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A PRELIMINARY INVESTIGATION OF A VALUES INTERVENTION AND A VALUES REMINDER ON CLINICALLY RELEVANT OUTCOMES

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Acceptance and Commitment Therapy (ACT) is designed to target psychological flexibility, broadly defined as engagement with personal values regardless of the presence of difficult private events. As engagement with valued behaviors is imperative to psychological flexibility, clarification of values is an essential skill for clients to learn. Practicing of skills in treatment has historically been a difficult hurdle for clinicians to implement between sessions for clients as well. The present study examined the utility of a novel values card sort activity, as well as the utility of a rubber band to act as a reminding agent for engagement with values. 112 undergraduate students were randomly assigned to one of three conditions: a values card sort condition, a values card sort condition with a rubber band given to the participant, and a control card sort condition. Each participant completed questionnaires assessing connection with values, lack of contact with values, negative affect, and quality of life at baseline and at a one-week follow-up. A series of ANCOVAs were conducted to determine if there were any group differences between the three conditions at follow-up, with baseline scores as a covariate. The analyses indicate no significant difference between the conditions at follow-up across any of the variables of interest. Endorsement of prior therapy experience suggested unique trends and differential reaction to the card sorting activity. These findings suggest the values card sort may not be an effective intervention for subclinical populations but may be a fruitful intervention for clinically-elevated individuals.

Keywords: Acceptance and Commitment Therapy, values, intervention, psychological flexibility

DEDICATION

There were many moments during the drafting of this document where frustration and discouragement could have prevented the completion of the project. During those moments, and during many more similar experiences, I could not have pulled through without the love and support of my fiancée Carrie. For this reason, this dedication would incomplete without her inclusion. I dedicate every word of this document to her. I also dedicate this document to my family. Every member of both my family and Carrie's family have been nothing but supportive throughout this process, and for that I extend gratitude to each individual member.

I appreciate the guidance of my committee members as well. Dr. Greer and Dr. Peter-Hagene have been helpful and pleasant people, and that continued in their work as members of this committee. I want to give a special thanks to Chad as well. The wisdom he has shared with me has helped me grow as an academic, researcher, clinician, and individual, and I greatly appreciate the mentorship and advising I've received from him.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) has grown into a popular form of psychotherapy over the past three decades. ACT is considered to be a part of a contemporary collection of behavioral and cognitive therapies, along with Dialectical Behavior Therapy (DBT; Linehan, 1993), Functional Analytic Psychotherapy (FAP; Kohlenberg & Tsai, 1991), and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) (Hayes, 2004a). The contemporary therapies, typically classified as "third wave" therapies, share commonalities among themselves, specifically with a focus on mindfulness, acceptance, and metacognition, among others (Ost, 2008; Kahl, Winter, & Schweiger, 2012). While these elements provide substantial overlap between them, each therapy also has a number of noteworthy distinctions.

ACT in particular differentiates itself from other forms of therapy in that it is grounded in a nonmainstream philosophy known as functional contextualism (Biglan & Hayes, 1996; Gifford & Hayes, 1999). Functional contextualism is a philosophy oriented to the prediction and influence of behavior. A foundational assumption of functional contextualism is that behavior is a function of context. One may predict and influence a given behavior by discovering and manipulating the contextual variables that influence that behavior. A presumption is that all behavior is based around these interactions (Hayes, 2004a). As such, focusing simply on treatment of specific symptoms without taking into account contexts in which symptoms are presented misses the purpose of the treatment (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004). To that end, ACT views each symptom similarly as any other behavior, in that symptoms are a behavior or a series of behaviors dependent on specific contexts.

A functional contextualist assumes that cognition is regarded as a behavioral phenomenon. Due to this, ACT is also distinct from other forms of therapies in that the theory embraces a nontraditional behavioral view of cognition, adding more to learning and cognitive processes above and beyond traditional classical and operational conditioning. Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) is a theory of cognition, language, and conditioning processes aligned with functional contextualism and behavior analysis. In the RFT theoretical approach, human behavior, cognitions, and language is a product of relational responding, in that humans are conditioned to relate to environmental stimuli in a variety of ways. Human cognition specifically involves using words and objects interchangeably, indicating an equivocal cognitive relation between a phonetic, audible stimulus and a visual, tactile stimulus. For example, one could see a long and scaly animal with fangs, without legs, arms, or wings, and understand this animal as a "snake". One could also say the word "snake" without a snake being around and immediately picture the limbless animal. For a client with a particularly strong phobia of snakes, this equivocal relation can be strong enough to elicit behavioral responses when the word "snake" is merely stated aloud. This interchangeable relationship, therefore, has the power to influence behavior. Equivocal relations are not the only type of relations humans have cognitively. Hierarchical relations, for example, are a specific type of relation in which humans place specific words into broader categories, which is based on the understanding of the relationship between the individual words and the broader category itself. Individuals can understand that the broad category of "animal" consists of several types of creatures, and can also understand that "snake" is an "animal", and moving beyond that to understand that "rattlesnake" is a "snake" which is an "animal" (Hayes et al., 2001). RFT

provides understanding of the relational frames that exist is human cognitive functioning and further understanding of how overt behavior can be impacted by these relations.

ACT uses its philosophical and theoretical underpinning to differentiate itself to other theoretical orientations in that there is an assumption that it is common, and perhaps even normal, to engage in behavioral processes that impact an individual in a bothersome way (Wilson, Hayes, Gregg, & Zettle, 2001). Many approaches to psychopathology, and therefore approaches to therapy as well, tend to view suffering as an abnormal and diagnostic problem, implying there must be a healthy normality (Hayes et al., 1999). However, an argument has been made that suffering is not only common and normal, but virtually impossible to fully avoid. With the theoretical and philosophical underpinnings in RFT and functional contextualism, ACT is based around empirically-supported and heavily-researched techniques related to the nature of human cognition, and incorporates many interventions designed to target the difficult cognitions of focus (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013). Arguing against the concept of abnormal psychopathology, the concerns related to significant distress stems from inflexible psychological repertoires as a response to normal discomfort. As such, the purpose of ACT is to reduce psychological inflexibility by developing repertoires that will increase psychological flexibility. A prominent characteristic of psychological inflexibility is referred to as experiential avoidance, or engagement in any behavior where the intent is to control unwanted thoughts, emotions, and sensations (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). An overinvestment in experiential avoidance predicts a broad range of psychological disorders (Levin, Hildebrandt, Lillis, & Hayes, 2012). Furthermore, psychologically inflexible clients also tend to lack focus on what matters to them over longer spans of time or in respect to their deepest desire for their life, and instead focus on immediate

reinforcers to feel good or avoid feeling bad. This underinvestment in long term outcomes and overinvestment in immediate relief or pleasure is a general characteristic of psychological inflexibility; engaging in emotional and cognitive control strategies to the point it that it outcompetes more functional repertoires leads to problematic psychopathological symptoms (Hayes et al., 2004a).

Because ACT is grounded in an underlying view of normal human suffering and that suffering is not inherently problematic, the outcome of interest is not symptom reduction. While reduction in many undesired symptoms, like depression and anxiety, is common in ACT, it is not of primary focus. The overarching goal of a therapist utilizing ACT is to increase functional repertoires and the construct of psychological flexibility. Psychological flexibility has previously been defined as "the ability to change or persist with functional behavioral classes when doing so serves valued ends" (Hayes, 2004b, p. 15). Specifically, psychological flexibility provides clients with the prioritization of values-based behavior in the presence of otherwise unwanted private events, like upsetting thoughts or undesired emotions. With the focus on a change in behavior to better align with personally relevant values, providing skills to handle unwanted events in one's life is imperative. This intention to improve flexible engagement with uncomfortable thoughts, emotions, and sensations, as well as the lack of intention to reduce clinical symptomology, makes ACT a transdiagnostic treatment designed to be implemented flexibly around whatever concern with which any client may present. The model of psychological flexibility can best be understood as the interplay of mindfulness skills leading to willingness to experience undesired private events directly for the purposes behaving in a more values-consistent manner, leading to an increase in psychological flexibility. This model is intended be applied broadly, and the skills

designed to improve psychological flexibility is intended to be done in a unified way for any potential difficulty (Dindo, Van Liew, & Arch, 2017).

Mindfulness Skills

The model of ACT incorporates three skills in particular to increase a client's ability to be mindful in their lives. The first skill in which ACT therapists endorse to lead to mindful living is the engagement of present moment awareness. Common experiences shared by those with greater psychological inflexibility involve an excess of attention focused on either negative past experiences or fearful future ones. Attentional concerns involving too much focus on the past or future tends to make psychological concerns worse over time as opposed to making them better (Hayes, Pistorello, & Levin, 2012). Therapists utilizing ACT would often help clients engage in present moment awareness through techniques designed to engage a client's attention on the current private events themselves opposed to previous or potential future ones (Strosahl, Robinson, & Gustavsson, 2015; Hayes et al., 2012; Wilson, Bordieri, Flinn, Lucas, & Slater, 2011). Bringing attention to the present moment is fruitful because the skill provides the ability to reorient oneself in a way to attend to a less distracting present opposed to attending to a more distressing past, future, or location. Several empirically supported techniques have been shown to improve present moment awareness in participants, including mindful breathing (Arch & Craske, 2006, Feldman, Greeson, & Senville, 2010; McHugh, Simpson, & Reed, 2010), mindful body scan (Carmody & Baer, 2008), and instructions to focus on sensory experiences (Haythornthwaite, Lawrence, & Fauerbach, 2001). Engagement in the present moment through means of the listed mindful techniques has been associated with a reduction in pain reported as well as a reduction in state anxiety.

Another important mindfulness skill provided to clients through ACT is cognitive defusion. Cognitive fusion involves providing an overinvestment on the symbolization of thoughts and words and a failure to acknowledge the arbitrary nature of thoughts (Hayes et al., 2012). Fusion with one's thoughts is not necessarily negative, but problems arise when behavior is organized by the symbolic nature of the thoughts rather than allowing the thoughts to pass, making it difficult to parse the sensory processes experienced when interacting with the word and the symbolic meaning the word holds (Hayes et al., 1999). ACT utilizes the process of cognitive defusion as an alternative and helpful therapeutic skill to counteract cognitive fusion. When defused from private events, one can notice a thought as only words and images that do not need to impact outward behavior. Many techniques an ACT therapist would utilize to teach cognitive defusion involve attempting to take the meaning out of the particularly painful words; a client cannot allow the symbolic nature of the thought to dictate behavior if the thought has no inherent or difficult meaning to them. Being able to experience an unwanted thought without having the thought have the same effect on behavior can be a powerful skill for clients (Hayes et al., 2012). Cognitive defusion is a difficult concept to grasp if unfamiliar, so the skill of practicing defusion could be more important than the understanding of the concept itself. Perhaps the most common technique measured in research to promote the skill of defusion is a word repetition strategy. A number of research studies have been conducted to assess the feasibility of word repetition (Masuda, Hayes, Sackett, & Twohig, 2004; Watson, Burkey, & Purdon, 2010; Masuda, Feinstein, Wendell, & Sheehan, 2010). Word repetition is meant to be an example of defusion, as repeatedly verbalizing a word can cause the word to lose meaning and provide distance from the word to the speaker. Once clients can realize that words can lose power by

simply acknowledging they are just words, they may be more likely to see their distressing thoughts as unthreatening.

The third mindfulness skill in the ACT model is the broader understanding of the self. A broad repertoire of perspective-taking skills known as self-as-context describes the skill and process in which an individual takes a perspective wherein they experience unwanted thoughts, feelings, and sensations simultaneously do not define who they are nor do they cause permanent harm (Hayes et al., 2013). Oftentimes, a client presents with a conceptualized sense of self, which is typically formed upon by private events. Self-as-context provides theoretical understanding that private events can be considered to be the mind, and the physical manifestation of the individual, including behavior as well as physical being, can be considered to be the self. Self-as-context focuses on a transcending view of self that many individuals who are psychologically inflexible have difficulty attaining and aligns closely with cognitive defusion (Hayes et al., 2006). As a component of the psychological flexibility model, self-as-context has been thus far untested as its own behavior in terms of laboratory-based research (Levin et al., 2012). When studied, it is usually a part of other processes as well. However, therapists have often utilized the "chessboard metaphor", wherein clients are asked to picture their private events, both positive and negative, as pieces on a chessboard. This metaphor places the client as a chessboard opposed to the chess pieces, symbolizing that the board is fully intact and unthreatened, regardless of what happens with the pieces (Hayes & Wilson, 1994; Zettle, 2003; Westrup, 2014; Hayes et al., 1999).

The mindful skills of ACT interplay together in a way which provides further awareness for the client to their private events. Each of the three components can be helpful on its own (Hayes et al., 2006); however, when combined, the three mindfulness skills empower the client

to engage with their private events in the present moment in a way that allows them to understand that the unwanted events do not represent the client nor should they be subject to controlled by the events. Once a client reaches the stage of actively engaging in present moment awareness, cognitive defusion, and self-as-context, they may freely engage in the skill of acceptance and willingness

Acceptance/Willingness

The attempt at controlling of private events tends take the form of experiential avoidance strategies, changing their outward behavior in a way to avoid the unpleasant responses to specific, unwelcoming stimuli. The therapeutic response and alternative to experiential avoidance is the behavior of acceptance. Acceptance, also often referred to as willingness, involves direct experience with and interest in the undesired private events that one might otherwise attempt to control or avoid. Acceptance in the ACT framework is not simply passively allowing negative experiences occur; acceptance is an active process in which a client would, without judgment, be curious about these experiences (Hayes, 2004b). A client skilled at acceptance might willingly approach situations in which discomfort is likely, using this skill in the service of consequences that are less oriented to reduction of discomfort and more oriented to values. The purpose of acceptance-based interventions is not to merely be okay with unwanted private events, but instead to be open with experiencing them instead of narrowing the potential enjoyable events one may miss while engaging in experiential avoidance (Hayes et al., 2012).

Common exercises intended to increase acceptance and willingness in therapy include empirically supported metaphors leading to the experiential exercises. Perhaps the most supported metaphor is the “Chinese finger trap metaphor”, in which clients are provided with a parallel between the emotional and cognitive struggle of upsetting private events and the

physical struggle of traditional Chinese finger fasteners. The metaphor aligns with acceptance and willingness in that the more one focuses on escaping the struggle the tighter it feels, while leaning into the experience is more effective than trying to escape in general (Hayes et al., 1999). This metaphor has been successfully utilized to increase tolerance of physical pain (Roche, Forsyth, & Maher, 2007) as well as reduce symptoms of catastrophic thoughts (Eifert & Heffner, 2003). Other effective acceptance interventions include simple psychoeducation and instruction to experience emotions fully (Hofmann, Heering, Sawyer, & Asnaani, 2009; Campbell-Sills, Barlow, Brown, & Hofmann, 2006), which has been efficacious at regulating anxiety and improving acceptance of negative emotions.

Values and Committed Action

Several presenting concerns a client may appear to therapy with involve inaction. Those with greater psychological inflexibility may have an idea of what they would like their lives to be like, but struggle with behaving in a way consistent with what they would want to accomplish. ACT therapists maintain a focus of personal change (Hayes, 2004b), and the personal change is outwardly displayed in the form of committed action. Committed action is likely the closest skill of the six in ACT to a more traditionally behavioral approach to therapy; the major difference between committed action in the ACT theoretical orientation and other behaviorally-based techniques is the use of teaching committed action in the context of the mindfulness and willingness skills (Hayes et al., 2012). Committed action is a way to get clients to behave in ways that are personally meaningful to them, in ways that connect to their values. While committed action is perhaps the easiest skill to teach a client, the skill may be the most difficult for one to actively attempt (Westrup, 2014).

Committed action is not possible without establishing an awareness of and cultivating a

conviction about the values most personally important and relevant to the client. Defined in the ACT context, values are personally chosen qualities describing fulfilling directions one would strive their lives to have. Struggling to understand or comprehend personal values can cause discomfort over time, leading to potentially unrewarding behavior. The lack of clarification of values can be caused by cognitive fusion, experiential avoidance, or other aspects of psychological inflexibility (Hayes et al., 1999). Values clarity allows the client to understand what truly matters to them. Values clarification is particularly important to ACT, as understanding of personal values plays into and leads to the learning of the other hexaflex skills (Westrup, 2014; Hayes et al., 1999). Once values have been clarified, the exploration of potential private barriers of actions are established, which lends itself to other ACT-based approaches like cognitive defusion, present moment awareness, self-as-context, and willingness (Hayes, 2004b).

In the ACT framework, values are the intrinsic motivator for all individuals to continue towards living a worthwhile and complete life (Trindade, Ferreira, Pinto-Gouveia, & Nooren, 2016). As ACT is a part of the behavioral therapy tradition, values would therefore be defined as something people can always work towards, while simultaneously being something that can never fully be accomplished; values are therefore seen as a direction in life, not an achievable goal. Values are also defined as intentional choices of important standards, free from societal or social pressure (Hayes et al., 1999). The understanding of personal values in the sense of actionable directions in life leads to the outcome skill of committed action – smaller, accomplishable activity closely aligned to the freely chosen values of an individual (Trompetter et al., 2013). Individuals who have higher connectedness to values and engage in values-consistent behavior have been found to have higher quality of life, lower anxiety, and lower fear

responses than those without valued clarity or with committed inaction (McCracken & Keogh, 2009; Michelson, Lee, Orsillo, & Roemer, 2011).

Common Values Measures and Interventions

While the outcome variable of interest in ACT is psychological flexibility, the measurable outcome skill is that of valued-based action. Researchers have attempted to develop psychometrically sound questionnaires assessing for values and committed action. The most commonly researched questionnaire assessing for values clarity and committed action is the Valued Living Questionnaire (VLQ; Wilson & Murrell, 2004). The VLQ is a questionnaire designed to determine the importance of and the level of activity towards personally held values. The questionnaire assesses action and importance across ten separate and widely-encompassing valued domains, including family relations, parenting, employment, recreation, and others. Clients are asked to rate how important each domain is personally on a 1 to 10 Likert scale, and are asked to do the same on a similar scale assessing for consistency in action with personal values. The VLQ is itself simply a questionnaire with some psychometric support (Cotter, 2011; Romero-Moreno, Gallego-Alberto, Marquez-Gonzalez, & Losada, 2017), but it has been used as a clinical intervention tool to provide the client a simple visual into the consistency in which they may live a valued life (Dahl, Wilson, & Nilsson, 2004). Wilson and Dufrene (2009) updated the VLQ with a second edition (VLQ-II), with the major addition in the questionnaire being the addition of two more valued domains – aesthetics and environment. While the VLQ-II has more domains provided within the questionnaire, it has thus far lacked the empirical support of its predecessor. Nonetheless, with the utilization of the VLQ in therapy, the clinician focuses on disparities between self-reported importance and self-reported activity across valued domains, with special focus on wide disparity between the questions.

Another measure that has also been used as an intervention is the Bulls-Eye Values Survey (BEVS; Lundgren, Luoma, Dahl, Strosahl, & Melin, 2012). The BEVS was designed to be a full-session intervention to clarify ideographic values pertaining to the individual in session. To complete the BEVS, a client is asked to identify and describe personal values across four domains (work/education, leisure, relationships, and personal growth/health). These four domains are displayed on a dartboard-like image, and the client is instructed to visualize the center of the board as acting consistently with the values and the furthest ring from the center representing acting inconsistently with the values. The client marks their levels of consistently acting on their values on the board for each domain. They are then asked to describe all obstacles that may appear when trying to live consistently with their values. Finally, the client is asked to identify at least one action they may be able to take which is consistent with their values for each valued domain. The BEVS was shown to be a reliable and valid intervention, but others have argued that the survey may not be suitable in empirical research due to the length of time needed to complete for each participant (Trindade et al., 2016). Nevertheless, the BEVS has been shown to be sensitive to treatment and a good intervention to increase clarity of values and valued action (Villatte et al., 2016; Dahl, 2015), indicating that it may be a beneficial intervention tool in the clinical setting regardless lack of robust empirical support.

Another common intervention used to provide values clarification is values writing. Writing and reflecting about what personally matters is a powerful intervention typically used to provide insight and knowledge of personally held values (Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013). The use of writing about values in therapy has been used as a short intervention (Creswell et al., 2005; Levin et al., 2012), as well as engaging in values writing between sessions in the form of values diaries or journals (Kirschenbaum, 2013). It has been

argued that actively performing enjoyable tasks may result in more enjoyable thoughts and emotions while also connecting the individual to themselves in a deeper manner; writing is no exception (Lyubomirsky & Layous, 2013). Researchers have previously found promising results with using self-affirmation and values writing when it comes to improving constructs such as negative affect (Harris & Napper, 2005), overall defensiveness (Crocker, Niiya, & Mischkowski, 2008), school performance (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009), self-control (Schmeichel & Vobs, 2009), and physiological symptoms of stress (Sherman, Bunyan, Creswell, & Jaremka, 2009), among others. As a research and intervention tool, values writing appears to be a well-established method to improve symptoms and quality of life.

Values Card Decks

A prominent intervention to provide clarification of personal values is through the use of a values card sort. A variety of values-oriented card decks are available, with the basic premise of the sort consistent across each of them. Clients are to be provided with a stack of dozens of small cards, each with the name of a potential personal value printed. Clients are then instructed to sort the deck of cards into three piles based on importance to their life (i.e. very important to me, somewhat important to me, and not important to me), and resort until their most important stack is of adequate size. Using the values card sort can be a powerful intervention due to the manipulatable nature of physically sorting the deck into piles and visually identifying the importance of each.

Perhaps the most commonly researched values card deck has been the Motivational Interviewing values deck (Miller, C'de Baca, Matthews, & Wilbourne, 2001). The deck consists of 86 cards. Of the 86 cards, 83 consist of printed values ranging from "Tolerance" and "Rationality" to "Monogamy" and "World Peace". The remaining three cards are intentionally

left blank for the purpose of filling in another value that may not be represented that the client believes is important. This card deck has been created for the purposes of motivational interviewing, a process by which the clinician attempts to facilitate change with the client in the face of ambivalence. Using the values card deck in accordance with the motivational interviewing technique facilitates the knowledge of personally held values in a way to motivate the client to change the path in which they are.

Motivational interviewing was initially designed for treatment of alcoholism (Miller & Rollnick, 2012), so it is not surprising that a majority of the existing literature into the utility of the motivational interviewing card sort has been focused on substance use and abuse. Quite a bit of the research conducted with this values deck has incorporated the card sort as a brief intervention in a larger motivational interviewing series of sessions across varied populations, including patients with schizophrenia and alcohol abuse (Graber, Moyers, Griffith, Guarjardo, & Tonigan, 2003), young homosexual and bisexual males with drug abuse and risky sexual behavior (Parsons, Lelutiu-Weinberger, Botsko, & Golub, 2014; Lelutiu-Weinberger et al., 2015), and adolescent marijuana users (Feldstein Ewing et al., 2013). Since the card sorting activity in these studies was just one part of a larger treatment package, it is difficult to know if or how much the activity in itself may contribute to clinically relevant outcomes. However, there have been some studies in which researchers have attempted to assess the utility of the values card sort exclusively.

Zhang, Dindoff, Arnold, Lane, and Swartzman (2015) conducted a research study into the importance of specific values patients with heart failure, as facilitated by the motivational interviewing card sort. The researchers had forty patients identify their top five values assessed by the values card sort, and had found that patients with heart failure who consider personal

autonomy and other values outside of the context of physical health had significantly greater self-care practices than those who valued physical health. The implication of the study appears to be that having a broader range of life values can have greater impact on functioning than narrower ones.

The role of values does not necessarily have to be limited to psychological and physical functioning. Sheehan and Schmidt (2015) utilized the motivational interviewing values card sort with 121 undergraduate and graduate accounting students. The purpose of this exercise was to provide a means of teaching about accounting ethics in a different and more personal way, with the students asked to connect personal values with the ethical standards of their field. This was a nonexperimental design, but provided important insight to the students and the participants felt a stronger sense of ethical decision-making after the sort than they had felt before the intervention.

It is possible that the motivational interviewing card sort is problematic, however. Sandelowski, DeVellis, and Campbell (2008) conducted the motivational interviewing card sort with 24 patients in a hospital setting, with interest in the value of "health" in particular. It would stand to reason that hospital patients would feel an obligation to value health, but the concern lied in the interpretation of the value. The researchers noted that the value of "health" had different connotations depending on the person; some argued that health is necessary to fulfill other personally held values, some argued that health is God's will and not dependent on humans, and even others argued that health is not a value on its own because it is not possible to be healthy without having a value of responsibility as well. This is indicative that there may be a problem with the card deck if there can be several interpretations of a single value. There may be more need for specificity in the cards.

Indeed, motivational interviewing takes the concept of values clarification in a different direction than does ACT. Specifically, as previously outlined, ACT defines values as something that provides directions for one's life, and not attainable goals (Hayes et al., 1999). Miller and Rollnick (2013) defined values in the motivational interviewing context as being goals one has for their lives and not necessarily ways in which to behave, providing a point of contention between the two schools of thought. Ciarrochi and Bailey (2008) created a values card deck based around specific and actionable values more closely aligned with the ACT definition than the motivational interviewing deck. The Survey of Guiding Principles (SGP) card sort includes 61 cards. Fifty-eight of the 61 cards include actionable values such as "Working on practical tasks" and "Promoting justice and caring for the weak". The three remaining cards are blank, intended on having the client fill in other values they may have, similar to the motivational interviewing deck. This deck is meant to be more aligned with ACT as a model, and allows for more specific cards than the motivational interviewing deck had in that deck. The deck is composed around ten valued domains considered to be universal in nature in previous research (Schwartz & Bilsky, 1987). While the SGP card sort has been less researched than the motivational interviewing counterpart, there have been protocols created that utilize this card sort as a means of values clarification (Whiting, Simpson, McLeod, Deane, & Ciarrochi, 2012; Thomas, Morris, Shawyer, & Farhall, 2013; Wiggs & Drake, 2016). As an intervention component in a larger protocol, it appears that the card sort is a capable method of improving clarity in values.

While there have been few research studies conducted to assess the capability of the SGP card sort intervention, the published studies assessing the sort provides promising results. For example, Williams et al. (2016) were interested in the impact that values clarification has in the

workplace motivation of mental health workers. The researchers collected data on 146 mental health workers attending training and development programs as a part of the position. Of the 146 workers, 79 were randomly assigned to a values condition and the other 67 randomly assigned to an implementation condition. Each condition had three days of training, with the same training provided for the first two days for each group. Those in the implementation condition were provided training on identifying barriers to the position and opportunity to implement the skills learned throughout the previous two days of training. Those in the values condition also had a third day of training, but the training day was filled with two separate values card sorts: one regarding personally held values, and the second regarding values in the workplace. The participants in the values condition also took place in a discussion surrounding their personal and workplace values. The researchers found that the participants in the values condition were significantly more motivated for practice and implementation planning than those in the implementation condition. The results appear to signify that values clarification through the means of a card sort is motivational in a unique way, perhaps through the idiographic nature of personal values.

Mental health workers were also subject to another research study assessing the values card sort. Veage, Ciarrichi, Deane, Andresen, & Oades (2014) utilized a cross-sectional approach to the values card sort, asking 106 mental health practitioners to participate in the intervention and take some questionnaires. Similar to the values condition in the Williams et al. (2016) study, participants were asked to complete two sorts assessing for personal life values and assessing for work values. The researchers were interested in assessing for value congruence among personally held values and assessing for burnout and well-being. Veage and colleagues (2014) found that those who are holding life values incongruent with work-related values predicted both

higher burnout and lower psychological well-being than those who had congruence with their personal and work values, indicating that living in accordance with personally held values congruently across a variety of life experiences is helpful for reducing stress and increasing personal satisfaction. Values clarification could be a promising venture for reducing anxieties and stressors in day-to-day life.

A limitation present with both the Motivational Interviewing and the SGP card sorts is the lack of other clinically-relevant and ACT-consistent information presented in the sorts. By including values as the only possibilities in the deck provides the decks valuable information regarding personal goals and valued motivators, but clients often present with inflexible strategies. It is possible, and oftentimes likely, that clients appear with motivations characteristic of psychological inflexibility, particularly controlling strategies like experiential avoidance or emotional control strategies (Kashdan, Breen, & Julian, 2010; Veage et al., 2014). Adding other cards to an ACT-consistent values card deck to better understand overall motivators for clients may be more clinically relevant.

Therapeutic Activities Outside of Therapy Sessions

ACT is a behaviorally-based therapeutic approach, focused on changing maladaptive and dysfunctional behavior. Like any behavioral treatment, utilizing the skills learned in therapy into day-to-day practice is imperative. One major component in therapy in general, and behavioral and cognitive-behavioral therapies specifically, is the practice of translating skills into daily practice (Helbig & Fehm, 2004). The purpose of this is to put what is learned through therapy into practice in the individual's life, with the goal being to provide an understanding and generalization of skill use outside of therapy. Work outside of therapy can come in the form of more formal homework assignments or more informal general skill practice (Vettese, Toneatto,

Stea, Nguyen, & Wang, 2009). The majority of psychotherapists use homework or stress the need for skill utilization in their practice, particularly those with an orientation towards cognitive and behavioral approaches, and psychologists have endorsed assigning skills practice in most of their sessions (Kazantzis & Deane, 1999). A majority of psychologists surveyed also endorsed the belief that the importance of practicing skills outside therapy will increase as psychotherapy continues to evolve (Norcross, Alford, & DeMichele, 1992). Two broad meta-analyses of the effects of homework and skill practice in therapy appeared to indicate that outside practice does indeed increase therapeutic outcomes (Kazantzis, Deane, & Ronan, 2000; Kazantzis, Wittington, & Dattilio, 2010).

Homework and skill utilization have previously been used effectively in treatment for several types of psychopathology. Behavioral and cognitive behavioral therapies have noted outside work for clients is effective for depression (Burns & Spangler, 2000; Startup & Edmonds, 1994), social anxiety disorder (Marks, 1995; Edelman & Chambless, 1995), generalized anxiety disorder (Barlow, Esler, & Vitali, 1998), obsessive-compulsive disorder (Cordioli et al., 2003; de Araujo, Ito, & Marks, 1996; Abramowitz, Franklin, Zoellner, & DiBernardo, 2002), substance use disorders (Gonzalez, Schmitz, & DeLaune, 2006; Carroll, Nich, & Ball, 2005) and panic disorder (Schmidt & Woolaway-Bickel, 2000), among others. Client homework has also been utilized effectively in treatment for subclinical or nondiagnostic problems as well, including poor social skills (Falloon, Lindley, McDonald, & Marks, 1977), grief (Spuij, van Londen-Huiberts, & Boelen, 2013), marital and relationship concerns (Hawrilenko, Eubanks-Fleming, Goldstein, & Cordova, 2015), sleep problems (Edinger & Carney, 2015), and anger (Ireland, 2004). Previous research yielded results that suggest that therapy which involves skill utilization provides greater improvement than therapy without

homework, especially when number of sessions is controlled (Al-Kubaisy et al., 1992). A recent meta-analysis examined the relationship between utilization of skills and homework compliance with therapy outcomes, and concluded that there is a small to medium effect size on therapy; the effect sizes were equally robust across a variety of targeted symptoms in the meta-analysis (Mausbach, Moore, Roesch, Cardenas, & Patterson, 2010). The available evidence strongly suggests that skill practice is a beneficial and welcome part of modern therapies for a wide variety of presenting client concerns.

Homework compliance and practicing of skills outside of therapy facilitates progress not just during therapy but also seems to perpetuate progress after therapy is terminated. Cammin-Nowak et al. (2013) analyzed whether compliance is affected by the type of work provided in therapy. The experimenters focused on two types of work: exposure, wherein clients were asked to participate in behavior-based physical exposure, and interoceptive, wherein clients were asked to actively engage with emotions and cognitions when thinking of feared stimuli. The researchers have reported that compliance for each style predicted improvement among a sample of clients with agoraphobia, and the effects of the compliance remained stable during a six-month follow-up. Carroll et al. (2005) conducted a similar study among clients with cocaine dependence, and the researchers have found in their study that homework compliance is related to treatment outcome both post-treatment and at a one-year follow-up. Park et al. (2001) conducted a study involving exposure for clients with phobias and panic disorders. Clients who completed exposure at home outside of exposure in session had significantly greater improvement post-treatment than those who did not complete the outside assignments, and the compliance predicted significant gains at a two-year follow-up as well. Research evidence points to completion of skills outside of

a therapeutic setting not just giving proper gains during the treatment period but also significantly later in life as well.

Considering that work outside of session is positively associated with treatment outcomes seemingly regardless of presenting concerns, efforts to incentive the completion skills by clients might be a useful treatment addition. Noncompliance, however, is very common in therapy. Kazantzis, Lampropoulos, and Deane (2005) conducted a large survey of 827 practicing psychologists of varying theoretical backgrounds. Of those practicing psychologists surveyed, 93% reported that their clients have historically had low-to-moderate compliance with assigned skill practice and homework. Two-thirds of the practitioners surveyed reported strong belief of the importance of skills utilization in their practice as well. Overall, the survey of psychologists suggest that homework is both very helpful and inconsistently completed.

Fehm and Kazantzis (2004) have also conducted a large survey assessing for attitudes and implementation of homework from practicing psychologists in Germany. The researchers received responses from 140 psychotherapists who have shared opinions regarding and personal use of assignments in therapy. A series of questions posed to the psychologists assessed for problems regarding outside work for clients. The most common problem reported by the psychologists by a wide margin was noncompliance; 91% of practitioners endorsed that clients do not complete outside work completely. Noncompliance of assignments could potentially be a problematic part of therapy regardless of culture, and it appears to be a pervasive aspect of therapy involving skill practice.

Helbig and Fehm (2004) surveyed 77 practicing therapists about skill practice and homework in therapy and problems with its use. The researchers found that three-fourths of psychologists surveyed endorsed problems with homework related to noncompliance or

nonacceptance of the work among their clients. The therapists have also endorsed difficulty of assignments as a major reason offered by clients for noncompliance. However, statistical analyses indicated that most of the variance in noncompliance were more related to individual client characteristics than assignment difficulty, indicating that difficulty is not the best predictor for noncompliance. Regardless of reasoning, noncompliance appeared to be a common feature in therapy.

Up to half of psychotherapists have endorsed their clients have indicated at one point or another in therapy that the assignments provided was too challenging to fully complete or that they were fearful of failing them (Fehm & Kazantzis, 2004; Helbig & Fehm, 2004). Interestingly, client views of homework difficulty are unrelated to therapist views of homework difficulty (Fehm & Kazantzis, 2004), supporting the subjective nature of perceived difficulty. Despite client reasons, it appears that compliance is not related to severity of symptoms or problems experienced by the client, as was previously theorized. In fact, it appears that clients who complete homework later receive more significant gains, indicating the nature of completion of homework and skill utilization leads to improvement, not improvement leading to increases in completion or utilization (Worthington, Jr., 1986; Burns & Spangler, 2000; Edelman & Chambless, 1995). It is therefore imperative to address the concerns of noncompliance and determine if a change in technique can be beneficial. If skill utilization compliance is indeed an important variable in treatment outcome, and if compliance is difficult to predict, then perhaps providing a simpler solution to have clients engage with therapeutic techniques between sessions is necessary.

Perhaps more cognitive skills do not need formal homework assignments in therapy to be effective. Mindfulness-based approaches often require clients to engage with practicing of skills

more informally, usually involving bringing mindful attention to daily experiences without the formal aspect of paper monitoring assignments (Kearney, McDermott, Martinez, & Simpson, 2011; Vettese et al., 2009; Brewer et al., 2011; Minor, Carlson, Mackenzie, Zernicke, & Jones, 2006). With the goal for values work in ACT being a further clarification, understanding, and awareness of personal values, more informal practice regarding mindful reminding of values may be more appropriate than formal assigned homework.

There is a history of using rubber bands around wrists of clients as an aversive stimulus, in which clients would snap a band against their wrists to cause pain and theoretically establish an association of problematic behaviors or unpleasant urges with painful sensation (Mastellone, 1974); however, there is a lack of empirical support for the technique and evidence suggests using a rubber band as an aversive stimulus is ineffective (Foa, 2010). In fact, it was previously proposed that perhaps the rubber bands elicit a reminder of the behavior or obsession as opposed to deterring the pattern (Blue, 1978). If the theory of the rubber band as a reminder of engaging with private experiences holds true, then perhaps using a rubber band as a reminder to engage with informal practice of mindful skills could be a beneficial addition to treatment.

Current Proposal

The current study attempted to assess two topics – a new card sort and a values reminder technology. The primary focus of the proposed study was on assessing the use of an ACT-consistent values card deck developed in conjunction with an ACT protocol used by graduate student clinicians at the Clinical Center of Southern Illinois University. The composition of the cards was based upon the VLQ-II (Wilson & Dufrene, 2009); namely utilizing values across all twelve values domains: parenting, family, intimate relationships, friends/social life, community life, education/training, work, spirituality, recreation/fun, physical self-care, the environment,

and aesthetics, plus a thirteenth domain containing relatively general values that may not be isolated to any one of the previous 12 domains. Each values domain has six cards, for a total of 78 values cards. Thirty-six additional cards are also included in the deck that represent "faux values" – cards with statements indicating a desire to control one's thoughts or emotions or the behavior of others (e.g., "controlling my emotions", "feeling calm", "being loved by someone", etc.). These "faux values" may offer clinically-relevant information about the degree of fusion, self-as-content, or experiential avoidance that reflect psychological inflexibility and interfere with valued action. This card deck has not had empirical support as an intervention to date; therefore, the primary purpose of the present study was to explore the utility of such a card sort.

The secondary purpose of the present study was to test the utility of a simple and cheap method of client engagement outside of session within an undergraduate population. The present study aimed to assess the feasibility of wearing a rubber band on the wrist as a cheap, convenient, and persistent reminder to remember one's values. Particularly, the present study utilized the modified version of an ACT consistent values card sort containing 114 cards outlined above. The proposed study had three conditions: a control card sort condition, the values card sort condition, and the values card sort and rubber band condition. Participants responded to a variety of measures before and one week after engaging in the intervention. The participants for the current study were recruited from Southern Illinois University in Carbondale, Illinois, and were reimbursed with partial course credit.

The current study recognized the concerns regarding homework completion. Despite results of research studies suggesting that skill practice outside of session is a valuable and predictive aspect of treatment outcome, compliance ranges from rare to unreliable among clients. It is possible that providing a rubber band for clients to wear around their wrists and asking for

practicing of skills when noticing the rubber band outside of session could be an answer to the problem of noncompliance. If a client wears the rubber band around the wrist, there is no longer the concern of not having assignments with them, nor the concern of the assignment being too difficult to complete, nor the concern of no time in the week to practice skills. Furthermore, this rubber band serves a purpose of being applied and potentially used as a reminder in every context in the person's life, which could lead to more generalizability of skills.

Hypotheses

The aim of the current study was to assess the intervention of the values card sort and to assess the efficacy of using a rubber band as a reminding agent to engage with personal values. The present study had the following hypotheses:

1. The condition means will differ significantly in values connection at a one-week follow-up. More specifically, the values card sort condition will have significantly higher levels of values connection and significantly lower lack of connection with values as measured by the MPFI when compared to the control condition. The values card sort with rubber band condition will have significantly higher levels of values connection and significantly lower lack of connection with values as measured by the MPFI when compared to the values card sort condition.
2. The condition means will differ significantly in negative affect at a one-week follow-up. More specifically, the values card sort condition will have significantly lower levels of negative affect as measured by the DASS when compared to the control condition. The values card sort with rubber band condition will have significantly lower levels of negative affect as measured by the DASS when compared to the values card sort condition.

3. The condition means will differ significantly in quality of life at a one-week follow-up. More specifically, the values card sort condition will have significantly higher levels of quality of life as measured by the WHOQOL-BREF when compared to the control condition. The values card sort with rubber band condition will have significantly higher levels of quality of life as measured by the WHOQOL-BREF when compared to the values card sort condition.

CHAPTER 2

METHODS

Participants

The participants of the proposed study were undergraduate students currently enrolled in the *Introduction to Psychology* (PSYC 102) course at Southern Illinois University (SIU) in Carbondale, Illinois. The participants were compensated in the form of partial course credit, per course requirements. In addition to the course credit, and to improve attrition rates, the study involved a drawing for a $25 gift card of participants who completed the one-week follow-up and provided an email contact for each semester of data collection. Participants in the proposed study were recruited via signing up for a time slot on the university's human subject recruitment website (SONA).

Once enrolled in the study, participants were provided with the informed consent form and were read the form by the researcher. The form stated that participation in the proposed study is voluntary and participants can withdraw at any point. The form also outlined the second part of the study. Each participant was assigned a research number, with each number associated with their email address. The participants were informed that they would be receiving an email one week after their participation, which will include a link to a survey through Qualtrics. Both the participant and the researcher, indicating understanding by the participant of the nature of the proposed study, then signed the informed consent form.

Measures

Demographics (See Appendix A). Participants in the present study were asked to respond to a short questionnaire about demographic characteristics, specifically age, sex,

race/ethnicity, religious affiliation, political affiliation, sexual identity, country of origin, socioeconomic status, and previous therapy experience.

Depression, Anxiety, and Stress Scale (DASS; See Appendix B). The DASS (Lovibond & Lovibond, 1995a) is a 42-item measure of three negative emotion states: depression, anxiety, and stress. Participants are asked to express how much each statement applied to them on a Likert scale, with potential answers ranging from 0 (*did not apply to me at all*) and 3 (*applied to me very much, or most of the time*). Fourteen questions assess for each of the three emotional states. To score, each answer among each domain is added to get an overall score for depression, anxiety, and stress separately. In this instance, scores range from 0 to 42 for each construct, with higher scores indicating more severe the emotional state. Adding all items together provide an overall negative affect score, providing a broader construct of interest with scores ranging from 0 to 126.

The DASS is a psychometrically sound questionnaire for all constructs it intends to measure. Brown, Chorpita, Korotitsch, and Barlow (1997) researched the reliability of the DASS with a clinical sample. The researchers found that the DASS has excellent internal consistency for depression (Cronbach's alphas between .91 and .96 depending on the disorder of the client), anxiety (Cronbach's alphas between .88 and .89), and stress (Cronbach's alphas between .89-.94). The DASS has also shown to have good test-retest reliability over a two-week period, with correlations ranging from .71 to .81 depending on the construct. Brown et al. found that the three-factor structure of the DASS using a factor analysis as well, confirming the factor structure proposed by Lovibond and Lovibond (1995b). The DASS is also a reliable and valid measure of negative affect, as it assesses broadly both physiological and cognitive symptoms of negative and unpleasant emotions (Antony & Barlow, 2011). In this current project, the DASS has shown

excellent internal consistency for depression (baseline = .95, follow-up = .97), anxiety (baseline = .90, follow-up = .92), stress (baseline = .93, follow-up = .95), and overall scores (baseline = .97, follow-up = .98).

Follow-up Question (See Appendix C). Each participant was asked the question, "How many days in the past week have you worn a rubber band around your wrist?" and provided a space for the participant to enter their answer. This was asked as a manipulation check to assess how well participants adhered to the rubber band condition. This question was asked to each participant, and the answers provided by the participants in the other two conditions were not analyzed.

Multidimensional Psychological Flexibility Inventory (MPFI; See Appendix D). The MPFI (Rolffs, Rogge, & Wilson, 2016) is a 60-item measure of both psychological flexibility and psychological inflexibility based on the ACT model. Five questions assess for each of the six components of psychological flexibility and each of the six components designed to measure inflexibility. Participants are asked to express how accurate each statement personally is on a Likert scale, with potential answers ranging from 1 (*never true*) to 6 (*always true*). To score, each answer among the flexible questions is added to get an overall psychological flexibility score and each answer among the inflexible questions is added to get an overall psychological inflexibility score. Possible scores range from 30 to 180 on each dimension, with higher scores indicating higher levels of psychological flexibility or inflexibility depending on the scale. Possible scores for each component of psychological flexibility and inflexibility range from 5-30.

The MPFI is a newer questionnaire, so wide psychometric studies outside of the initial article by Rolffs and colleagues (2016) have not as of yet been published. However, the

researchers have found the MPFI to be a reliable and valid measure. Rolffs et al. also found that each composite of the MPFI had excellent internal reliability, with the flexibility composite had a Cronbach's alpha of .91 and the inflexibility composite had an alpha of .90. Each of the components of psychological flexibility and inflexibility also had great internal consistency as well. The researchers have found a clear two-factor structure, with the factor analysis noting that psychological flexibility and psychological inflexibility are notably and statistically different in their questionnaire. The six constructs measured in the flexibility composite had alphas ranging from .89 (self-as-context) to .93 (committed action). The six constructs measured in the inflexibility composite had alphas ranging from .87 (lack of contact with values) to .95 (fusion). The internal consistencies for the constructs measured in Hypothesis 1 were good to excellent, with connection with values baseline alpha being .93 and follow-up alpha being .94 and baseline lack of contact with values alpha being 85 and follow-up alpha being .88

World Health Organization Quality of Life Assessment – Brief Form (WHOQOL-BREF; See Appendix E). The WHOQOL-BREF (World Health Organization Quality of Life Group, 1998) is a 26-item measure of quality of life across four domains: physical health, psychological health, social relationships, and environment. There are also two questions that assess for personal life quality and life satisfaction. Participants are asked to rate the questions on a 5-point Likert scale, with 1 indicating the lowest level for each question and 5 rating the highest level for each question Two items measure overall quality of life and general health (with possible scores being from 2-10), seven items measure physical health (7-35), six items measure psychological health (6-30), three items measure social relationships (3-15), and eight questions assess for environment (8-40). To assess for overall quality of life, the scores of each item are

added together to provide a range of possible scores between 26 and 130. Most questions are scored normally, and three questions are reverse scored.

The WHOQOL-BREF is a widely researched questionnaire assessing for quality of life, partly due to its brief nature when compared to the original and partly due to the robust research of the questionnaire across cultures impacted by the World Health Organization. Indeed, the WHOQOL-BREF is well-validated across several cultures, including among Somali (Redko, Rogers, Bule, Siad, & Choh, 2015), Iranian (Usefy et al., 2010), New Zealander (Krageloh et al., 2013), Chinese (Zhang et al., 2012), and American populations (Guay, Fortin, Fitretoglu, Poundja, & Brunet, 2015). The existing research appears to indicate support for the four-factor model initially proposed (Garcia-Rea & LePage, 2010; Redko et al., 2015; Usefy et al., 2010; Zhang et al., 2012). The research also shows that each factor has internal consistency ranging from adequate to good. The existing literature provides Cronbach's alphas ranging from .65-.86 for the physical health factor, .71-.86 for the psychological factor, .67-.83 for the social relationships factor, and .73-.82 for the environment factor (Garcia & LePage, 2010; Guay et al., 2015; Krageloh et al., 2013; Redko et al., 2015; Usefy et al., 2010; Zhang et al., 2012). The WHOQOL-BREF is a good, well supported measure of current quality of life across four constructs and across cultures. Internal consistency for the WHOQOL-BREF were between acceptable and excellent among the physical health domain (baseline = .74; follow-up = .81), psychological domain (baseline = .85; follow-up = .86), social relationships domain (baseline = .77; follow-up = .73), environment domain (baseline = .83; follow-up = .84), and overall domain (baseline = .93; follow-up = .94).

Design

The proposed study was an experimental design with a follow-up component one week after the initial intervention. Upon receiving informed consent, each participant was asked to complete a series of self-report questionnaires to evaluate psychological flexibility, psychological distress, and quality of life. The questionnaires will be presented in random order to balance for any potential order effects. Following the self-report questionnaires, each participant was randomly assigned to one of three card sorting conditions. Each participant completed the card sort matching their experimental condition after having a discussion with an experimenter, who then ensured adequate completion of the card sort by the participant in the study. The study took place in private rooms with a single participant and experimenter, providing a similar structure for a one-on-one therapeutic intervention.

Control Card Sort Condition. The control card sort condition prompted the participant to sort a stack of 114 common words in the English language into how common they feel the words are in their lives (i.e. *not common*, *somewhat common*, and *very common*). The cards were sorted repeatedly until the pile of cards in the *very common* category ended with fewer than 15 words. The purpose of this card sort is to replicate closely the values-based card sort condition while making the condition as sterile and unrelated to personal values as possible. The words used for this condition were the 114 most common words in the English language compiled by Fry, Kress, and Fountoukidis (2000). The experimenter placed the three categories in front of the participant and instructed the participant to sort the deck into three piles based upon the most common words they hear on a daily basis. The participant continued to sort the stack in the *very common* pile until they ended up with eight to twelve words in the pile. The experimenter then

asked the participant to try and notice how common the words they have sorted are in their lives for the following week.

Values Card Sort Condition. The values card sort condition prompted the participant to sort a stack of 114 cards with common values into three piles assessing personal importance (i.e. *not important to me*, *somewhat important to me*, and *very important to me*). The cards were sorted repeatedly until the pile of cards in the *very important to me* category ended with fewer than 15 values cards. The experimenter facilitating the card sort had a brief discussion on the importance of the values for the participant, and specifically addressed questions on how workable and actionable the chosen values are to both provide insight on the unworkability on "faux values" and to initiate thinking of values in actionable ways. The experimenter then requested the participant to spend time thinking of their values each day for the following week.

Values Card Sort and Rubber Band Condition. The values cards sort and rubber band condition was nearly identical to the values card sort condition, except that at the end of the card sort activity participants were asked to wear a rubber band on their wrist and to think of their most important values each time they notice the band on their wrist for the following week.

Following the card sort activity in each condition, participants completed a brief demographics survey. At the end of each experimental session regardless of condition, all participants were asked to provide an email address to be contacted one week later for follow-up data. Participants were contacted exactly one week following the card sort via email. Each participant received a link to a Qualtrics survey via email with the MPFI, DASS, WHOQOL-BREF, and the Follow-up Question with a unique password provided for each participant to enter the survey. Each participant participating in the initial card sort received one point for

course credit and received an additional one point of course credit if they complete the follow-up package of questionnaires within the same day as getting the follow-up email.

CHAPTER 3

RESULTS

Preliminary Analyses

All analyses were conducted using SPSS version 25. The sample of the study included 112 undergraduate participants. Demographics were collected after the experimental card sort was completed, and each participant completed the demographics form. The sample had a mean age of 18.84 (*SD* = 1.26) and was primarily white or Caucasian (66.1%), heterosexual (91.1%), female (58.9%), and enrolled as a freshman (68.8%) For complete demographics, see Table 1.

Table 1. Demographic Composition of Sample.

Category	Level	%	Category	Level	%
Age *M* = 18.84	17	1.8	Race or Ethnicity	American Indian or Alaska Native	2.7
	18	46.4		Asian	5.4
	19	36.6		Black or African American	23.2
	20	6.3		Hispanic or Latino	8.9
	21	3.6		Native Hawaiian or Other Pacific Islander	0
	22	2.7		White or Caucasian	66.1
	23	1.8		Other	4.5
	25	0.9	Religious Affiliation	Agnostic	13.4
Country of Origin	United States	96.4		Atheist	2.7
	Other	3.6		Buddhist	1.8
Student Year	Freshman	68.8		Christian	65.2
	Sophomore	25.9		Hindu	0.9
	Junior	4.5		Jewish	1.8
	Senior	0.9		Muslim	5.4
Psychotherapy Experience	Yes	30.4		Other	8.9
	No	69.6	Sex	Female	59.8
Political Affiliation	Democrat	48.2		Male	40.2
	Republican	25.0		Other	0
	Other	26.8	SES	$25,000 or less	35.7
Sexual Orientation	Bisexual	5.4		$25,001-$50,000	21.4
	Heterosexual	91.1		$50,001-$75,000	19.6
	Homosexual	3.6		$75,001 or more	23.2

In all, twelve of the 112 participants failed to complete the one-week follow-up of the study (10.7% attrition). Of the twelve participants, seven were assigned to the values card sort condition, three were assigned to the values and rubber band condition, and two were assigned to the control condition. To determine if those who withdrew from the study prematurely were significantly different from those who completed the study, a series of t-tests were conducted. The t-tests had the constructs of interest from the hypotheses listed as dependent variables, and whether the participant completed part two of the study as the independent variable. The t-tests determined no significant differences in connection with values, $t(110) = 0.426$, $p = .671$, lack of contact with values, $t(110) = 0.872$, $p = .385$, negative affect, $t(110) = 0.135$, $p = .893$, or quality of life, $t(110) = 1.011$, $p = .314$. These analyses demonstrate no significant difference in constructs of interest between those who did and did not complete the study, suggesting there was no link between the constructs and attrition rate. Among the 34 participants in the values and rubber band condition who provided follow-up data, the average number of days that they reported wearing the rubber band was 5.88 ($SD = 1.78$), with a range from 1 to 7 days. For measures cited in the hypotheses, average scores for each condition at baseline and follow-up are depicted in Tables 2 and 3.

Table 2. Group Means of Variables of Interest at Baseline.

	Connection with Values		Lack of Contact with Values		Negative Affect		Quality of Life	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Values	21.816	4.661	11.921	4.270	26.947	24.080	98.447	15.006
Rubber Band	21.757	5.894	11.487	4.501	22.946	23.629	99.487	13.888
Control	20.784	5.618	11.865	4.029	23.405	23.346	97.702	17.057

Table 3. Group Means of Variables of Interest at One-Week Follow-up.

	Connection with Values		Lack of Contact with Values		Negative Affect		Quality of Life	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Values	22.000	6.017	11.645	5.672	24.483	25.072	99.968	12.932
Rubber Band	21.618	5.129	10.941	3.507	18.882	22.536	99.559	14.865
Control	21.057	5.434	10.514	3.921	24.629	29.646	97.688	17.895

Tests of Assumptions

Some suggest that assumptions of ANCOVAs are appropriately met only in randomized experiments (Thompson, 1994; Field, 2013), but some assumptions require statistical analyses. Both of the following assumptions of ANCOVA procedures were assessed for all hypotheses following the recommendations by Field (2013): 1) independence of the covariate and the experimental effect, and 2) homogeneity of regression slopes.

Assumption 1. To assess the assumption of independence of the covariate and the experimental effect, ANOVAs are completed for each of the four variables hypothesized to change. The assumption would not be violated unless there are statistical differences between the groups in the covariate in question. This assumption was appropriately met, as the one-way ANOVAs indicated that covariates were not statistically different among the groups. More specifically, the three conditions were comparable in baseline values connection ($F[2, 109] = 0.427$, $p = .654$), lack of contact with values ($F[2, 109] = 0.114$, $p = .892$), negative affect ($F[2, 109] = 0.332$, $p = .726$), and quality of life ($F[2, 109] = 0.126$, $p = .882$). This suggests that the conditions in the present study were independent of the covariates outlined in the hypotheses.

Assumption 2. Regression slopes were plotted on a scatterplot, with the dependent variable being the outcome variable, the independent variable being the covariate, and the grouping variable being the condition for each ANCOVA. In order to meet this assumption, each

grouping variable slope must be moving in roughly the same direction; if significant deviation of the slope for one group exists compared to the other groups, this assumption is violated due to the covariate and outcome variable having differing relationships based on the group. This assumption was appropriately met, as each scatterplot had the regression lines moving in the same direction for each of connection with values, lack of contact with values, negative affect, and quality of life.

The current study utilized a series of ANCOVAs to interpret the relationship between the three experimental conditions and endorsement of components of psychological flexibility (connection with values and lack of contact with values), psychological distress (negative affect), and quality of life at the one-week follow-up. Using an ANCOVA allows for possible group variation between the values card sort condition, the rubber band condition, and the control condition at the beginning of the experiment to be controlled for through using covariates. Each ANCOVA had the grouping condition as the independent variable. For correlations of variables at baseline, see Table 4.

Table 4. Pearson Correlations Among Variables of Interest at Baseline.

	1	2	3	4
1. Connection with Values	-			
2. Lack of Contact with Values	-.580**	-		
3. Negative Affect	-.503**	.585**	-	
4. Quality of Life	.555**	-.553**	-.644**	-

Note. ** = $p \leq .01$

Hypothesis 1: The condition means will differ significantly in values connection at a one-week follow-up. More specifically, the two values card sort conditions will have significantly higher levels of values connection and significantly lower lack of connection with values as measured by the MPFI when compared to the control condition. The values card sort with rubber band condition will have significantly higher levels of values connection and significantly lower lack of connection with values as measured by the MPFI when compared to the values card sort condition.

Two ANCOVAs were conducted to address the first hypothesis. The first ANCOVA was conducted by entering the dependent variable (one-week follow-up scores of connection with values measured by the MPFI subscale), the independent variable of experimental condition, and the covariate of the analysis (baseline connection with values). The ANCOVA demonstrated no significant difference between the conditions with respect to connection with values at follow-up when controlling for initial connection with values, $F(2, 96) = 0.047$, $p = .954$ (see Table 5). The second ANCOVA was conducted in a similar manner to the first, with the only differences being the dependent variable (one-week follow-up scores of lack of contact with values measured by the MPFI subscale) and the covariate (baseline lack of contact with values). The ANCOVA demonstrated no significant difference between the conditions with respect to lack of contact with values at follow-up when controlling for initial lack of contact with values, $F(2, 96) = 0.773$, $p = .465$ (see Table 6).

Table 5. ANCOVA Results for Connection with Values at One Week by Randomization Assignment and Baseline Connection with Values as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Connection with Values	862.573	1	862.573	39.520	< .001
Group	2.051	2	1.026	0.047	.954
Error	2095.342	96	21.836		

Table 6. ANCOVA Results for Lack of Contact with Values at One Week by Randomization Assignment and Baseline Lack of Contact with Values as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Lack of Contact with Values	808.579	1	808.579	71.533	< .001
Group	17.469	2	8.734	0.773	.465
Error	1085.143	96	11.304		

Hypothesis 2: The condition means will differ significantly in negative affect at a one-week follow-up. More specifically, the two values card sort conditions will have significantly lower levels of negative affect as measured by the DASS when compared to the control condition. The values card sort with rubber band condition will have significantly lower levels of negative affect as measured by the DASS when compared to the values card sort condition.

An ANCOVA was conducted to address this hypothesis. This ANCOVA was conducted by entering in the dependent variable (one-week follow-up scores of negative affect measured by total score of the DASS), the independent variable of the experimental condition, and the

covariate (baseline negative affect). The ANCOVA demonstrated no significant difference between the conditions in follow-up negative affect when controlling for baseline initial negative affect, $F(2, 96) = 1.783$, $p = .174$ (see Table 7).

Table 7. ANCOVA Results for Negative Affect at One Week by Randomization Assignment and Baseline Negative Affect as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Negative Affect	45596.773	1	45596.773	219.935	< .001
Group	739.163	2	369.582	1.783	.174
Error	19902.669	96	207.319		

Hypothesis 3: The condition means will differ significantly in quality of life at a one-week follow-up. More specifically, the two values card sort conditions will have significantly higher levels of quality of life as measured by the WHOQOL-BREF when compared to the control condition. The values card sort with rubber band condition will have significantly higher levels of quality of life as measured by the WHOQOL-BREF when compared to the values card sort condition.

An ANCOVA was conducted to address the third hypothesis. This ANCOVA was conducted by entering in the dependent variable (one-week follow-up scores of quality of life measured by total score of the WHOQOL-BREF), the independent variable of the experimental condition, and the covariate (baseline quality of life). The ANCOVA demonstrated no significant difference between the conditions in follow-up quality of life when controlling for baseline negative affect, $F(2, 96) = 0.282$, $p = .755$ (see Table 8).

Table 8. ANCOVA Results for Quality of Life at One Week by Randomization Assignment and Baseline Quality of Life as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Quality of Life	18243.495	1	18243.495	353.570	< .001
Group	29.117	2	14.558	0.282	.755
Error	4953.398	96	51.598		

Post Hoc Analyses

A recent study with the values card deck featured in the current study (Kimball, 2018) suggested that previous therapeutic experience moderated the relationship between card sorting and measures of psychological flexibility, symptoms, and quality of life. Specifically, the study utilized a computerized form of the card sorting activity, and performance on the task was related differently to other measures based on previous experience with therapy. Perhaps the card sorting activity is more relevant or appropriate for those who are experiencing elevated distress; the group of participants who reported previous therapy experience in the Kimball study also endorsed a more clinical presentation. An item for therapy experience was included in the demographics form of the current study. Given the null findings in the current results, and to potentially extend this line of research, therapy experience was factored into a set of post hoc analyses on the current data in order to see if the intervention had a differential effect based on this variable. Of the initial sample, 34 participants endorsed previous therapeutic experience and 78 participants denied it. Independent samples *t*-tests were conducted to compare these two groups at baseline for each dependent variable. Similar to Kimball, participants with therapy

experience reported a significantly lower connection with values, higher lack of contact with values, and higher negative affect (but not significantly lower quality of life; see Table 9).

Table 9. Independent Samples t*-tests Assessing Group Differences Between Participants Endorsing and Denying Previous Therapy Experience on Variables of Interest at Baseline.*

	Therapy Experience			
	Endorsed	Denied	*t*	df
Connection with Values	19.059	22.500	-3.242**	110
	(5.404)	(5.060)		
Lack of Contact with Values	13.206	11.128	2.430*	110
	(4.395)	(4.033)		
Negative Affect	35.941	19.449	3.586**	110
	(26.448)	(20.389)		
Quality of Life	94.882	100.141	-1.692	110
	(12.756)	(16.029)		

Note. * = $p \leq .05$, ** = $p \leq .01$. Standard deviations appear in parentheses below the means.

Of the 34 participants who have endorsed previous therapy experience, 29 completed both parts of the study. To determine if there were significant trends in the conditions of the study based on previous therapy experience, slope analyses were conducted for each of the variables of interest. Each analysis was conducted in a similar fashion as the analyses testing the hypotheses, with endorsement or denial of previous therapy experience being added as a second independent variable to assess for interactions between treatment condition and experience with therapy. The first slope analysis was conducted with the dependent variable being connection with values at one-week follow-up, with the independent variables being the condition and the answer to the therapy question. Baseline connection with values was entered as the covariate. The analysis determined there was no significant condition by therapy experience interaction when assessing connection with values, $F(2, 93) = 0.663$; $p = .518$ (see Table 10).

Table 10. Trend Analysis Analyzing Interaction Between Condition and Endorsement or Denial of Therapy Experience on Connection with Values with Baseline Connection with Values as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Connection with Values	725.280	1	725.280	32.666	< .001
Group	9.006	2	4.503	0.203	.817
Therapy Experience	.198	1	.198	0.009	.925
Group x Therapy Experience	29.421	2	14.711	0.663	.518
Error	2064.886	93	22.203		

A second trend analysis was conducted. The dependent variable was lack of contact with values at follow-up, with independent variables being treatment condition and therapy experience. The covariate was baseline lack of contact with values. Results of the trend analysis demonstrated no significant condition by therapy experience interaction when assessing lack of contact with values, $F(2, 93) = 1.632$; $p = .201$ (see Table 11).

Table 11. Trend Analysis Analyzing Interaction Between Condition and Endorsement or Denial of Therapy Experience on Lack of Contact with Values with Baseline Lack of Contact with Values as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Lack of Contact with Values	697.336	1	697.336	61.865	< .001
Group	4.785	2	2.393	0.212	.809
Therapy Experience	.420	1	.420	0.037	.847
Group x Therapy Experience	36.789	2	18.394	1.632	.201
Error	1048.288	93	11.272		

A third trend analysis was conducted. The dependent variable was negative affect at follow-up, with independent variables being treatment condition and therapy experience. The covariate was baseline negative affect. Results of the trend analysis demonstrated no significant condition by therapy experience interaction when assessing negative affect, $F(2, 93) = 2.341$; $p = .102$ (see Table 12).

Table 12. Trend Analysis Analyzing Interaction Between Condition and Endorsement or Denial of Therapy Experience on Negative Affect with Baseline Negative Affect as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Negative Affect	39808.119	1	39808.119	195.383	< .001
Group	1358.887	2	679.443	3.335	.040
Therapy Experience	2.065	1	2.065	0.010	.920
Group x Therapy Experience	954.076	2	477.038	2.341	.102
Error	18948.222	93	203.744		

The final trend analysis was conducted, with the dependent variable being quality of life at follow-up and the independent variables being treatment condition and therapy experience. The covariate was baseline quality of life. Results of the trend analysis demonstrated a statistically significant condition by therapy experience interaction when assessing quality of life, $F(2, 93) = 6.165$; $p = .003$ (see Table 13).

Table 13. Trend Analysis Analyzing Interaction Between Condition and Endorsement or Denial of Therapy Experience on Quality of Life with Baseline Quality of Life as a Covariate.

Source	SS	df	MS	F	*p* value
Baseline Quality of Life	16355.269	1	16355.369	360.774	< .001
Group	235.835	2	117.913	2.601	.080
Therapy Experience	232.454	1	232.454	5.128	.026
Group x Therapy Experience	559.003	2	279.501	6.165	.003
Error	4216.049	93	45.334		

To determine where the statistically significant interaction was found, two ANCOVAs were conducted. One ANCOVA was conducted among the subsample of participants who denied previous therapy experience and one was conducted among the subsample who endorsed previous therapy experience. For the subsample of participants who have denied previous therapy experience, the ANCOVA indicated no significant difference between the conditions in quality of life at follow-up while controlling for initial quality of life, $F(2, 67) = 0.670$; $p = .515$ (see Table 14). For the subsample of participants who endorsed previous therapeutic experience, the ANCOVA indicated statistically significant group differences when assessing follow-up quality of life and controlling for initial quality of life among the three conditions, $F(2, 25) = 5.283$; $p = .012$ (see Table 15). Post hoc comparisons using the Sidak test indicated that the values condition ($M = 99.500$, $SD = 11.172$) had a significantly higher mean score of quality of life than the control condition ($M = 84.000$, $SD = 14.041$; $p = .013$). However, the rubber band condition ($M = 92.111$, $SD = 9.675$) did not have a different mean score than either the values condition ($p = .144$) or the control condition ($p = .607$).

Table 14. ANCOVA Results for Quality of Life at One Week by Randomization Assignment and Baseline Quality of Life as a Covariate Among Participants Who Denied Previous Therapy Experience.

Source	SS	df	MS	F	*p* value
Baseline Quality of Life	14337.981	1	14337.981	351.698	< .001
Group	54.608	2	27.304	0.670	.515
Error	2731.448	67	40.768		

Table 15. ANCOVA Results for Quality of Life at One Week by Randomization Assignment and Baseline Quality of Life as a Covariate Among Participants Who Endorsed Previous Therapy Experience.

Source	SS	df	MS	F	*p* value
Baseline Quality of Life	2073.821	1	2073.821	36.305	< .001
Group	603.583	2	301.792	5.283	.012
Error	1428.067	25	57.123		

CHAPTER 4

DISCUSSION

The present study utilized a novel, ACT-consistent card sort deck designed to improve connection to personal values. This intervention was provided in two experimental conditions, where one included the addition of a simple reminder in the form of a rubber band worn on the wrist for the subsequent week, to investigate the potential impact on a variety of clinically relevant measures one week after engaging in the intervention in comparison to a control condition. There were three proposed hypotheses in this study. First, the values card sort condition would have significantly higher means of connection with values and lower means of lack of contact with values compared to the control card sort condition, and the values card sort and rubber band condition would have significantly higher connection with values and lower means of lack of contact with values than the other two conditions at a one-week follow-up. Second, the values card sort condition would have significantly lower means of negative affect compared to the control card sort condition, and the values card sort and rubber band condition would have significantly lower means of negative affect than the other two conditions at a one-week follow-up. Third, the values card sort condition would have significantly higher means of quality of life compared to the control card sort condition, and the values card sort and rubber band condition would have significantly higher means of quality of life than the other two conditions at a one-week follow-up. Each of the three hypotheses listed were unfounded. At the one-week follow-up, there was no statistically significant difference observed in either values card sorting condition compared to the control condition. The results suggest that a single administration of the values card sort among an undergraduate sample may not be an effective

method of increasing connection with personal values or quality of life or of decreasing lack of connection with values or negative affect when assessed for changes one week later.

Other values-based interventions have been shown to improve clinically-relevant outcome measures (Harris & Napper, 2005; Sherman et al., 2009; Villatte et al., 2016; Dahl, 2015), including the BEVS (Lundgren et al., 2012) and values writing (Harris & Napper, 2005; Sherman et al., 2009), both of which have generated increases in connection with values. Perhaps the content of the card sorting activity lacked sufficient depth or breadth of consideration about personal values to generate detectable effects. In contrast, administration of the BEVS entails considerable discussion of personal values, and for the BEVS to be completed entirely, each participant or client must think about potential barriers towards engagement with values and identify at least one engageable behavior consistent with each valued domain. This discussion may be a crucial ingredient; clarity about ways to engage in values-consistent action, including in the face of obstacles, may be necessary to significantly move one's perception of their own values. Values writing as a clinical intervention may also include this level of engagement for an individual, as the activity involves writing values-consistent affirmations, sometimes for extended periods of time or multiple times over the study period. This comparative reduction in the magnitude or "dosage" of the card sorting activity, not only in respect to the richness of the discussion about it but also to the duration of it, may also have contributed to the current null findings. In the present study, care was taken to ensure equality of experience among participants engaging in the values card sort; a relatively narrow protocol of behaviors for participants and experimenters was established for the current study to minimize potential differences in procedure. However, in clinical practice the values card sort is a much more individualized procedure entailing a broader and richer discussion than was done in this study. Perhaps our

efforts to enhance the internal validity of the current study limited our ability to detect effects that might be generated by a more ecologically valid administration of the activity.

While values interventions have been demonstrated to provide clinically relevant benefits, it is less clear to what extent any of the available decks of values cards may be able to provide those same or similar benefits. The motivational interviewing cards (Miller et al., 2001) are usually used as a component of treatment studies and not as a standalone intervention, and the few studies available examining the effects of the card sorting activity by itself have not involved a focus on clinically relevant outcomes. The SGP sort, a more ACT-consistent deck of cards, also has limited evidentiary basis for its use as an intervention, although Williams et al. (2016) did utilize an experimental design in their study and found improvements in motivation and implementation among mental health workers. The means in which the SGP values cards were used involved endorsement of both personal and work values, and participants were also involved in an intensive discussion surrounding differences and similarities in personal and workplace values. Again, perhaps the values connection is caused by deeper communication that the present study intentionally did not employ.

A recent study (Kimball, 2018) used a computerized version of the values card sorting task from the current study, with the purpose of assessing how particular performance variables of the task (e.g., number of values cards selected for the final sort, number of valued domains represented, and the percentage of "faux values" included) relate to clinically-relevant measures. Although robust relationships between the activity and the measures were not apparent, Kimball noted in a collection of post-hoc analyses that previous therapy experience moderated some relationships between performative variables and the measures; specifically, his study suggested that the card sorting activity was predictive of these measures among those participants who

endorsed previous experience with psychotherapy but not among those participants who lacked such experience. These findings provided a basis for conducting the post-hoc analyses in the present study, as the therapy experience question was included in the Demographics measure. The analyses conducted for the original hypotheses were reconducted separately for each of the subsample in regard to previous therapy experience. Of these eight analyses, only one revealed a significant effect; among those who endorsed previous therapy experience, the values card sort condition had a significantly higher quality of life at follow-up compared to the control condition when controlling for baseline quality of life. The effects that emerged when focusing on this subsample in the Kimball study do not appear to be apparent in the current study, although it may be worth noting that these analyses involved rather small samples and were limited in their ability to detect meaningful effects. To date, no study has fully investigated the utility of an ACT-consistent values card sort with a clinical sample.

The values card sort condition that included provision of the rubber band generated somewhat unexpected results. Not only it not significantly different from the other values condition, but also the obtained results trended in the opposite direction expected; if anything, the rubber band may have reduced awareness of values rather than increased it. The purpose of the rubber band was to provide a simple, inexpensive, and frequent reminder for the subsequent week of the values identified during the card sort. In a manner of speaking, the rubber band condition was expected to be experienced as a larger "dosage" of values awareness in comparison to the values condition without the rubber band. Despite this, average scores among three of the four dependent variables at follow-up for the rubber band condition were between the averages for the values condition and the control condition, as if coupling a reminder with the values intervention was less effective at impacting clinically relevant outcomes than the

intervention without the reminder; only negative affect trended in the expected direction for the values condition with the rubber band in comparison to the values condition without the reminder. Perhaps these results are random artifacts, as there were no statistically significant differences among the groups, but it seems counterintuitive that a reminder would not be accompanied by more apparent benefits of a values clarification activity (even if those benefits were not statistically significant). When asked how many days the participants in the rubber band condition wore the rubber band, the mean was nearly six of the seven days in the week (M = 5.88 days; range of 1-7 days); it appears that there was sufficient adherence to the instruction to wear the rubber band each day for a week among the participants in this condition, presuming this data wasn't impacted by any impression management motivations. If the band was not actually worn throughout the week, then the purpose of the rubber band would no longer have been salient, which could have generated the attenuated effects that were obtained. Future research may benefit from efforts to verify compliance with the reminder mechanism or consideration of an alternative mechanism.

The unique results related to the rubber band condition compared to the values card sort only condition also might be attributed to instructions given to the participants. The values condition that did not include the rubber band reminder entailed asking participants to think about their values every day for a week. The rubber band condition included providing each participant with a rubber band and asking them to wear it and attend to personal values when they notice the rubber band over the next week; there was no overt instruction to bring to mind personal values daily independently of the rubber band, just the instruction to bring to mind personal values when noticing the reminding agent. Thus, it is conceivable that this minor difference could have contributed to the obtained findings. After the follow-up, the means of

three of the clinical measures between conditions placed the rubber band condition between the values condition and the control condition. Perhaps the instructions given to each participant in the rubber band condition were too narrow, with more focus being placed on awareness of values when noticing the rubber band as opposed to the focus being placed on bringing awareness to values often each day. Mindful homework practice typically stresses more informal practice of skills (Kearney et al., 2011; Vettese et al., 2009; Brewer et al., 2011; Minor et al., 2006); it is possible that more broad instructions of informal practice daily is more appropriate for connection with values than a reminding agent.

Limitations and Future Directions

Although the card deck was designed for use in a clinical setting, the current study utilized it with a nonclinical undergraduate sample. This leads to several limitations. First, nonclinical community samples tend to report having subclinical levels of distress; perhaps the card sort would be ineffective in altering the dependent variables among a nonclinical sample bearing relatively normative scores on measures of these variables. This limitation is further noted by statistical differences and notable trends towards significance between the values condition and the control condition in the present study found among those with previous therapeutic experience, with the findings not matched by those who denied previous psychotherapy. In the present study, those who had endorsed therapy experience had poorer baseline scores than those who denied the experience, suggesting a notable difference among those in this sample and the clinical population. A second limitation due to the nonclinical sample is the narrow scope of the card sorting task being limited to only the task as a stand-alone, one-time use intervention. When providing ACT, it is standard practice to assess values not in isolation of any other consideration, but rather in respect to things such as willingness to

experience psychological barriers to committed action and the client's perspective on the workability of their efforts to control symptoms of psychological problems. Often values-consistent behavior is viewed as a contrast to behaviors done by the client to avoid, control, or otherwise manipulate unpleasant private events; the process of identifying the futility of control is referred to as creative hopelessness (Hayes & Wilson, 1994). Creative hopelessness is viewed as a crucial part of ACT, as the purpose of it is to disrupt a pattern of behaviors that are contrary to valued action. Future research would benefit from assessing the importance of instilling creative hopelessness before engaging with a values clarification exercise or discussing more specific considerations for values-consistent behavior.

The post-hoc analyses that examined for differences based on previous therapy experience should be viewed tentatively, as this variable was founded on a relatively simple question about previous therapy experience with only "yes" and "no" as response options. Therapy experience could vary in a variety of ways, including ways that conceivably could impact perceptions of the cards. Participants who endorsed therapy experience may have been currently receiving psychotherapy, or recently received it, or attended therapy years or even decades in the past. Furthermore, the nature of this therapy and the participants perceptions of it was not assessed, factors that conceivable could impact how a person might respond to the card sorting activity. This limitation, along with the limited power of these post hoc analyses, require that any generalization of the current findings be done cautiously.

The study relied on self-reports for all dependent variables, which is a significant limitation to this current study. Two of the variables of interest in this present study were quality of life and negative affect; perhaps these constructs themselves are too broad for a brief, individual intervention to target. Maybe more narrow or specific dependent variables would be

more likely to be responsive to the intervention. Still, self-report measures can also be unreliable for several reasons. Alternative measures, particularly more behavioral and contextually based ones, could offer possible improvement on the current research design.

The researchers in this study were graduate students rather than experienced clinicians; it is possible that the implementation of this procedure was not done as effectively as a practiced clinician may have implemented the sort. In addition, this study had three separate researchers facilitating the procedure. Between the limited clinical experience of the researchers and the fact there were multiple people facilitating the exercise, there was some further error added to this study. Despite the lack of fidelity being established through audio or video recording, each researcher was extensively trained and was taught to adhere to a carefully constructed protocol. While there was no reason to believe lack of adherence to the protocol was a concern, the lack of recording is a limitation.

Finally, there remains the possibility that values card sorting activity is not a viable intervention for values clarification or related mental health concerns. The values card deck and procedure outlined in this study are key tools used in an ACT protocol used by graduate students at the Clinical Center of Southern Illinois University. Qualitative feedback about the procedure's use in a clinical context has been encouraging, but quantitative results are lacking. As there has been no empirical evidence published about the use of any values sorting deck in a clinical context as a stand-alone intervention, perhaps there is a necessity of other intervention or discussion beyond a sorting task. If that is the case, then, perhaps a values sorting task on its own simply does not meaningfully impact the variables of interest in the current study.

Conclusion

As outlined through this report, the values card sort intervention featured in this project did not meaningfully impact self-reports of connection with values, lack of contact with values, negative affect, or quality of life one week after the intervention. Using a rubber band as a reminding agent with the intention of enhancing the card sort also had no apparent benefit over the card sort by itself or even a control condition. However, after dividing the sample on the basis of previous experience in therapy, some results suggested that the intervention could offer benefits for those with elevated levels of psychological distress. Further considerations about this as well as additional ingredients of the card sorting activity that were not included in the current work may provide a basis for additional scrutiny of this element of Acceptance and Commitment Therapy.

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APPENDICES

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

What is your age (in years)? _____

What is your country of origin?

- ☐ United States
- ☐ Other

Is English your first language?

- ☐ Yes
- ☐ No

What is your current year?

- ☐ Freshman
- ☐ Sophomore
- ☐ Junior
- ☐ Senior

What is your political affiliation

- ☐ Democrat
- ☐ Republican
- ☐ Independent
- ☐ Other

Which race(s) or ethnicity (ethnicities) do you identify as?

- ☐ American Indian/Alaskan Native
- ☐ Asian
- ☐ Black/African American
- ☐ Hispanic/Latino
- ☐ Native Hawaiian/Pacific Islander
- ☐ White/Caucasian

Which religion do you most identify with?

- ☐ Agnosticism (Agnostic)
- ☐ Atheism (Atheist)
- ☐ Buddhism (Buddhist)
- ☐ Christianity (Christian)
- ☐ Hinduism (Hindu)
- ☐ Islam (Muslim)
- ☐ Judaism (Jewish)
- ☐ Other: _____

What gender do you identify as?

- ☐ Female
- ☐ Male
- ☐ Other

What is your sexual identity?

- ☐ Bisexual (attracted to both sexes)
- ☐ Heterosexual (attracted to the opposite sex)
- ☐ Homosexual (attracted to the same sex)

What is your socioeconomic status? If someone other than you is providing the majority of the household income, please report their income instead.

- ☐ $25,000 or less
- ☐ $25,001-50,000
- ☐ $50,001-75,000
- ☐ More than $75,000

Have you, at any time, received psychotherapy or counseling?

- ☐ Yes
- ☐ No

APPENDIX B

DEPRESSION ANXIETY STRESS SCALE

Please read each statement and choose a number 0, 1, 2, or 3 that indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found myself getting upset by quite trivial things	0	1	2	3
2	I was aware of dryness in my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I just couldn't seem to get going	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I had a feeling of shakiness (eg, legs going to give way)	0	1	2	3
8	I found it difficult to relax	0	1	2	3
9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting upset rather easily	0	1	2	3
12	I felt that I was using a lot of nervous energy	0	1	2	3
13	I felt sad and depressed	0	1	2	3
14	I found myself getting impatient when I was delayed in any way (eg, elevators, traffic lights, being kept waiting)	0	1	2	3
15	I had a feeling of faintness	0	1	2	3
16	I felt that I had lost interest in just about everything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3

19	I perspired noticeable (eg, hands sweaty) in the absence of high temperatures or physical exertion	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life wasn't worthwhile	0	1	2	3
22	I found it hard to wind down	0	1	2	3
23	I had difficulty in swallowing	0	1	2	3
24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
26	I felt down-hearted and blue	0	1	2	3
27	I found that I was very irritable	0	1	2	3
28	I felt I was close to panic	0	1	2	3
29	I found it hard to calm down after something upset me	0	1	2	3
30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3
31	I was unable to become enthusiastic about anything	0	1	2	3
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
33	I was in a state of nervous tension	0	1	2	3
34	I felt I was pretty worthless	0	1	2	3
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
36	I felt terrified	0	1	2	3
37	I could see nothing in the future to be hopeful about	0	1	2	3
38	I felt that life was meaningless	0	1	2	3
39	I found myself getting agitated	0	1	2	3
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
41	I experienced trembling (eg, in the hands)	0	1	2	3
42	I found it difficult to work up the initiative to do things	0	1	2	3

APPENDIX C

ONE-WEEK FOLLOW-UP QUESTION

1. How many days in the past week have you worn a rubber band around your wrist?
   _____

APPENDIX D

MULTIDIMENSIONAL PSYCHOLOGICAL FLEXIBILITY INVENTORY

FLEXIBILITY SUBSCALES

ACCEPTANCE

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was receptive to observing unpleasant thoughts and feelings without interfering with them	O	O	O	O	O	O
I tried to make peace with my negative thoughts and feelings rather than resisting them	O	O	O	O	O	O
I made room to fully experience negative thoughts and emotions, breathing them in rather than pushing them away	O	O	O	O	O	O
When I had an upsetting thought or emotion, I tried to give it space rather than ignoring it	O	O	O	O	O	O
I opened myself to all of my feelings, the good and the bad	O	O	O	O	O	O

PRESENT MOMENT AWARENESS

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was attentive and aware of my emotions	O	O	O	O	O	O
I was in tune with my thoughts and feelings from moment to moment	O	O	O	O	O	O
I paid close attention to what I was thinking and feeling	O	O	O	O	O	O
I was in touch with the ebb and flow of my thoughts and feelings	O	O	O	O	O	O
I strived to remain mindful and aware of my own thoughts and emotions	O	O	O	O	O	O

SELF AS CONTEXT

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Even when I felt hurt or upset, I tried to maintain a broader perspective	O	O	O	O	O	O
I carried myself through tough moments by seeing my life from a larger viewpoint	O	O	O	O	O	O
I tried to keep perspective even when life knocked me down	O	O	O	O	O	O
When I was scared or afraid, I still tried to see the larger picture	O	O	O	O	O	O
When something painful happened, I tried to take a balanced view of the situation	O	O	O	O	O	O

DEFUSION

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was able to let negative feelings come and go without getting caught up in them	O	O	O	O	O	O
When I was upset, I was able to let those negative feelings pass though me without clinging to them	O	O	O	O	O	O
When I was scared or afraid, I was able to gently experience those feelings, allowing them to pass	O	O	O	O	O	O
I was able to step back and notice my negative thoughts and feelings without reacting to them	O	O	O	O	O	O
In tough situations, I was able to notice my thoughts and feelings without getting overwhelmed by them	O	O	O	O	O	O

VALUES

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I was very in-touch with what is important to me and my life	O	O	O	O	O	O
I stuck to my deeper priorities in life	O	O	O	O	O	O
I tried to connect with what is truly important to me on a daily basis	O	O	O	O	O	O
Even when it meant making tough choices, I still tried to prioritize the things that were important to me	O	O	O	O	O	O
My deeper values consistently gave direction to my life	O	O	O	O	O	O

COMMITTED ACTION

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Even when I stumbled in my efforts, I didn't quit working toward what is important	O	O	O	O	O	O
Even when times got tough, I was still able to take steps toward what I value in life	O	O	O	O	O	O
Even when life got stressful and hectic, I still worked toward things that were important to me	O	O	O	O	O	O
I didn't let set-backs slow me down in taking action toward what I really want in life	O	O	O	O	O	O
I didn't let my own fears and doubts get in the way of taking action towards my goals	O	O	O	O	O	O

INFLEXIBILITY SUBSCALES

EXPERIENTIAL AVOIDANCE

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
When I had a bad memory, I tried to distract myself to make it go away	O	O	O	O	O	O
I tried to distract myself when I felt unpleasant emotions	O	O	O	O	O	O
When unpleasant memories came to me, I tried to put them out of my mind	O	O	O	O	O	O
When something upsetting came up, I tried very hard to stop thinking about it	O	O	O	O	O	O
If there was something I didn't want to think about, I would try many things to get it out of my mind	O	O	O	O	O	O

LACK OF CONTACT WITH THE PRESENT MOMENT

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I did most things on "automatic" with little awareness of what I was doing	O	O	O	O	O	O
I did most things mindlessly without paying attention	O	O	O	O	O	O
I went through most days on auto-pilot without paying much attention to what I was thinking or feelings	O	O	O	O	O	O
I floated through most days without paying much attention	O	O	O	O	O	O
Most of the time I was just going through the motions without paying much attention	O	O	O	O	O	O

SELF AS CONTENT

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
I thought some of my emotions were bad or inappropriate and I shouldn't feel them	O	O	O	O	O	O
I criticized myself for having irrational or inappropriate emotions	O	O	O	O	O	O
I believed some of my thoughts are abnormal or bad and I shouldn't think that way	O	O	O	O	O	O
I told myself that I shouldn't be feeling the way I'm feeling	O	O	O	O	O	O
I told myself I shouldn't be thinking the way I was thinking	O	O	O	O	O	O

FUSION

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Negative thoughts and feelings tended to stick with me for a long time	O	O	O	O	O	O
Distressing thoughts tended to spin around in my mind like a broken record	O	O	O	O	O	O
It was very easy to get trapped into unwanted thoughts and feelings	O	O	O	O	O	O
When I had negative thoughts or feelings it was very hard to see past them	O	O	O	O	O	O
When something bad happened it was hard for me to stop thinking about it	O	O	O	O	O	O

LACK OF CONTACT WITH VALUES

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
My priorities and values often feel by the wayside in my day to day life	O	O	O	O	O	O
When life got hectic, I often lost touch with the things I valued	O	O	O	O	O	O
The things that I value the most often fell off my priority list completely	O	O	O	O	O	O
I didn't usually have time to focus on the things that are really important to me	O	O	O	O	O	O
When times got tough, it was easy to forget about what I truly value	O	O	O	O	O	O

INACTION

IN THE LAST TWO WEEKS…	Never TRUE	Rarely TRUE	Occasionally TRUE	Often TRUE	Very Often TRUE	Always TRUE
Negative feelings often trapped me in inaction	O	O	O	O	O	O
Negative feelings easily stalled out my plans	O	O	O	O	O	O
Getting upset left me stuck and inactive	O	O	O	O	O	O
Negative experiences derailed me from what's really important	O	O	O	O	O	O
Unpleasant thoughts and feelings easily overwhelmed my efforts to deepen my life	O	O	O	O	O	O

APPENDIX E

WORLD HEALTH ORGANIZATION QUALITY OF LIFE ASSESSMENT – BRIEF FORM

Please read each question, assess your feelings, and choose the number on the scale that gives the best answer for you for each question.

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	**1**	**2**	**3**	**4**	**5**

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	**1**	**2**	**3**	**4**	**5**

The following questions ask about **how much** you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	**1**	**2**	**3**	**4**	**5**
4.	How much do you need any medical treatment to function in your daily life?	**1**	**2**	**3**	**4**	**5**
5.	How much do you enjoy life?	**1**	**2**	**3**	**4**	**5**
6.	To what extent do you feel your life to be meaningful?	**1**	**2**	**3**	**4**	**5**

		Not at all	Slightly	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	**1**	**2**	**3**	**4**	**5**
8.	How safe do you feel in your daily life?	**1**	**2**	**3**	**4**	**5**
9.	How healthy is your physical environment?	**1**	**2**	**3**	**4**	**5**

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	**1**	**2**	**3**	**4**	**5**
11.	Are you able to accept your bodily appearance?	**1**	**2**	**3**	**4**	**5**
12.	Have you enough money to meet your need?	**1**	**2**	**3**	**4**	**5**
13.	How available to you is the information that you need in your day-to-day life?	**1**	**2**	**3**	**4**	**5**
14.	To what extent do you have the opportunity for leisure activities?	**1**	**2**	**3**	**4**	**5**

		Very poor	Poor	Neither poor nor well	Well	Very well
15.	How well are you able to get around?	**1**	**2**	**3**	**4**	**5**

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	**1**	**2**	**3**	**4**	**5**
17.	How satisfied are you with your ability to perform your daily living activities?	**1**	**2**	**3**	**4**	**5**
18.	How satisfied are you with your capacity for work?	**1**	**2**	**3**	**4**	**5**
19.	How satisfied are you with yourself?	**1**	**2**	**3**	**4**	**5**
20.	How satisfied are you with your personal relationships?	**1**	**2**	**3**	**4**	**5**
21.	How satisfied are you with your sex life?	**1**	**2**	**3**	**4**	**5**

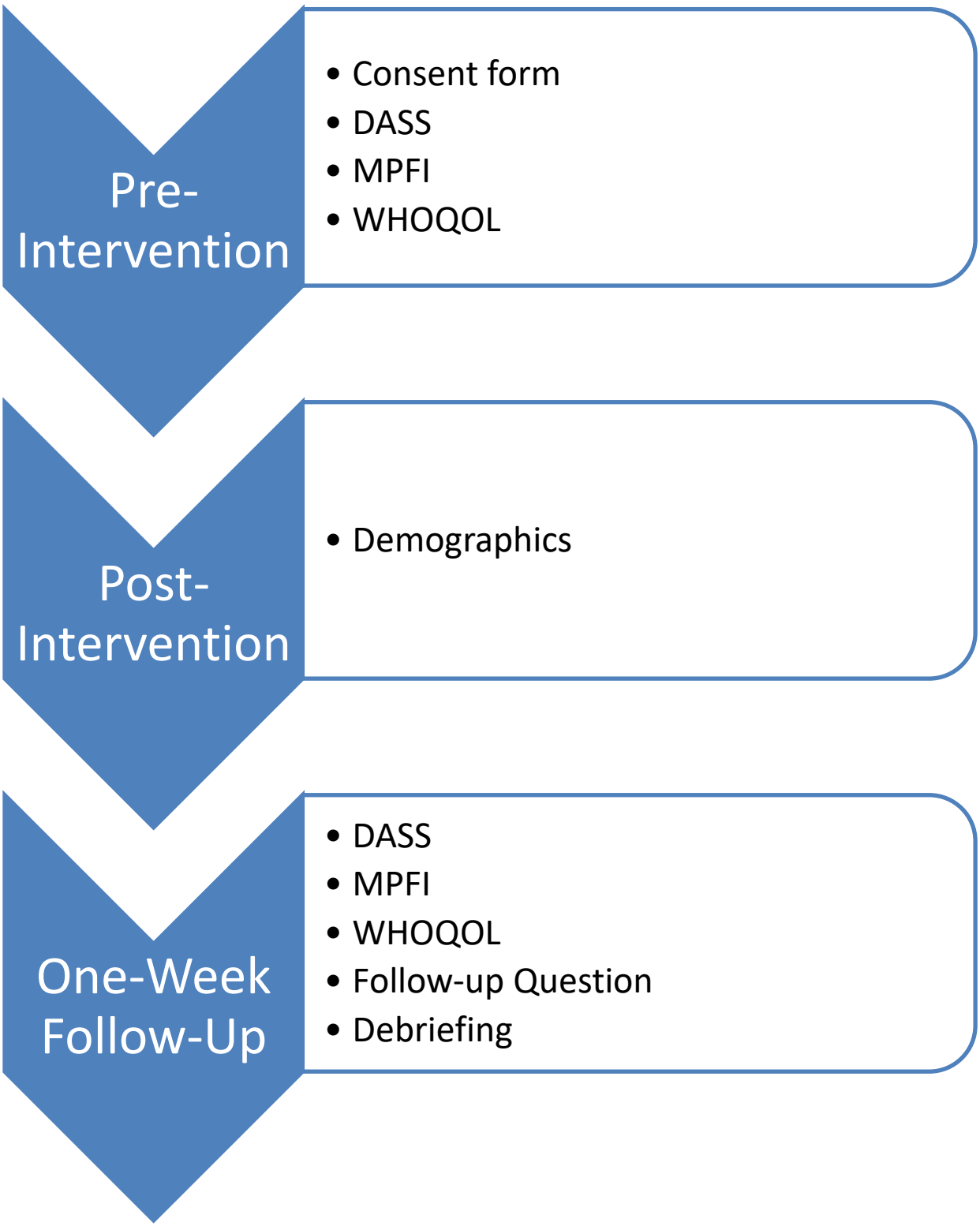
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
22.	How satisfied are you with the support you get from your friends?	**1**	**2**	**3**	**4**	**5**
23.	How satisfied are you with the conditions of your living place?	**1**	**2**	**3**	**4**	**5**
24.	How satisfied are you with your access to health services?	**1**	**2**	**3**	**4**	**5**
25.	How satisfied are you with your mode of transportation?	**1**	**2**	**3**	**4**	**5**

The follow question refers to **how often** you have felt or expressed certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	**1**	**2**	**3**	**4**	**5**

APPENDIX F

ORDERS



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A Preliminary Investigation of a Values Intervention and a Values Reminder on Clinically Relevant Outcomes

Major Professor: Dr. Chad E. Drake