaire
 - 1. Please select the option that best represents your current employment status.

Employed, working 1 - 29 hours per week.

Employed, working 30 or more hours per week.

Not employed, looking for work

Not employed, NOT looking for work

Retired

Disabled, not able to work

I consider being an MTurk Worker as my primary occupation.

2. Please enter your job title and a brief description of your three major job duties.

3. Do you anticipate any major job changes over the next month?

Yes

- No
- 4. Please select the option that best describes the industry that you currently work in.
- Accommodation and Food Services
- Administrative and Support Services

Agriculture, Forestry, Fishing, and Hunting

Arts, Entertainment, and Recreation

Construction

Educational Services

Finance and Insurance

Government

Health Care and Social Assistance

Information

Management of Companies and Enterprises

Manufacturing

Mining, Quarrying, and Oil and Gas Extraction

Other Services (except Public Administration

Professional, Scientific, and Technical Services

Real Estate and Rental and Leasing

Retail Trade

Self-employed

Transportation and Warehousing

Utilities

Wholesale Trade

 Please select your occupation from the list provided. If you do not see your occupation, please select the closest match.

[Participants will only be presented with options that correspond to the industry that they selected in the previous question]

B. Autonomy subscale of Basic Psychological Need Satisfaction and Frustration Scale –
 General Measure (Chen et al., 2015)

Please think about your experience right now. Indicate how true each statement is of how you feel right now.

1. Right now, I feel a sense of choice and freedom in the things I take on. (AS)

Right now, most of the things I have done, I feel like "I have to." (AF)
 Right now, I feel that my decisions reflect what I really want. (AS)

- 4. Right now, I feel forced to do things that I wouldn't choose to do. (AF)
- 5. Right now, I feel my choices express who I really am. (AS)
- 6. Right now, I feel pressured to do certain things. (AF)
- 7. Right now, I am doing what really interests me. (AS)
- 8. Right now, my activities feel like obligations. (AF)

Not true at all = 1

Somewhat untrue = 2

Neither true nor untrue = 3

Somewhat true = 4

Completely true = 5

AS = Autonomy Satisfaction Subscale

AF = Autonomy Frustration Subscale

Please drag and drop the slider bar to indicate the degree to which this statement is true of you.

All in all, I feel as if I have control over my life.

Not true at all = 1

Completely true = 100

C. Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995).

Please read each statement and indicate how much the statement applied to you over the past month. There are no right or wrong answers. Do not spend too much time on any one statement.

- 1. I found it hard to wind down. (S)
- 2. I was aware of dryness in my mouth. (A)
- 3. I couldn't seem to experience any positive feeling at all. (D)
- 4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion). (A)
- 5. I found it difficult to work up the initiative to do things. (D)
- 6. I tended to over-react to situations. (S)
- 7. I experienced trembling (e.g. in the hands). (A)
- 8. I felt that I was using a lot of nervous energy. (S)
- 9. I was worried about situations in which I might panic and make a fool of myself. (A)
- 10. I felt that I had nothing to look forward to. (D)
- 11. I found myself getting agitated. (S)
- 12. I found difficult to relax. (S)
- 13. I felt down-hearted and blue. (D)
- 14. I was intolerant of anything that kept me from getting on with what I was doing. (S)
- 15. I felt I was close to panic. (A)
- 16. I was unable to become enthusiastic about anything. (D)
- 17. I felt I wasn't worth much as a person. (D)
- 18. I felt that I was rather touchy. (S)
- 19. I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat). (A)
- 20. I felt scared without any good reason. (A)
- 21. I felt that life was meaningless. (D)

Never = 1 Almost never = 2 Sometimes = 3 Fairly often – 4 Very often = 5 D = Depression subscale A = Anxiety subscale S = Stress Subscale

D. Adherence

How often was each of the following statements true for you during the past four weeks?

- 1. I had a hard time doing what the job stress program suggested I do*
- 2. I followed the job stress program's suggestions exactly ...
- 3. I was unable to do what was necessary to follow the job stress program's plans ...*
- 4. I found it was easy to do the things the job stress program suggested I do...
- 5. Generally speaking, how often during the past four weeks were you able to do what the job stress program told you?

None of the time = 1 Some of the time = 2 A good bit of the time = 3 Most of the time = 4 All of the time = 5

*Represent items that are reverse-coded.

E. Intention (created based on technical report by Ajzen, 2006)

- 1. I intend to review my handouts and/or outline over the next four weeks.
- 2. I intend to complete my practice worksheet.
- 3. I intend to complete my tracking worksheet over the next four weeks.
- 4. I intend to implement the concepts discussed in the program in my work life over the next four weeks.

Very unlikely = 1

Unlikely = 2

Neither unlikely nor likely = 3

Likely = 4

Very likely = 5

F. Self-Efficacy

Please rate how true each statement is of you regarding your ability to manage work stress.

1. If someone poses a challenge, I can find means and ways to manage my work stress.

2. It is easy for me to stick to my aims and accomplish my goals related to management of work stress.

3. I am confident that I could deal efficiently with unexpected events related to work stress management.

4. Thanks to my resourcefulness, I know how to handle unforeseen situations related to the management of work stress.

5. I can remain calm when facing difficulties managing my work stress because I can rely on my coping abilities. 6. No matter what comes my way related to work stress management, I'm usually able to handle it.

Not at all true = 1

Somewhat untrue = *2*

Neither true nor untrue = *3*

Somewhat true = 4

Completely true = 5

- G. Demographic Measure
 - 1. What is your gender?

Male

Female

Other

- 2. What is your age?
- 3. How long have you worked in your current organization?

Years _____

Months _____

4. What is your marital status?

Cohabiting (not married)

Long-term relationship (not married or cohabiting)

Married

Single

Divorced
Widowed

Other

5. What is your highest level of education?

Some high school

High school (or GED)

Some college, but no degree

Associate's degree

Bachelor's degree

Master's degree

Beyond master's degree

6. What is your race? (Select all that apply)

American Indian or Alaskan native

Asian/Pacific Islander

Black/African American

Caucasian/White

Hispanic/Latino

Other

7. What is your approximate total yearly household income?

\$0 - \$24,999 \$25,000 - \$49,000 \$50,000 - \$74,999 \$75,000 - \$99,999 \$100,000 - \$124,999 \$125,000 - \$149,999 \$150,000 - \$174,999 \$175,000 - \$199,999 \$200,000 and up

H. Follow-up Questions

[For control group only, following random assignment into intervention] Which program would you have chosen if you had been given a choice?

Ideal Work Life

Optimal Work Life

[For experimental group participants only, following selection of intervention] Please use the space below to describe why you chose this program.

APPENDIX B. IRB APPROVAL LETTER

BGSU.

BOWLING GREEN STATE UNIVERSITY

Office of Research Compliance

DATE:	December 7, 2017
TO:	Kristin Horan
FROM:	Bowling Green State University Institutional Review Board
PROJECT TITLE:	[1152144-2] Participant Preference in Interventions in Occupational Health Psychology
SUBMISSION TYPE:	Revision
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	December 7, 2017
REVIEW CATEGORY:	Exemption category # 2

Thank you for your submission of Revision materials for this project. The Bowling Green State University Institutional Review Board has determined this project is exempt from IRB review according to federal regulations AND that the proposed research has met the principles outlined in the Belmont Report. You may now begin the research activities.

Reviewer Comment: HIT is introduced but not defined in the consent form and recruitment text. The acronym should be written out the first time it is presented. If Human Intelligence Task seems too offputting, the Board suggests removing the acronym and say that participants will complete a survey and participate in a stress management module in the first session and a second survey in the follow-up session. This is an accurate description that does not have a negative connotation.

Note that changes cannot be made to exempt research because of the possibility that proposed changes may change the research in such a way that it no longer meets the criteria for exemption. If you want to make changes to this project, contact the Office of Research Compliance for guidance.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact the Office of Research Compliance at 419-372-7716 or orc@bgsu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Bowling Green State University Institutional Review Board's records.

APPENDIX C. CONSENT FORM



ROWLING GREEN STATE UNIVERSITY Department of Psychology

Researchers at Bowling Green State University are conducting a survey about programs for the management of work stress. Your participation in this HIT would involve completing one 30-minute session (consisting of survey questions and a stress management module) and completing one 5-minute follow-up session (consisting of survey questions) one month from now. All in all, your participation will take 35 minutes. You will be compensated \$3.50 after completing the first session and \$0.50 after completing the second session one month from now.

To verify your eligibility, a short series of eligibility questions will be presented at the start of the HIT. If you don't meet the eligibility requirements, we apologize for the inconvenience, and ask that you return the HIT so that others can participate.

ELIGIBILITY. You must be at least 18 years old to participate.

LENGTH. People typically take 30 minutes to complete the first session and 5 minutes to complete the follow-up session.

PURPOSE. The purpose of this study is to better understand factors that influence the effectiveness of job stress management programs.

GENERAL BENEFITS. Your participation will benefit science by helping the research community learn more about job stress management programs.

RISKS. The risk of participation is no greater than that experienced in everyday life.

DIRECT BENEFIT. You will be paid \$4 in total for participating (\$3.50 after the first survey and \$.50 after the follow-up survey). You will also receive free content related to the management of work stress as part of your participation.

ANONYMITY. All of your responses will be completely anonymous. Only the study researcher will have access to your responses and your identity will not be connected to your responses.

SECURITY. Please be aware that (a) no form of communication (e.g. email, telephone, or regular mail) is 100% secure, (b) employers or others may be able to track the information you type into a computer, (c) it is best to clear the browser cache and page history (see your browser instructions) after you complete the study. Data will be stored on a password secured computer that only the investigator has access to.

VOLUNTARINESS. Your participation in the study is voluntary and you are free to withdraw at any time without penalty. Deciding to participate or not will not impact any relationship you may have with BGSU.

CONTACTS. You should direct any questions or concerns about your rights as a research participant to the Chair of the Institutional Review Board (Phone: 419-372-7716, Email: orc@bgsu.edu). If you have questions about the study, you may contact Kristin Horan (404-308-7764; khoran@bgsu.edu) or Dr. Clare Barratt (419-372-4250; cbarrat@bgsu.edu).

By clicking on the continue button below, you are consenting to participate in this research.

BGSU IRB - APPROVED FOR USE IRBNet ID # 1152144 EFFECTIVE 12/07/2017

206 Psychology Building Bowling Green, Ohio 43403-0232

419-372-2301 fax 419-372-6013 www.bgsu.edu/departments/psych

APPENDIX D. PROGRAM DESCRIPTIONS

Ideal Work Life Program

We are pleased to present **Ideal Work Life**, a program grounded in a strong foundation of research in Clinical Psychology and Organizational Psychology. This program is built on the idea that many problematic aspects of workplace stress are <u>based on our interpretations of our</u> <u>environment</u>. Through this program, you'll learn how to <u>identify</u> unhelpful interpretations, <u>replace</u> them, and <u>implement well-reasoned behaviors</u> that move you closer to your ideal work life.

This program puts you in control of your thoughts and actions at work!



Engaging videos with educational content created by experts in managing work stress

What you'll get.....



Guided quizzes to help you apply educational content to your own work life



Handouts, worksheets, and practice activities that will help you implement the concepts into your work life

Optimal Work Life Program

We are pleased to present **Optimal Work Life**, a program grounded in a strong foundation of research in Clinical Psychology and Organizational Psychology. This program is built on the idea that many problematic aspects of workplace stress are <u>based on the way our behaviors interact with our environment</u>. Through this program, you'll learn how to implement behaviors that <u>minimize or reduce</u> the presence of workplace stressors, moving you closer to your optimal work life.

This program puts you in control of your work environment!

What you'll get.....



Engaging videos with educational content created by experts in managing work stress

?

Guided quizzes to help you apply educational content to your own work life



Handouts, worksheets, and practice activities that will help you implement the concepts into your work life

APPENDIX E. LINKS TO INTERVENTION VIDEOS

Ideal Work Life Intervention Video

Optimal Work Life Intervention Video

APPENDIX F. IDEAL WORK LIFE TRANSCRIPT

Slide 1: Introduction

Welcome to the Ideal Work Life Program! My name is Kristin Horan. I am a researcher that studies Occupational Health Psychology at Bowling Green State University and I'm the creator of this program. The goal of this program is to give you tactics that will help you learn to better manage stress related to work and live your ideal work life.

Slide 2: Conceptual Model of Stress

First, it will be helpful to go over our model of stress – meaning what we believe to be the causes and consequences of stress.

Slide 3: Meaning of Stress

What comes to mind when I say the word stress?

Slide 4: Stressors

For some people, they think of things that stress them out – things like a difficult commute, a rude coworker, or a demanding deadline. We call these "stressors."

Slide 5: Appraisal

Other people think of how they interpret the stressor. It's not necessarily a deadline that causes them distress, but rather the evaluation that the deadline will be very difficult to meet in combination with all of their other demands. We call thoughts like this an "appraisal."

Slide Six: Response

Some people think of stress as their reaction. A reaction could be in our thoughts (cognitive), in how we behave (behavioral), or in our body (physical). For example, when people are stressed they could think "this job is too difficult for me to handle," lash out by being rude to a client, or feel an increase in their heart rate. We call these reactions a "response."

Slide 7: The Stress Process

The question remains, what is stress? The answer is that it's all three. Stressors, appraisals, and responses are all part of what researchers call "the stress process" and each part of the process feeds off of each other. When someone perceives something in their environment, they interpret it as stressful, and they respond in their body, in their thoughts, or in their actions. Our program is going to focus on two pieces of this model: the appraisal and the response. We are going to give you tools that help you interpret stress in a different way and respond differently to stress.

Slide 8: Program Rationale

This program is based on an approach that has been successful in improving quality of life for a number of conditions and settings, including stress in the workplace. This approach is based on research that finds that humans commonly interpret situations in a way that is inconsistent with reality. These faulty interpretations are called "cognitive distortions." In the presence of these cognitive distortions, we can behave in a way that makes sense for our interpretation of the situation. The only problem is that our behavior doesn't make sense for the reality of the situation, and can actually cost us something in the long run. Let's break it down with an example.

Slide 9: Example

This is Samantha, an employee in a public relations firm. Her boss asks her to take the lead on the next client presentation. Most people would get a little nervous in response to this request, but Samantha gets very nervous - the type of nervous that her body interprets as danger. Based on the interpretation of danger, Samantha's body and mind tell her to avoid this situation and she tells her boss that she doesn't feel comfortable taking on that responsibility. The situation that her body and mind interpreted as dangerous is gone, and she feels better. This would be a successful strategy if this was actually a dangerous situation, but really it is just a faulty interpretation, or a cognitive distortion. Although Samantha feels better, she may miss out on a good performance review, a promotion in the future, or the chance to grow her skill set. Her faulty cognition encouraged her to behave in a way that actually hurt in the long run.

Slide 10: Identify and Replace

Have you ever found yourself in a similar situation at work? Most of us have. The good news is that there are tools that can help you identify cognitive distortions and the behaviors that they encourage and replace them with something that is healthier and more in line with your ideal work life!

Slide 11: Learning Cognitive Distortions

Let's start by learning the most common types of cognitive distortions. These are sometimes called "mind traps" or "thought ruts" because it's so hard to "snap out of it" when you start thinking in this way.

Slide 12: Catastrophizing

The first is catastrophizing – we think that the worst possible outcome is the only possible outcome. Going back to our example, Samantha could imagine passing out at the client presentation as the only possible outcome, when it is much more likely that her nerves would only cause her to stumble over her words a few times.

Slide 13: Should's

The second is "should's" – we create strict rules for how we should be, others should be, and the world should be. Samantha could be thinking "I should be able to get through it without saying a single "umm," when in reality saying "umm" once or twice would not diminish the quality of her presentation.

Slide 14: All or Nothing Thinking

The third is all or nothing thinking - we look at the world in strict black and white, when the reality is closer to a shade of grey. Samantha might say to herself "if it can't be perfect, then I'd rather not do it at all."

Slide 15: Generalizing

We also have generalizing – we interpret events as patterns, rather than as singular events. It's common to express these with words like "always" or "never." Samantha could be thinking "I always screw up" or "my boss always asks me to do things that I'm not prepared to do."

Slide 16: Filtering and magnifying

Next, we have filtering and magnifying – we over-focus on the negative and forget to focus on the positive. Let's say that Samantha's nerves are based on a presentation that she gave in the past and she didn't think that it went well. It is likely that she would remember someone yawning in her presentation and forget to remember the audience members that politely listened.

Slide 17: Disqualifying

The next type of cognitive distortion is disqualifying – even when we can see the positive, we come up with a reason that it doesn't matter. Let's say in Samantha's past presentation, she had seen someone giving her a smile, she could dismiss it as them feeling sorry for her and "just being nice."

Slide 18: Emotional Reasoning

Emotional reasoning is another type of cognitive distortion – We think that because we feel a certain way, it must be the truth. Reality may actually be different from the way we feel. Samantha may think that because she felt embarrassed in her last presentation, she must have looked like a fool.

Slide 19: Jumping to Conclusions

The final type of cognitive distortion is jumping to conclusions. In this type we either mind read or predict the future. In mind-reading, we incorrectly assume that we know what others are thinking. Let's say that in Samantha's past presentation, she noticed an audience member giving her a mean look. She assumed "they think I'm doing a bad job," when in reality, they could have been remembering an unpleasant experience from that morning, like being cut off in traffic. In predicting the future, we think that our past experiences automatically mean that our current experience will turn out a certain way. Samantha may think that because she viewed her past presentation as a failure, she is automatically doomed to fail in the current request, when there are a number of ways this experience could be different than her past.

Slide 20: Step by Step Approach

Now that you know about these common cognitive distortions, what can you do change them? We'd like to tell you about our step-by-step approach. The first two steps are based on the idea that these cognitive distortions are sneaky. They tend to pop up and control our behavior without us even noticing.

Slide 21: SCRRP

The first step is to stop what you are doing. This will help you avoid going through a stressful situation on autopilot." The second step is the catch the negative thought. The third step is to replace the thought. The idea behind this step is that it will be easier to behave in a helpful way if you are guided by more positive or realistic thoughts. The fourth step is to relax. Do something to counteract your body's reaction to stress, like taking a deep breath or listen to your favorite relaxing song. It will be easier to behave in a helpful way if your body isn't in "danger-mode." The final step is to problem solve so that you can behave in a helpful way. By helpful we mean that the behavior helps you live a healthy, fulfilled life. Problem solving can be complex, so we will talk about this more in a bit. To help you remember the steps, think SCRRP – Stop, Catch, Replace, Relax, and Problem Solve.

Slide 22: SCRR Example

Let's go back to our example with Samantha and see how the SCRR steps would work. Samantha's boss asks her to give the next client presentation and she feels her nerves rising to unhelpful level. She stops. She catches the unhelpful thought connected to the nerves – "I will deliver a terrible presentation and I will get fired." She recognizes that this thought contains a cognitive distortion – jumping to conclusions by predicting the future. She replaces the thought with a more helpful one – "That's just one possible outcome, and it is unlikely. Even if I give a bad presentation, it is unlikely that my boss would discount my many years of good work here." Then she would relax by taking a few deep breaths.

Slide 23: Problem Solve

Let's take it a step further – let's learn how to complete the final step and problem solve. The problem-solving step will be broken up into its own sub-steps. First, you identify the problem. Then you select a goal. You generate a list of alternatives, or different ways that you can behave in this situation. Then you weigh the consequences of each of those alternatives. Then you make a decision by choosing one of the alternatives. The next step is very important. You implement the decision – you actually perform the behavior. Finally, you evaluate the consequences of the behavior.

Slide 24: Problem Solve Example

To problem solve, Samantha would identify the problem. She is nervous about her boss asking her to give a presentation. She would identify the goal. She decides that her goal in this situation is to show her boss that she is dependable and capable. She generates a list of alternatives - to politely turn down the opportunity and recommend an alternative team member, to accept despite being nervous, or to accept and request that the boss schedule a practice presentation in front of her other coworkers. In the next step, she will evaluate the consequences of each of those alternatives – in the first, her boss will likely be disappointed that Samantha passed up on the opportunity and the alternative team member may not be as familiar with the account as Samantha. In the second, the boss will probably be pleased that Samantha accommodated her request. Samantha will probably perform adequately in the presentation. In the last alternative, the boss will be pleased that she accommodated the request and Samantha will probably perform above average given that her nerves typically decrease with practice. She decides to go with the third option and implements the decision by making the request to her boss to schedule a practice session. After implementing the decision, she would evaluate her decision based on the presentation, her boss's response, her clients' reactions, and how she feels about her performance.

Slide 25: Conclusion

Now that you've been educated on the Ideal Work Life Approach to managing work stress, let's talk about the next four weeks. We will follow-up with you in one month, and we would like for you to focus on implementing this approach in your work life until then. Remember, I said this approach challenges our automatic ways of responding to stress, and that takes practice. We've included some resources to help you practice. We encourage you to use them on a weekly basis. Thank you for being a part of the Ideal Work Life Program!

APPENDIX G. OPTIMAL WORK LIFE TRANSCRIPT

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The question remains, what is stress? The answer is that all three. Stressors, appraisals, and responses are all part of what researchers call "the stress process" and each part of the process feeds off of each other. When someone perceives something in their environment, they interpret it as stressful, and they respond in their body, in their thoughts, or in their actions. Our program is going to focus on one piece of this model: the stressors. We are going to give you tools that help you minimize the chances of encountering stressors in the workplace.

Slide 8: Program Rationale

This program is based on an approach that has been successful in improving quality of life for a number of conditions and settings, including stress in the workplace. This approach is based on the idea that there are a number of stressors that we frequently encounter in the workplace that to some degree are influenced by our behaviors. By learning to behave in certain ways, we can minimize or eliminate the stressors. Let's talk about a few common stressors in the workplace.

Slide 9: Example

This is Samantha, an employee in a public relations firm. Like many employees, she reports a few things that stress her out at her job. She has a difficult time communicating with her coworkers. Specifically, her coworkers ask her to do things that aren't her job and she has a difficult time saying no. She also finds it difficult to ask for help when she needs it. She has a high workload that is difficult for her to keep up with.

Slide 10: Communication Example

According to our approach, Samantha's relationship with her work environment is not a one-way street. What we mean is the work environment influences Samantha and she also influences her work environment. Think about it this way. When Samantha's coworker asks her to do something that isn't her job and Samantha says yes, what happens? The coworker learns that this is an effective way to reduce their own workload, so they are more likely to keep doing this in the future (even if they don't realize they are doing this).

Slide 11: Workload Example

In another example, Samantha is approaching a complex, overwhelming project. She has a difficult time deciding where to start. She half-heartedly commits to attempting the first task, but then starts thinking about her overwhelming to do list. She constantly switches her focus. This puts her behind in her progress on the project, which makes her even more overwhelmed. In both of these situations, the situation affected Samantha, but her behavior also affected the situation. Note that this approach is not about blaming Samantha. It's about helping Samantha to learn behaviors that help her manage her environment more effectively.

Slide 12: Manage your Work Environment

Have you ever found yourself in a similar situation at work? Most of us have! The good news is that there are tools that can help you identify behaviors to help you effectively manage your work environment, meaning that your behaviors are healthier and more in line with your optimal work life!

Slide 13: Passive Communication

Let's start by talking about a source of stress in many workplaces - communication. Communication refers to the exchange of information between two or more parties, and in the work-place it takes many forms. We will teach you about three types of communication. The first type is passive communication. When you are passively communicating, you might be thinking "I can't" or "I should." You might be feeling anxiety or other negative emotions and behaving in an apologetic way.

Slide 14: Assertive Communication

The next type of communication is assertive communication. When communicating assertively, you might be thinking something like "I am going to get what I want, but being as flexible as needed." You might be feeling calm or appropriate negative feelings and behaving with persistence.

Slide 15: Aggressive Communication

The final type of communication is aggressive communication. When communicating with this style, you might be thinking "I must get what I want." You might be feeling anger or other negative emotions and exhibiting behaviors like shouting or name calling.

Slide 16: Optimal Communication

We are going to focus on two forms of communication that people typically have a hard time with in a work setting – making a request and refusing a request. Both of these forms of communication tend to be more successful when you use assertive communication.

Slide 17: Passive Communication Example

Let's see how these types of communication differ with an example. Samantha's coworker, Mark, frequently makes unreasonable requests of her at work. Specifically, he gives her one day's notice on projects that should require at least three work days. In response to his most recent request, Samantha tries passive communication. She says "I'm so sorry, but I can't complete your request with such short notice." This sends the message that her feelings are not appropriate and even conveys that it is due to her own shortcoming that she can't meet the short deadline. Or she could day "Sure, I'll do that for you." This sends the message that one day's notice is appropriate and Mark's habits are reinforced.

Slide 18: Aggressive Communication Example

Let's say that Samantha responds aggressively to Mark's request. She says "You don't value my time. This is completely unreasonable!). Her aggressive response is likely to encourage aggression from Mark, and the conversation may escalate and hurt their working relationship.

Slide 19: Assertive Communication Example

Let's say she tries assertive communication. She says "I feel as if you don't value my time when continue to give me short notice for requests like this because I have to rearrange other important things in my workday. I won't be able to meet the deadline you requested, but I can move your request to the top of my priority list once I finish my work on the grocery chain account. In the

future, we can avoid this situation if you give me at least three workdays notice for a request like this."

Slide 20: Example Breakdown

Samantha's response contains both a refusal and a request, both of which are stated assertively. She takes ownership of her feelings, provides a compromise, and most importantly, does not reinforce Mark's habits by giving in.

Slide 21: Recommendations for Assertive Communication

Here are our recommendations for communicating assertively:

- Express positive feelings and accept positive statements from other (s).
- State what you prefer or feel.
- Respond to another's infringement by setting limits or refusing.
- Refuse requests without feeling guilty or apologizing.
- Look the other person in the eye.
- Don't act apologetic.
- Don't smile or giggle if the content is serious.
- It's okay to let your feelings show.
- Use "I" statements that include feelings, observations, wants, thoughts, or intentions.

Slide 22: Negative Responses to Assertive Communication

If someone doesn't respond to your assertive communication well, maintain calm assertiveness. Do not switch to aggressive or passive communication. It can help to reflect the other person's feelings or gathering information about their criticisms.

Slide 23: Workload

Next, we will talk about tactics for successfully managing your workload. In this program, workload focuses on the amount time, product, or any other metric of performance that is expected of you at work. Workload is kind of like a balancing act, some people are happy with their workload, others don't have enough to keep them happy at work (underload), and some feel that they have too much to do (overload). Which one sounds like your typical workload?

Slide 24: Recommendations for both types of imbalanced workload

We have a few suggestions for managing your workload. The first is to keep track of the things that contribute to your workload – the causes or contributors. For some people, they may notice that their underload tends to be caused by lack of customers, lack of work that they find interesting, or tasks that they tend to complete easily and with little effort. Other people may notice that their high overload tends to be caused by a boss with high expectations, the need to learn new technology to complete tasks, or always being accessible through mobile technology.

Slide 25: Recommendations for both types of imbalanced workload (continued)

Once you've got your list of causes of underload or overload in your work environment, assess which factors are in your control and which factors are out of your control. Sometimes we tend to over-focus on the things that are out of our control, and we waste so much time and effort focusing on these things. Instead, focus on the things that are in your control. Develop a list of strategies, implement them, and focus on the results. Don't hang on to a strategy if it isn't helping you. Some example strategies include setting reasonable deadlines when you have control over deadlines, schedule time to account for interruptions, saying no to unimportant tasks, asking for help, finding resources to help you complete jobs more efficiently, and working on high importance tasks when you tend to have the most energy in the day.

Slide 26: Recommendations for both types of imbalanced workload (continued)

We also recommend making a list of time-wasters to watch out for. Common time-wasters include unimportant meetings, wasting time on the web, or spending time perfecting small details that are unimportant to the overall success of a project. These lists of workload management strategies and time-wasters will be more effective if they are relevant to you, so take these lists as a starting point and add to them.

Slide 27: Specific Recommendations

Next, we will provide some general strategies for underload and overload. In instances of underload, we recommend pursuing challenging tasks and finding resources. In instances of overload, we recommend prioritizing and restructuring activities in light of your priorities.

Slide 28: Recommendations for Underload

Let's talk about pursuing challenges and finding resources first. When you are feeling underloaded, your job is to create some meaningful challenges for yourself. Talk to your supervisor about ways in which your job tasks could be expanded to challenge you. The next step is to identify resources that can help you accomplish these challenges. Resources can be many things – support from your boss or your coworkers, access to supplies, equipment, or technology, access to training, or anything that helps you achieve desired results on a project. Ask for your supervisor's help in securing resources. If whatever you request is not a possibility, then proactively seek out what you need.

Slide 29: Recommendations for Overload

Next, let's talk about prioritization. Employees with a high workload typically follow what we call the 80/20 rule – 80% of their major accomplishments are completed in 20 percent of time spent during the day. Their day seems like nothing but a long list of unimportant tasks, leaving little time for the projects that actually matter to them. We want you to start thinking about your tasks in terms of what matters for your career. When your to-do list gets long, dedicate time to important activities that provide value to your career and are urgent. These important tasks have a tendency to be large and overwhelming, which is why we feel the need to complete all of our

small unimportant tasks before we even approach them. However, get in the habit of chipping away at your important tasks in small, manageable pieces. Break these important tasks down into smaller sub-tasks that can reasonably be accomplished in a day.

Slide 30: Conclusion

Now that you've been educated on the Optimal Work Life Approach to managing work stress, let's talk about the next four weeks. We will follow-up with you in one-month, we would like for you to focus on implementing this approach in your work life until then. Remember, I said this approach challenges our behaviors that have been present in our work environment for a long time, and that takes practice. We've included some resources to help you practice. We encourage you to use these resources on a weekly basis. Thank you for being a part of the Optimal Work Life Program!

APPENDIX H. IDEAL WORK LIFE REFLECTION QUESTIONS

Ideal Work Life Reflection Questions and Feedback

Below you will find the questions that were presented to you in the guided reflection portion of the Ideal Work Life Program. The question is in black. Expert feedback on each question is presented below each question in bold blue font. Keep in mind that there are many ways you could answer each question, and reflection that is personally meaningful to you and your work life will always be the most valuable. The expert feedback is meant to provide guidance and assistance if you are having difficulty answering any questions.

a. Please describe a stressful situation that you frequently encounter at work or one that you recently encountered.

A stressful situation is one that either causes you to have a negative interpretation of the situation (e.g. "I'll never be able to finish this report by Friday because I've got too much work to on my other account") or have a mental, physical, or behavioral reaction (e.g. "This job is too much for me," clenched jaw or headache, or avoiding the situation). You'll get more out of this reflection if you list something that really gets in the way of you having a fulfilling work life, not something that is a minor hassle.

b. How could you implement the Stop step?

This can be a difficult step to perform, because your body and mind can go on "autopilot" in stressful situations. Some people implement the Stop step by finding ways to notice when they are stressed (e.g. "If I feel my breathing getting shallow, I know I'm stressed, and I need to stop."). Others can implement this step by taking a step back from the situation (i.e. briefly stopping what they are doing).

c. How could you implement the Catch step? What unhelpful thought is usually tied to this situation?

Implementing the Catch step involves knowledge of the cognitive distortions in general and knowledge of your own patterns of thinking. Some people may find that writing down their feelings or talking with a friend can help them catch the unhelpful thought. Others may prefer to go through the list of distortions and see which one fits.

One thing to note is that sometimes in stressful situations, your interpretation may be consistent with reality and is not a cognitive distortion. You should approach the Catch step a little differently. Let's say Samantha's employer is ignoring safety regulations. If she determines that the thought "this is an unsafe work environment" is not a cognitive distortion, then going through the rest of the SCRPP process with this thought in mind will not move her closer to her healthier, fulfilled work life. In this case, Samantha could pick a different thought connected to this situation, such as "No one in my position can do anything about this" and go through the SCRRP process. d. How could you implement the Replace step? What is a more helpful thought that could replace the unhelpful one?

The Replace step depends on the cognitive distortion that you identified in the previous step. You'll want to focus on *how* it is unhelpful or unrealistic, the helpful thought should address that. For example, if I'm placing unreasonable expectations on myself through all-or-nothing thinking, the replacement thought could focus on the ways I can still be a great employee without being perfect. Just like the last step, sometimes writing down your feelings or talking with others can help you sort through the potential replacement thoughts and find one that best fits the situation. If you work through the situation on your own, try talking to yourself as if you were giving advice to someone that you care about or love very much (e.g. your children).

e. How could you implement the Relax step? What could you do to combat the effects of stress in your body?

The Relax step will depend on what situation you are in at the moment. If you can't excuse yourself from the situation at the moment, then focus on strategies that can be completed anywhere, in a small amount of time, with few resources (e.g. counting down from 10, taking deep breaths, repeating a relaxing phrase to yourself). If the situation is more flexible, however, you could also be more flexible with your relaxation techniques. You could take a break and go for a short walk around the building, look outside your office window, or listen to your favorite relaxing song, just to name a few suggestions. Just keep in mind that some techniques, while they may promote relaxation, might not be in line with a healthier, more fulfilled life. A perfect example is alcohol use. We all know that a glass of wine can help us unwind after a long workday, yet consistently turning to alcohol to decrease your body's reaction to stress can start a very dangerous pattern. Whatever relaxation technique you choose, make sure it is in line with your goals and actually helping you in the long run.

f. Now let's go through the Problem-Solving step. What is the problem? What is your goal? Generate a list of alternatives. What are the possible consequences of each of those alternatives? Which of these do you choose? How will you implement the decision? How will you evaluate the results of the decision?

A strong Problem Identification response will feature some description of why you are stressed in the first place. The Goal response should feature some sort of broad statement about what you would like to get out of the situation. Remember the example of Samantha's presentation? Her goal could be to avoid embarrassment, to please her boss and the client, or to make herself proud. All are valid, but just keep in mind that some goals will be more in line with your healthy, fulfilled work life in the long run than others. When generating a list of alternatives, your goal is to be both thorough and realistic. When generating a list of consequences, your goal is also to be realistic, meaning that it doesn't exaggerate unlikely possibilities. Talking to others about potential alternatives and their consequences can be helpful. The Decision-making response means that you choose the alternative with the consequence that gets you closest to the goal that you identified. A strong Implementation response will feature some sort of behavior that can be observed or measured. Your Evaluation response should feature a list of the potential sources of evidence that you'll use to assess your performance in the situation. This step is important because many people implement and never evaluate, but assessing whether or not your behavior actually moved you closer to your goal will make you a stronger decision-maker in the next stressful situation.

APPENDIX I. OPTIMAL WORK LIFE REFLECTION QUESTIONS

Optimal Work Life Reflection Questions with Feedback

Below you will find the questions that were presented to you in the guided reflection portion of the Optimal Work Life Program. The question is in black. Expert feedback on each question is presented below each question in bold blue font. Keep in mind that there are many ways you could answer each question, and reflection that is personally meaningful to you and your work life will always be the most valuable. The expert feedback is meant to provide guidance and assistance if you are having difficulty answering any questions.

Questions for Communication:

1. List situations in your work life where you feel assertive communication would be useful. Although the video only used examples of email communication, you can describe situations with other types of communication (i.e. phone, in-person).

Ideally, you would list situations that involve another person or group of people in your work life. They do not have to be co-workers. For example, you could mention rude customers or demanding clients. When possible, being specific will help you get more value out of this reflection. For example, listing "talking to my supervisor about a promotion" would help you get more out of this reflection than "talking to people at work."

2. For each of the situations, list a passive, aggressive, and assertive response.

The features of a passive response would be giving up in some way or not standing up for your own desires or preferences in the situation. The features of an aggressive response would be demanding that your preferences be met. Finally, the features of an assertive response would be calmly advocating for your desires or preferences, making compromises when needed. Let's stick with the example of asking your supervisor for a promotion. Some sample responses might look like:

<u>Passive:</u> Not asking at all; or "I'm so sorry to bring this up, but I would like a promotion."

<u>Aggressive:</u> "Devin got a promotion and he has been here for less time than me. Give me a promotion or I'm putting in my notice."

<u>Assertive:</u> "I've been at this company for a while and I'm interested on exploring other ways that I can take on new challenges in this company. I've demonstrated that I'm ready for a leadership role and I'd like to talk about opportunities for advancement."

3. What do you think the outcome of each would be?

This can be a difficult step because it is hard to predict others' responses. An ideal response here would be realistic, meaning that it doesn't exaggerate unlikely possibilities. For example, very few organizations would terminate an employee for respectfully asking for a promotion, so the outcome of termination for the passive or assertive responses is probably not realistic. Sample outcomes for the previous answer include:

<u>Passive:</u> Nothing happens; or the supervisor might say "This isn't a good time to talk about that. Bring it up next quarter."

<u>Aggressive:</u> The boss would refuse your request, which would result in you leaving your current job under bad circumstances, or going back on your bluff and sticking around with a potential cost to your reputation.

<u>Assertive</u>: The boss might recommend you for an open position that he knows of in the near future. The boss might recommend you for a mentorship or training program that could help you advance.

4. What do you see as potential obstacles to using assertive communication? For each obstacle, list something that you can do to help you overcome this obstacle when it comes up.

Obstacles refer to anything that could keep you from either starting with or switching to passive or assertive communication. The potential solutions refer to anything that could be helpful in overcoming that obstacle. Common obstacles and potential solution to those common obstacles are provided below. However, a list like this is more valuable when it is personal, so you are encouraged to brainstorm your own obstacles and solutions.

Common Obstacles	Potential Solutions
Wanting to be perceived as a "nice	Remind yourself that there is nothing
person."	mean about advocating for yourself in a
	respectful way; talk to others that you
	identify as a nice person that
	communicate assertively.
You are worried you will react without	Take a small pause before each
thinking	response; Let the other person know
	that this conversation is important to
	you and you'd like to reschedule when
	you've had time to reflect
Other people expect a certain style of	Be patient and don't expect
communication from you.	
You are nervous	Practice the conversation with a friend;
	take deep breaths throughout the
	conversation

Questions for Workload Management:

1. Do you tend to struggle with overload, underload, or periods of both in your job?

You should have marked underload if your job tends to have too little work, overload if your job tends to have too much work, or both if your job tend to have periods of too much and too little work. While some people may think that one is better than the other, research shows that both types of imbalance have consequences.

2. [If you answered underload] – Use the space below to write three career goals. Brainstorm challenges that will help you achieve those goals. What resources could you use to make this successful and where can you find the resources?

Career goals should be reasonable, yet enough to get you really excited about your future work life. Although the time frame depends on the goal itself, I generally recommend thinking about goals that can be accomplished over the next one or two years because they give you opportunities for immediate action, yet enough time to prepare. Challenges refer to the small steps that will help you achieve that goal. Resources can be many things, but in a work environment people typically think of coworker or supervisor support, protected time to work on a project, access to training, technology, or equipment, or other things.

To provide an example of how this question could be filled out, I will give you a reallife example from a close friend of mine. He was stuck in a job that didn't challenge him and he described his work life as "just coasting through." Instead of filling his extra work time with meaningless time-wasters, he identified a career goal: to apply for a promotion that would move his job away from data entry and reporting and more toward technology and programming. He identified a challenge that would help him achieve this goal: to learn coding. He located a few free resources to help him learn to code: free apps on his cell phone and free online courses. I'm happy to say that just a little over a year after he began working on the coding challenge, he did get that promotion and is very happy in his new job!

3. **[If you answered overload]** – Use the space below to write three career goals. Write tasks that typically take up your work day or work week. Are these tasks in line with your goal? Write down tasks that would be more in line with your goals. These are high importance tasks. How can you break these into smaller steps to make these high importance tasks seem less overwhelming?

Career goals should be reasonable, yet enough to get you really excited about your future work life. Although the time frame depends on the goal itself, I generally recommend thinking about goals that can be accomplished over the next one or two years because they give you opportunities for immediate action, yet enough time to prepare. Tasks would include anything that fills up your work day – emails, meetings, phone calls, paperwork, interacting with clients, writing, researching, etc. The decision as to whether a task supports your goal is dependent on many things specific to your own work environment – your industry, your supervisor's expectations, they method in which you are evaluated, and other things. A good rule of thumb is: if you spent most of your day doing that task, would you be closer to or further away from your goal? Breaking down high importance tasks involves separating a project into separate phases. I recommend focusing on a day of work as the smallest unit to focus on in most cases. What can you reasonably do today to work on this task?

To provide an example of how this question could be filled out, I will give you a reallife example from a colleague of mine. He works in an academic field, where most people are evaluated on the amount of research they publish. Getting a scientific article published in a peer-reviewed journal is a task that takes a minimum of months, if not years! He set the goal of being promoted from Assistant Professor to Associate Professor. He analyzed the tasks that took up most of his work day. He noticed that answering emails (from students, from fellow researchers, from people wanted to use questionnaires he created, etc.) was a huge portion of his day, whereas writing scientific articles was a very small portion. To break down the task of getting an article published, he set smaller goals of sections of the articles that he could write in a reasonably short time. He scheduled uninterrupted time to work on writing (where he did not check his email). He created templated email responses for the types of email requests that he received frequently to help manage the new way he allocated his time. The articles he wrote were eventually published and he received the promotion he wanted, and he now gives these recommendations to the students he mentors!

APPENDIX J. IDEAL WORK LIFE HANDOUTS AND WORKSHEETS

Ideal Work Life Approach A Step-by-Step Guide to Work Stress Management



8		Cognitive				
		Distortions				
Ideal Work Life Program						
01		Catastrophizing Thinking that the worst possible outcome is the only possible outcome				
02		Should's Creating strict rules for how we, others, or the world should be				
03	<u>ৰ</u> ুৰ	All-or-Nothing Thinking Looking at the world in black and white terms				
04	iii	Generalizing Interpreting singular events as patterns				
05	D	Filtering and Magnifying Over-focusing on the negative and forgetting to focus on the positive				
06	×	Disqualifying Creating reasons why positive things don't matter				
07	\odot	Emotional Reasoning Mistaking feelings for truth				
80		Jumping to Conclusions Predicting the future or mind-reading by assuming what others are thinking				

STEP-BY-STEP APPROACH – PRACTICE AND ROLE-PLAYING ACTIVITY

Part I:

It is helpful to practice the step-by-step approach with hypothetical situations. It is also helpful to practice with a friend or loved one because they can help you generate creative alternatives in each of the steps. Have a close friend or loved one guide you through each of the steps below by asking you the questions in bold. You will answer each of the questions first, then your helper will give input on each question by assisting you in developing alternative helpful thoughts, more problem-solving alternatives, and more realistic consequences. Keep an open-mind to whatever they propose.

Scenario:

Your supervisor calls you into his office and states that he needs an inventory completed on supplies by the end of the day. Two office associates have been coming to you and asking questions all day. The telephone calls won't stop. You had to leave your desk to pick up a package. You had to ask a visitor to put out a cigarette on your supervisor's orders. You can't seem to find time to complete a report that is already overdue. You have been running all morning with no break in your schedule. Your muscles feel tight and you've got one hell of a headache.

- 1. How can you implement the <u>Stop</u> step?
- 2. How can you implement the <u>Catch</u> step? What is the unhelpful thought running through your head?
- 3. How can you implement the <u>Replace</u> step? What is a more helpful thought?
- 4. How can you implement the <u>Relax</u> step? How can you diminish the effects of stress on your body?
- 5. How can you implement the **<u>Problem-Solving Step?</u>**
 - a. Problem Identification What is the concern?
 - b. Goal Selection What do you want?

- c. Generation of Alternatives What can you do?
- d. Consideration of Consequences What might happen?
- e. Decision-Making What is your decision?
- f. Implementation How can you implement your decision?
- g. Evaluation How will you know if your decision worked?

Part II:

Now, go through the questions one more time, but this time you will ask the questions in bold and your friend or loved one will answer. This practice is based on the idea that helping someone learn the step-by-step approach will help you become an expert. When you listen to their answers, do your best to offer helpful alternatives, generate more suggestions, and identify realistic consequences.

After completing this part of the activity, record your experiences and reactions below.

1. How do you think this practice went?

2. Do you feel ready to implement this approach in a real-life situation? What potential challenges do you think you might face and how can you address them?

CATCHING COGNITIVE DISTORTIONS

Please record your experience catching cognitive distortions and replacing them with helpful thoughts. Record the date and type of practice and describe the unhelpful and helpful thoughts. Record your stress level before and after the replacement, as well as any other comments that are relevant to you.

Stress Rating Scale

1=Not at all 2=A little bit 3=Moderately 4=Quite a bit 5=Extremely

Unhelpful Thought	Helpful Replacement	Stress Before After	Comments
	Inought	Delote Aller	8
	Unhelpful Thought	Unhelpful Thought Helpful Replacement Thought Image: Im	Unhelpful Thought Helpful Replacement Thought Stress Before After Image: Stress Before After Image: Stress Before After Image: Stress Before After

STEP-BY-STEP APPROACH TRACKER

Please record your experience practicing the SCRRP. Record the date and your stress level before and after the steps. Record a brief description of each of these steps, as well as any other comments that are relevant to you. You can record both successful and unsuccessful attempts at using the step-by-step approach. An example entry is provided.

Reminder of Steps:

Stop, Catch, Replace, Relax, Problem-Solve*

*Problem-Solving involves Problem Identification, Goal Identification, Generation of Alternatives, Consideration of Consequences, Decision Making, Implementation, and Evaluation.

Stress Rating Scale:

1=Not at all; 2=A little bit; 3=Moderately; 4=Quite a bit; 5=Extremely

I.t.

Date	Stro Before	ess After	Situation	Cognitive Distortion	Descriptions of Steps (SCRRP)
1/1/18	5	2	Co-worker dismissed my idea in a work meeting	Generalizing	Stop: Paused when my heart rate rose Catch: My ideas never matter; Generalizing Replace: My ideas are valid, and I can provide reasons why my ideas will work Relax: Three deep breaths Problem Solve: The problem is that I feel invalidated, my goal is to feel respected; alternatives include not say anything and to provide reasons my idea will work; consequences include nothing happening and the team listening; I decide to use the "providing reasons" alternative; I will evaluate my results based on the response of my teammates and supervisor

APPENDIX K. OPTIMAL WORK LIFE HANDOUTS AND WORKSHEETS





ASSERTIVE COMMUNICATION – PRACTICE AND ROLE-PLAYING ACTIVITY Part I:

It is helpful to practice assertive communication with hypothetical situations. It is also helpful to practice with a friend or loved one because it can help you face your nerves associated with asking for something or saying no in a low-pressure situation. For Part I, you will be the **asker** and your assister will be the **refuser**.

- 1. The asker (you) will make a series of requests for help with work (e.g. help with a report). The refuser (your friend or loved one) will simply say "no." Do this for 2-3 minutes. How did this go? Record your reactions below.
- Next, the asker (you) will make a series of requests again. This time, the refuser (your friend or loved one) will come up with fake excuses. The asker (you) will be very persistent and come up with alternatives to each phony excuse. Do this for 2 3 minutes. How did this go? Record your reactions below.
- Next, the asker (you) will make a series of requests again. This time, the refuser (your friend or loved one) will choose assertive responses such as the ones below. Do this for 2 -3 minutes. How did this go? Record your reactions below.
 - a. "No, I won't" or "No, I don't want to"
 - b. "No, because (with an honest explanation)"
 - c. "No, but (with possible alternatives)"
- 4. Which type of communication did you think was best from the asker's perspective? Why? Did you have any trouble making a request assertively? If so, why? What can you try in the future to make your assertive requests more effective?

Part II:

For Part II, go through the same exercise one more time, but switch roles. Switching roles is a valuable experience for a couple of reasons. First, it will help you get practice refusing a request, which is an important aspect of assertive communication. Second, switching roles can promote perspective-taking, which is a valuable skill for your work life and in general. Record your reactions, and then answer the question below.

- 1. The asker (your friend) will make a series of requests for help with work (e.g. help with a report). The refuser (you) will simply say "no." Do this for 2-3 minutes. How did this go? Record your reactions below.
- Next, the asker (your friend) will make a series of requests again. This time, the refuser (you) will come up with fake excuses. The asker (your friend) will be very persistent and come up with alternatives to each phony excuse. Do this for 2 – 3 minutes. How did this go? Record your reactions below.
- 3. Next, the asker (your friend) will make a series of requests again. This time, the refuser (you) will choose assertive responses such as the ones below. Do this for 2 -3 minutes. How did this go? Record your reactions below.
 - a. "No, I won't" or "No, I don't want to"
 - b. "No, because (with an honest explanation)"
 - c. "No, but (with possible alternatives)"

Which type of communication did you think was best from the refuser's perspective? Why? Did you have any trouble denying a request assertively? If so, why? What can you try in the future to make your assertive refusals more effective?

ASSERTIVE COMMUNICATION TRACKER

Please record your assertive asking/refusal practice below. Record the date and type of practice (i.e. ask, refuse). Record your stress level before and after practicing asking or refusing. In the comments section, record any relevant details (e.g. what your reactions to asking/refusing were, what the other person(s) reactions appeared to be, whether you were successful, and anything else that is relevant for you. You can record both successful or unsuccessful attempts at assertive communication. An example entry is provided below.

Stress rating scale: 1=Not at all 2=A little bit 3=Moderately 4=Quite a bit 5=Extremely

Date	Type of Practice	Str	ess After	Comments (e.g. situation reactions outcome etc.)
1/1/18	Refusing	4	 2 	Refused to complete a custom form immediately; offered a compromise to work on the custom form next week; the other person seemed disappointed but respected my rationale.
)		
WORKLOAD MANAGEMENT TRACKER

Please record your workload management practice below. Record the date and type of strategy (e.g. finding challenges or prioritization). Record your stress level during the activity, your workload, and the level of challenge and/or importance to you. You can record both successful and unsuccessful attempts at managing your workload. An example entry is provided.

Rating scale for Stress, Challenge, and Importance:

- 1=Not at all 2=A little bit 3=Moderately 4=Quite a bit 5=Extremely

Workload rating scale:

- 1 = Very low 2 = Somewhat low 3 = Moderate 4 = Somewhat high 5 = Very high

		I	racker for I	Underload		
Date	Strategy (e.g. finding challenges, securing resources)	Activity	Stress	Workload	Level of Challenge	Comments
1/1/18	Securing resources	Asked supervisor for access to analytics software	4	2	5	My boss denied my request for the software I asked for, but suggested a lower cost alternative

Tracker for Overload									
Date	Strategy (e.g. prioritization, restructuring activities)	Activity	Stress	Workload	Level of Importance	Comments			
1/1/18	Minimizing time spent on unimportant details	Added only essential appendices to client report	2	3	2	The client requested one additional appendix, but that is less than I would have originally added			

APPENDIX L. TABLES

Table 1.Sample Characteristics at Baseline Survey.

Sample Characteristics at Baseline Survey.		
	Count	Percent
Industry		
Accommodations and Food Service	23	7.2%
Administrative and Support Services	27	8.4%
Agriculture, Forestry, Fishing and Hunting	0	0.0%
Arts, Entertainment, and Recreation	18	5.6%
Construction	11	3.4%
Educational Services	35	10.9%
Finance and Insurance	20	6.3%
Government	10	3.1%
Health Care and Social Assistance	27	8.4%
Information	27	8.4%
Management of Companies and Enterprises	1	0.3%
Manufacturing	19	5.9%
Other Services (except public administration)	8	2.5%
Professional, Scientific, and Technical Services	31	9.7%
Real Estate and Rental and Leasing	7	2.2%
Retail Trade	41	12.8%
Self-employed	7	2.2%
Transportation and Warehousing	5	1.6%
Utilities	3	0.9%
Gender		
Male	151	47.2%
Female	168	52.5%
Other	1	0.3%
Marital Status		
Cohabiting (not married)	36	11.3%
Long-relationship (not married or cohabiting)	29	9.1%
Married	144	45.0%
Single	88	27.5%
Divorced	20	6.3%
Widowed	2	0.6%
Other	1	0.3%

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk.

Table 1 (continued).Sample Characteristics at Baseline Survey.

	Count	Percent
Education		
Some high school	1	0.3%
High school diploma (or GED)	28	8.8%
Some college, but no degree	64	20.0%
Associates degree	47	14.7%
Bachelor's degree	136	42.5%
Master's degree	35	10.9%
Beyond master's degree	9	2.8%
Income		
\$0 - \$24,999	36	11.3%
\$25,000 - \$49,999	110	34.4%
\$50,000 - \$74,999	84	26.3%
\$75,000 - \$99,999	51	15.9%
\$100,000 - \$124,999	21	6.6%
\$125,000 - \$174,999	9	2.8%
\$175,000 - \$199,999	3	0.9%
\$200,000 and up	6	1.9%
Race*		
American Indian or Alaskan Native	5	1.6%
Asian/Pacific Islander	26	8.1%
Black/African American	25	7.8%
Caucasian/White	264	82.5%
Hispanic/Latino	20	6.3%
Other	1	0.3%
	Μ	SD
Age	36.01	9.66
Average weekly work hours	41.22	7.57
Tenure	5.99	4.78

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk; *Percentages for race may not add up to 100% because participants were permitted to select more than one race.

Table 2.

Results of Exploratory Factor Analyses for Autonomy.

Item		ctor	Eigen-	Variance	
	Loa	ding	value	Explained	
Descling Automann	1	2			
Baseline Autonomy Dight new I feel a conse of choice and freedom in the things I take	71		2 1 5	25.070/	
Right now, I leef a sense of choice and freedom in the things I take	./1		5.15	33.07%	
OII. Dight now I feel that my decisions reflect what I really want	70				
Right now, I feel that my decisions reflect what I really want.	./9				
Right now, I leel my choices express who I really am.	.81				
Right now, I am doing what really interests me.	./4				
All in all, I feel as if I have control over my life (slider scale	.39				
question).		75	0.75	20 500/	
Right now, most of the things I have done, I feel like "I have to."		./5	2.75	30.58%	
Right now, I feel forced to do things I wouldn't choose to do.		.69			
Right now, I feel pressured to do certain things.		.80			
Right now, my activities feel like obligations.		.76			
Post-Assignment Autonomy			• • •		
Right now, I feel a sense of choice and freedom in the things I take	.72		2.95	32.67%	
on.					
Right now, I feel that my decisions reflect what I really want.	.75				
Right now, I feel my choices express who I really am.	.74				
Right now, I am doing what really interests me.	.66				
All in all, I feel as if I have control over my life (slider scale	.57				
question).					
Right now, most of the things I have done, I feel like "I have to."		.77	2.92	32.45%	
Right now, I feel forced to do things I wouldn't choose to do.		.74			
Right now, I feel pressured to do certain things.		.77			
Right now, my activities feel like obligations.		.78			
Follow-up Autonomy					
Right now, I feel a sense of choice and freedom in the things I take	.82		3.48	38.70%	
on.					
Right now, I feel that my decisions reflect what I really want.	.78				
Right now, I feel my choices express who I really am.	.81				
Right now, I am doing what really interests me.	.72				
All in all, I feel as if I have control over my life (slider scale	.61				
question).					
Right now, most of the things I have done, I feel like "I have to."		.71	2.84	31.58%	
Right now, I feel forced to do things I wouldn't choose to do.		.67			
Right now, I feel pressured to do certain things.		.76			
Right now, my activities feel like obligations.		.78			

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline and post-assignment autonomy and 203 participants who completed a follow-up survey for follow-up autonomy.

Item	Factor			Eigen-	Variance	
		oadir	ng	value	Explained	
Drasling Druchological Health	l	Z	3			
Baseline Psychological Healin	(0			4 72	22 500/	
I couldn't seem to experience any positive feeling at	.08			4./3	22.50%	
all. $\mathbf{L}_{1} = \mathbf{L}_{1} = \mathbf{L}$	4.4		64			
I found it difficult to work up the initiative to do things.	.44		.04			
I feit that I had nothing to look forward to.	.83		50			
I felt down-hearted and blue.	.68		.52			
I was unable to become enthusiastic about anything.	.75					
I felt I wasn't worth much as a person.	.78					
I felt that life was meaningless.	.74					
I was aware of dryness in my mouth.		.62		4.80	22.83%	
I experienced breathing difficulty (e.g. excessively		.82				
rapid breathing, breathlessness in the absence of						
physical exertion).						
I experienced trembling (e.g. in the hands).		.74				
I was worried about situations in which I might panic		.52				
and make a fool of myself.						
I felt I was close to panic.		.70				
I was aware of the action of my heart in the absence of		.73				
physical exertion (e.g. sense of heart rate increase,						
heart missing a beat).						
I felt scared without any good reason.		.73				
I found it hard to wind down.			.68	4.70	22.38%	
I tended to over-react to situations.			.64			
I felt that I was using a lot of nervous energy.		.50	.48			
I found myself getting agitated.			.68			
I found it difficult to relax.			.71			
I was intolerant of anything that kept me from getting			.51			
on with what I was doing.						
I felt that I was rather touchy.			.72			

Table 3.Results of Exploratory Factor Analyses for Psychological Health.

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline psychological health and 203 participants who completed a follow-up survey for follow-up psychological health.

Item	Factor		Eigen-	Variance	
	Loading			value	Explained
	I	2	3		
Follow-up Psychological Health				6.0.6	•••
I couldn't seem to experience any positive feeling at	./1			6.96	23.00%
all.					
I found it difficult to work up the initiative to do things.	.56		.52		
I felt that I had nothing to look forward to.	.81				
I felt down-hearted and blue.	.68		.41		
I was unable to become enthusiastic about anything.	.72				
I felt I wasn't worth much as a person.	.74				
I felt that life was meaningless.	.79				
I was aware of dryness in my mouth.		.54		4.81	23.00%
I experienced breathing difficulty (e.g. excessively		.77			
rapid breathing, breathlessness in the absence of					
physical exertion).					
I experienced trembling (e.g. in the hands).		.70			
I was worried about situations in which I might panic		.68			
and make a fool of myself.					
I felt I was close to panic.		.77			
I was aware of the action of my heart in the absence of		.68			
physical exertion (e.g. sense of heart rate increase,					
heart missing a beat).					
I felt scared without any good reason.		.73			
I found it hard to wind down.			.69	4.26	20.27%
I tended to over-react to situations.		.40	.59		
I felt that I was using a lot of nervous energy.		.54	.53		
I found myself getting agitated.			.71		
I found it difficult to relax.			.73		
I was intolerant of anything that kept me from getting			.48		
on with what I was doing.					
I felt that I was rather touchy.			.69		

Table 3 (continued).Results of Exploratory Factor Analyses for Psychological Health.

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline psychological health and 203 participants who completed a follow-up survey for follow-up psychological health.

Table 4.

Results of Exploratory Factor Analyses for Self-Efficacy.

Item	Factor Loading	Eigenvalue	Variance Explained
	1		Enpiunicu
Baseline Self-Efficacy			
If someone poses a challenge, I can find means and	.81	4.00	66.48%
ways to manage my work stress.			
It is easy for me to stick to my aims and accomplish my	.78		
goals related to the management of work stress.			
I am confident that I could deal efficiently with	.87		
unexpected events related to work stress management,			
Thanks to my resourcefulness, I know how to handle	.83		
unforeseen events related to the management of work			
stress.			
I can remain calm when facing difficulties managing my	.78		
work stress because I can rely on my coping abilities.			
No matter what comes my way related to work stress	.82		
management, I'm usually able to handle it.			
Post-Intervention Self-Efficacy	-		
If someone poses a challenge, I can find means and	.79	3.74	62.32%
ways to manage my work stress.			
It is easy for me to stick to my aims and accomplish my	.73		
goals related to the management of work stress.	0.2		
I am confident that I could deal efficiently with	.83		
unexpected events related to work stress management,	0.0		
Thanks to my resourcefulness, I know how to handle	.80		
unforeseen events related to the management of work			
stress.	0.4		
I can remain calm when facing difficulties managing my	.84		
work stress because I can rely on my coping abilities.	74		
No matter what comes my way related to work stress	./4		
management, I'm usually able to handle it. Note: $N = 220$ amplexed adults living in the Units 1 States		1	a

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk.

<u>Resuits of Exploratory 1 delor maryses for michilon.</u>			
Item	Factor	Eigenvalue	Variance
	Loading		Explained
	1		
I intend to review my handouts and/or outline over the	.87	2.92	73.09%
next four weeks.			
I intend to complete my practice worksheet.	.93		
I intend to complete my tracking worksheet over the	.91		
next four weeks.			
I intend to implement the concepts discussed in the	.69		
program in my work life over the next four weeks.			
	• •		•

Table 5.Results of Exploratory Factor Analyses for Intention.

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk

Table 6.Results of Exploratory Factor Analyses for Adherence.

Item	Factor		Eigenvalue	Variance
	Loa	ding		Explained
	1	2		
I followed the job stress program's suggestions exactly.	.84		2.02	40.31
I found it was easy to do the things the job stress	.76			
program suggested I do.				
Generally speaking, how often during the past four	.83			
weeks were you able to do what the job stress program				
told you?				
I had a hard time doing what the job stress program		.76	1.24	24.85
suggested I do.				
I was unable to do what was necessary to follow the job		.83		
stress program's plans				
		1. 1.	1 1 4	•

Note: N = 203 employed adults living in the United States recruited through Amazon's Mechanical Turk who completed the one-month follow-up survey.

$\mathcal{D}\mathfrak{c}$	scriptive statistics and bivar		relation	.						
	Variable	Μ	SD	1	2	3	4	5	6	
1.	Preference	0.51	0.50							
2.	Program	0.47	0.50	.05						
3.	B Autonomy Satisfaction	3.48	0.93	.01	06	(.89)				
4.	PA Autonomy Satisfaction	3.51	0.87	02	.02	.73	(.87)			
5.	FU Autonomy Satisfaction	3.65	0.95	.03	04	.58	.55	(.92)		
6.	B Autonomy Frustration	2.95	1.05	.00	.02	64	58	41	(.89)	
7.	PA Autonomy Frustration	2.93	1.08	.01	05	54	70	43	.76	
8.	FU Autonomy Frustration	2.74	1.08	01	.08	56	51	73	.52	
9.	B Global Autonomy	66.98	21.05	07	01	.64	.54	.51	55	
10	. PA Global Autonomy	67.53	19.97	06	.02	.61	.63	.49	55	
11	. FU Global Autonomy	69.23	21.51	01	04	.51	.41	.69	39	
12	. B Depression	2.00	0.98	.05	08	45	42	54	.53	
13	. FU Depression	1.78	0.93	.01	03	44	42	58	.43	
14	. B Anxiety	1.75	0.85	.02	10	19	22	19	.29	
15	. FU Anxiety	1.49	0.69	02	04	19	20	24	.24	
16	. B Stress	2.36	0.89	.08	15	30	28	36	.43	
17	. FU Stress	2.05	0.81	02	07	33	32	42	.35	
18	. B Self-efficacy	3.85	0.78	09	.02	.41	.43	.35	40	
19	. PI Self-efficacy	4.02	0.64	.05	.05	.36	.40	.36	37	
20	. PI Intention	4.05	0.82	.04	07	.01	.10	.12	.08	
21	. FU Adherence	3.25	0.77	03	02	.21	.23	.31	19	

Table 7Descriptive Statistics and Bivariate Correlations.

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline variables; N = 203 participants who completed one-month follow-up survey for follow-up variables. Preference refers to condition assignment and is coded such that 0 = control and 1 = experimental; Program refers to selected or assigned intervention program and is coded such that 0 = CBT and 1 = Skills Training; B = Baseline, PA = Post-assignment, PI = Post-intervention, FU = Follow-up; Internal consistencies are presented along the diagonal in parentheses; Correlations in columns 1 and 2 are Spearman's rank correlations, while all remaining correlations are Pearson's correlations; Correlations with an absolute value greater than or equal to .13 are significant at the p<0.05 level and correlations greater than or equal to .15 are significant at the p<.01 level.

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Table 7 (continued)

Variable	7	8	9	10	11	12	13
1. Preference							
2. Program							
3. B Autonomy Satisfaction							
4. PA Autonomy Satisfaction							
5. FU Autonomy Satisfaction							
6. B Autonomy Frustration							
7. PA Autonomy Frustration	(.91)						
8. FU Autonomy Frustration	.52	(.90)					
9. B Global Autonomy	48	49					
10. PA Global Autonomy	57	47	.92				
11. FU Global Autonomy	38	61	.69	.66			
12. B Depression	.48	.54	60	58	62	(.95)	
13. FU Depression	.40	.56	56	53	66	.83	(.95)
14. B Anxiety	.33	.23	40	42	30	.68	.51
15. FU Anxiety	.31	.30	38	39	37	.54	.69
16. B Stress	.42	.42	45	45	38	.74	.57
17. FU Stress	.40	.50	44	44	52	.66	.78
18. B Self-efficacy	37	30	.48	.46	.41	58	55
19. PI Self-efficacy	35	35	.40	.41	.33	49	47
20. PI Intention	03	07	01	.05	.08	03	12
21. FU Adherence	19	31	.22	.22	.32	26	35

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline variables; N = 203 participants who completed one-month follow-up survey for follow-up variables. Preference refers to condition assignment and is coded such that 0 = control and 1 = experimental; Program refers to selected or assigned intervention program and is coded such that 0 = CBT and 1 = Skills Training; B = Baseline, PA = Post-assignment, PI = Post-intervention, FU = Follow-up; Internal consistencies are presented along the diagonal in parentheses; Correlations in columns 1 and 2 are Spearman's rank correlations, while all remaining correlations are Pearson's correlations; Correlations with an absolute value greater than or equal to .13 are significant at the p<0.05 level and correlations greater than or equal to .15 are significant at the p<.01 level.

Descriptive Statistics and Bivariate Correlations.								
Variable	14	15	16	17	18	19	20	21
1. Preference								
2. Program								
3. B Autonomy Satisfaction								
4. PA Autonomy Satisfaction								
5. FU Autonomy Satisfaction								
6. B Autonomy Frustration								
7. PA Autonomy Frustration								
8. FU Autonomy Frustration								
9. B Global Autonomy								
10. PA Global Autonomy								
11. FU Global Autonomy								
12. B Depression								
13. FU Depression								
14. B Anxiety	(.92)							
15. FU Anxiety	.76	(.91)						
16. B Stress	.74	.51	(.91)					
17. FU Stress	.60	.72	.73	(.91)				
18. B Self-efficacy	50	44	50	47	(.92)			
19. PI Self-efficacy	39	38	38	41	.69	(.91)		
20. PI Intention	01	10	.13	12	.04	.20	(.91)	
21. FU Adherence	13	20	19	39	.28	.23	.35	(.76)

 Table 7 (continued)

 Descriptive Statistics and Rivariate Correlation

Note: N = 320 employed adults living in the United States recruited through Amazon's Mechanical Turk for baseline variables; N = 203 participants who completed one-month follow-up survey for follow-up variables. Preference refers to condition assignment and is coded such that 0 = control and 1 = experimental; Program refers to selected or assigned intervention program and is coded such that 0 = CBT and 1 = Skills Training; B = Baseline, PA = Post-assignment, PI = Post-intervention, FU = Follow-up; Internal consistencies are presented along the diagonal in parentheses; Correlations in columns 1 and 2 are Spearman's rank correlations, while all remaining correlations are Pearson's correlations; Correlations with an absolute value greater than or equal to .13 are significant at the p<0.05 level and correlations greater than or equal to .15 are significant at the p<.01 level.

Table 8.

Results of Qualitative Data Analysis.

Rationale for Choice	Cases	Percent of	
		Participants	
Beliefs		-	
Beliefs about causes of stress	36	22.0%	
Beliefs about possibility of proposed changes	14	8.5%	
Beliefs about life or the world	12	7.3%	
Beliefs about responsibility for stress	4	2.4%	
Desired Outcome			
Promotion of positive outcome	23	14.0%	
Avoidance of negative outcome	14	8.5%	
Subjective Liking			
Appeal of approach	18	11.0%	
Interest in material	5	3.0%	
Perceptions			
Perceived helpfulness	15	9.1%	
Perceived practicality	5	3.0%	
Perceived ease of understanding or implementation	3	1.8%	
Perceived impact	1	0.6%	
Perceived relevance to life	1	0.6%	
Envisioned Use			
Specific environment	13	7.9%	
Specific problem or outcome	5	3.0%	
Specific situation or stressor	4	2.4%	
Specific timeline of results	3	1.8%	
Level of Fit			
Fit with desires	10	6.1%	
Fit with needs	5	3.0%	
Fit with personality	5	3.0%	
Fit with usual approach	4	2.4%	
Knowledge & Experiences			
Already have alternative skill	8	4.9%	
Previous research on concept	1	0.6%	
Already working on alternative skill	1	0.6%	

Note: N = 164 participants assigned to experimental group; Percentages will not add up to 100% because participants may have specified more than one rationale for their chosen program.

APPENDIX M. FIGURES



Figure 1. Depiction of experimental procedures.



Figure 2. Self-efficacy path models with autonomy scale measure. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with the Basic Psychological Needs Satisfaction and Frustration Scale (Chen et al., 2015).



Figure 3. Self-efficacy path models with autonomy slider measure. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with a single item slider measure.







Figure 5. Intention path models with autonomy slider measure. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with a single item slider measure.







Figure 7. Adherence path models with autonomy slider measure. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with a single item slider measure.



Figure 8. Psychological health hybrid path models with autonomy scale measure. The latent constructs measuring psychological health are indicated by three manifest variables (depression, stress, and anxiety) that are not pictured. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with the Basic Psychological Needs Satisfaction and Frustration Scale (Chen et al., 2015).



Figure 9. Psychological health hybrid path models with autonomy slider measure. The latent constructs measuring psychological health are indicated by three manifest variables (depression, stress, and anxiety) that are not pictured. The nested model is presented in the top of the figure and the constrained model is presented in the bottom of the figure. "Preference" refers to experimental condition and is coded such that 0 = control condition and 1 = experimental condition. Post-assignment autonomy is measured with a single item slider measure.