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entitled

The Effect of Culture and Advisor Characteristics on Treatment Outcomes

by

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Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Experimental Psychology

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An Abstract of

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In the current climate of patient-centered care, an increasing amount of responsibility is being placed on patients to make health decisions that optimize their outcomes. Patients may vary on the amount of control they prefer to exert in a decision context. Factors such as locus of control and cultural background may influence this desire for control over treatment options. Individuals from Western, independent cultural contexts may be more amenable to the idea of making medical decisions and benefit more from this control while those from Eastern, interdependent contexts may not benefit as much from pressure to select a treatment. To aid in the decision-making process, people across cultures often turn to others for advice. However, the benefit of this advice can vary depending on a myriad of factors including the interpersonal closeness between decision-maker and their advisor. For example, an individual consulting their best friend or significant other may find themselves with better treatment outcomes than an individual seeking information from impersonal webpages or online support groups. Further, individuals from disparate cultural contexts may find more or less benefit from consultations with close or distant others, perhaps due to differing social and familial orientations and goals. The goal of the current study was to better understand how
interpersonal closeness and culture interact to affect an individual’s experience of
treatment decision-making and ultimately their treatment outcomes. Results demonstrate
moderate support for the hypotheses; individuals who made a treatment selection after
discussing their options with a close other showed better treatment outcomes than distant
or no advisor groups. Additionally, the Japanese participants showed a mediation effect
such that individuals who experienced the decision process negatively (e.g., rated making
a treatment selection as “unpleasant”) subsequently had worse treatment outcomes.
Unexpectedly, the influence of advisor condition did not differ across culture and the
aforementioned effects of advisor condition were not moderated by variables anticipated
to assess the desire for decisional control. Explanations and implications for these results
are discussed. These findings shed light on the treatment decision-making process and
how factors of the decision environment may impact treatment outcomes.
This dissertation is dedicated to the InSPHIRE Lab. You never let me lose sight of the bigger picture and reminded me that it’s okay to let a little dinosaur out.
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Chapter One

The Effect of Culture and Advisor Characteristics on Treatment Outcomes

Currently, individuals are presented with more opportunities to play a guiding role in their health care than ever before. They may select their own over-the-counter remedy, decide when to see a physician, determine the appropriate medical professional to visit for their particular ailment, and ultimately help choose the treatment they believe will work best. However, with this abundance of decision-making also comes a sense of responsibility for the outcomes of the decisions. Are treatment outcomes improved when an individual participates in their own treatment selection? What other factors might play a role in how these decisions impact treatment outcomes? More research is required to understand how features within the decision environment and other socio-cultural factors can interact with the characteristics of the individual making decisions to influence outcomes.

The treatment decision process may manifest in various ways across medical conditions and encounters; the case of breast cancer patients provides a clear example of how a discrete treatment decision context may be experienced differently across individuals (Ashcroft, Leinster, & Slade, 1985). For these patients, the decision to remove a malignant tumor is often unambiguous: extraction of the tumor is necessary, rendering that decision moot. However, the subsequent decision of whether or not to have a lumpectomy paired with radiotherapy or proceed with a full mastectomy is frequently left up to the patient. There are of course costs and benefits to both options; radiotherapy carries with it certain side effects (e.g., nausea, fatigue, hair loss) while there are increased risks associated with surgery for a full mastectomy. Patients are expected
to hear and understand the information they are being provided and make a treatment decision. One patient may not perceive it as a decision at all; after consultation with her physician she would prefer to remove the entire breast to minimize her chances of relapse. Alternately, another patient’s value system may be such that without a breast, a woman is stripped of her femininity and thus she would elect to experience the lumpectomy and radiotherapy over surgical removal of the full breast. A third woman may be torn between the two options, unsure of which side effects she would rather endure and decides to talk with her partner before selecting a treatment. These three women are provided with the same information and treatment options for how to treat their breast cancer, but their treatment decisions, and perhaps even their treatment outcomes, can be quite distinct. This example illustrates that there are multiple pathways through which decisions are made and factors of the treatment environment (e.g., physician advice, patient values, closeness with family) may substantially influence decision processes.

The goal of the present investigation was to determine how factors surrounding the treatment context, namely the characteristics of a treatment advisor (e.g., friend, stranger), influence treatment outcomes. The effect of treatment advisors was examined across samples from two different cultures: the United States and Japan. Further, potential mediating and moderating mechanisms explaining the relationship of treatment advisor and culture on treatment outcomes were explored.

**Health Care across Cultures**

Questions regarding the costs and benefits of involving patients in treatment decision-making have not always been of concern in the history of health care. In fact,
up until the 1970s, the Western model of health care operated under a paternalistic system whereby patients deferred to their physicians for their medical decisions and were often not informed of the side effects of their current treatment or any alternate treatment options. A few influential court cases regarding the meaning of the consent process (e.g., Hyman v. Jewish Chronic Disease Hospital, 1964) shifted this culture, requiring physicians to disclose all treatment information to patients. Patients soon became highly involved in their medical care and with the rise of consumerism quickly following in the 1980s, patients were exerting control over their care, not only pursuing additional sources of information on their conditions and treatments, but seeking to maximize their benefits and reduce their costs. This consumer approach requires patients to be more assertive in their communications with physicians (Hibbard & Weeks, 1987) and increases the accountability of both the patient and physician for information exchange and patient well-being (Beisecker & Beisecker, 1993).

This shift from paternalistic to autonomous health care did not occur simultaneously worldwide. In more Eastern contexts such as in Japan, these issues of informed consent emerged nearly a decade later than in the U.S. and continued well into the mid-1990s (Akabayashi & Slingsby, 2006). Further, the consent process in Japan explicitly includes family as an extension of the self, where providing information to family members rather than the patient themselves is often considered sufficient communication from the physician. This approach to treatment consent is rarely seen in Western contexts; explicit inclusion of the family is typically only observed when patients do not have the capacity to make the decision themselves (e.g., children, elderly, unconscious).
There may be social and cognitive differences between Eastern and Western contexts that have contributed to the distinct systems of care. For example, individuals in a Western culture are generally said to have an independent self-construal orientation; they are primarily focused on how events affect the self and they tend to express preferences by exercising control via making active choices (Markus & Schwartz, 2010). Typically cultures such as the United States, Canada, and much of Europe are considered to be independently oriented. That is, many of the social institutions are constructed in a manner that fosters a sense of individualism and making choices that benefit or promote the self are rewarded. Individuals in an Eastern culture, on the other hand, are more interconnected and attend to how their actions influence others, particularly those in their close network (White, Lehman, & Cohen, 2006). Interdependent cultures such as those found in Japan, China, and many Asian and South American countries place emphasis on the collective good. Standing out and expressing individual preferences is generally discouraged. It should be noted that people have both independent and interdependent aspects of the self, but often one orientation is more salient than the other due to contextual demands or norms (Singelis, 1994). Thus, a predominately independent construal, as one might find in Western contexts, could lead to a more autonomous, consumer approach to healthcare where there is a strong emphasis on costs and benefits. An interdependent construal, such as is found in Eastern cultures, could lead to a more collaborative healthcare process.

The cultural differences in the perception of information exchange and decision-making in the medical encounter as well as the incorporation of others into the decision process is in need of further investigation. It is currently not clear how these differences
might affect treatment outcomes and clarifying the factors that impact the treatment selection process should be a priority.

**Patient Involvement in Treatment Decision-Making**

The consequences of increasing the involvement of individuals in medical decision-making have been a topic of interest in both the physical and mental health care literatures (Quill & Brody, 1996; Swift & Callahan, 2009). Studies across a variety of treatment domains provide evidence that increased personal involvement, perceptions of choice, and the maximization of fit between patient preferences and treatments can benefit treatment satisfaction and outcomes (Chilvers et al., 2001; Fallowfield, Hall, Maguire, & Baum, 1990; Moyer & Salovey, 1998; Street & Voigt, 1997; Vogel, Leonhart, & Helmes, 2009). Although often modest in size, these results are promising and suggest that the act of involving patients in medical decision-making can have benefits. This work builds from the notion that, like therapeutic rituals, treatment beliefs, and other contextual cues (e.g., the color, brand, price, or number of tablets ingested for an illness), the experience of control can change how one interprets and responds to treatment activities (Benedetti, 2009; Branthwaite & Cooper, 1981; Price, Finniss, & Benedetti, 2008; Waber, Shiv, Carmon, & Ariely, 2008). In essence, the psychological meaning ascribed to a treatment along with the active treatment ingredients serve as two distinct components of all medical treatments (Blasi, Harkness, Ernst, Georgiou, & Kleijnen, 2001; Colloca & Benedetti, 2005; Moerman, 2002). This area of research examines how and when factors that alter treatment interpretations, such as having decisional control, play a role in determining the illness experience and the symptomatic expressions of disease (Finniss, Kaptchuk, Miller, & Benedetti, 2010).
Broadly, the research that has been conducted on treatment decision-making thus far does not provide a unified picture of the influence of selecting a treatment on health-related outcomes (Guadagnoli & Ward, 1998) either within Western cultural contexts or across both Eastern and Western models of health care. Much of the work has been limited to Western environments and has been geared toward investigating decision processes and participation in the treatment context. Some studies have shown patient improvement in treatment and other health-related outcomes as a result of exercising treatment choice. Women who were more involved in decisions regarding their treatment for breast cancer reported better physical and social functioning (Hack, Degner, Watson, & Sinha, 2006; Street & Voigt, 1997) and have noted reduced levels in anxiety (Gattellari, Butow, & Tattersall, 2001; Smith et al., 2011) and depression (Fallowfield et al., 1990). Positive effects of active involvement have also been extended to general internal medicine contexts where patients show an improvement in symptoms (Brody, Miller, Lerman, Smith, & Caputo, 1989). However, other research indicates that the opportunity to choose one treatment over another has a null effect, without affecting outcomes in either a positive or negative direction (Fallowfield, Hall, Maguire, Baum, & A´Hern, 1994). Finally, there is some work to suggest that being involved in treatment decision-making may actually be overwhelming and detrimental to patient outcomes; the decision-making process has been reported to be stressful, increasing anxiety over the decision and resulting outcomes (Botti, Orfali, & Iyengar, 2009). The inconsistency in results indicates that other factors aside from the provision of treatment choice may be integral to understanding the treatment decision context.
Far less research has been conducted on the effect of treatment decision-making in Eastern cultures. The majority of the work focuses on the experience of the patient rather than explicit treatment choice. For example, research indicates that Japanese patients are most satisfied when their preference for involvement is honored by their physician, regardless of who makes the final decision (Sekimoto et al., 2004). That is, patients are not necessarily focused on deferring to the expertise of the physician but are concerned with having their wishes respected. In another study, cancer patients who felt they were forced into a decision or had to surrender their decision to a physician were less satisfied with the experience (Watanabe, Takahashi, & Kai, 2008), suggesting a desire for active participation in the treatment context. Additionally, patients report a strong desire to include the family on treatment decisions even when they are fully capable of making the decision themselves (Ito, Tanida, & Turale, 2010). Thus, despite the notion of a strong sense of deference in Eastern cultures, research suggests that patients are in fact interested in playing a role in the treatment decision-making process and perceive that role as being a part of a collaborative process encompassing others around them (Sekimoto et al., 2004). However, it is not clear if the inclusion of others in the treatment decision process has any causal impact on outcomes.

The disparate findings in the literature on the impacts of patient involvement in the treatment context may be a result of incongruent features of the decision environment across studies (e.g., number of treatment options presented, consultation with friends or family members, societal physician-patient norms). For example, much of the research on explicit treatment choice investigates samples of patients with acute conditions such as breast cancer (e.g., Fallowfield et al., 1994) while studies looking at active versus passive
roles are often associated with more chronic and less severe treatment contexts such as the management of diabetes (e.g., Brody et al., 1989; Entwistle, Skea, & O’Donnell, 2001; Levoska & Keinanen-Kiukaanniemi, 1993). Further, some research acknowledges and discusses the inclusion of family members in the decision process (e.g., Cassileth et al., 1989; Lin, Pang, & Chen, 2013; Zeliadt et al., 2006) while in other work there is no mention of the impact of family. To identify how previous work across both Western and Eastern cultures can inform patient decision-making, it is necessary to account for and investigate these contextual differences.

Though the quantity of research on treatment choice and patient involvement is distinct across cultures, work from both cultural contexts emphasizes patient satisfaction as the key outcome variable (e.g., satisfaction with the treatment, physician, and consultation). Although satisfaction is certainly an important variable to investigate, researchers have spent comparatively little time on determining the effects of patient involvement and decision processes on outcomes specific to the treatment itself (e.g., decreased pain, improved symptoms). Structuring treatment decision contexts with the goal of enhancing treatment outcomes would be beneficial for patients’ long-term well-being and even reduce the burden on the health care system.

Prior research demonstrates the important effect that patient involvement can have on dependent measures such as patient satisfaction with their health care. For a more complete understanding of how the current culture of patient involvement is impacting actual patient outcomes, it is critical to establish how, when, and for whom increased involvement is beneficial.

Theoretical Frameworks
There are many existing theoretical models that could help explain how patients make decisions and the manner by which their decisional processes are influenced by external factors. These factors could affect the decision process in such a manner that treatment outcomes are also impacted, though the particular pathway through which this occurs is unknown. This issue can be looked at from a variety of perspectives, drawing on research from judgment and decision-making, health, and social psychological domains.

If the treatment decision process is examined through a judgment and decision-making lens, expected utility theory suggests that people should objectively evaluate each of the possible alternatives and assign weights based on their personal values (von Neumann & Morgenstern, 1947). For example, if an individual were asked to choose between two different treatments for lowering their cholesterol, they may heavily weight the monetary cost of each treatment and potential side effects, ultimately selecting a treatment that balanced each of these factors, though not necessarily selecting the treatment with the objectively best outcomes. If an individual instead used the efficacy of the treatment options as one of their valued factors, selecting the best treatment using an expected utility approach may have the greatest impact on outcomes directly related to the condition being treated. However, people do not always adhere to the logic of expected utility theory but rather allow affect and other contextual variables to play a role in their decision-making and outcomes, especially concerning health-related evaluations (Peters, Lipkus, & Diefenbach, 2006). Notably, expected utility theory focuses on the decision process and speaks less to how the experience of being involved in decision-making may alter the treatment outcome of the patient.
The Health Belief Model (Becker, 1974), on the other hand, focuses more on an individual’s subjective appraisal of an illness, and thus it may also be an informative framework through which to investigate health-related decisions. The Health Belief Model was designed to identify when patients are motivated to take action to change their illness state. Becker asserts an individual’s actions can be predicted by their perception of susceptibility to an illness or condition as well as by their perception of the severity of that illness or condition; increases in both would predict motivation to alleviate the illness. Research conducted supporting the Health Belief Model also suggests that other factors are important in predicting this action including, but not limited to, quality and type of doctor-patient relationship (Davis, 1968), attitudes (e.g., toward medical staff, toward the treatment itself; Becker, Drachman, & Kirscht, 1974), and the sources patients seek advice from (Curry, 1968). Increased motivation to action may result in better treatment adherence, but it is unclear which outcomes would be most impacted as the Health Belief Model does not provide specific outcome predictions. One shortcoming of this model is that the mechanism for action is explained as motivation rather than the desire for control that is often discussed in terms of health decision-making. While these states are often closely linked, motivation to take action is often a precursor to executing the action or taking control (Schwarzer, Lippke, & Luszczynska, 2011) and may not be fully representative of the desire to experience decisional control during a treatment decision process.

Both expected utility theory and the Health Belief Model contribute useful perspectives to the interpretation of the treatment decision-making context. However, neither of these models allow for a full understanding of the interaction between traits
that individuals bring to the treatment environment (e.g., desire for control) and characteristics of the environment itself (e.g., presence of others). In order to thoroughly investigate how the treatment decision process and the surrounding context influences patient outcomes, I have been developing a more comprehensive theoretical framework of the medical decision environment. I suggest that a theoretical, social-psychological equilibrium model may help to elucidate the experience of decision-making within a treatment context and how this experience is influenced by interpersonal and socio-cultural factors. The Patient Involvement on Outcomes of Treatment (PIvOT) model (Brown, unpublished) seeks to integrate person variables (e.g., desire for control, culture), contextual factors (e.g., expertise of individuals consulting on the decision), and characteristics of the treatments themselves (e.g., amount of choice options) to predict how and when patients would most benefit from input into treatment decisions. The model conceptualizes individuals as having a “set point” for their desire for decisional control (DFDC), defined as a stable point at which they desire control (e.g., some individuals have a tendency to avoid making decisions and seek out external advice while other individuals would rather make the decision themselves). The other characteristics of the environment interact with the DFDC to influence patient outcomes. Only a small component of this model was examined in the present research, however each element is theoretically relevant to the experience of treatment decision-making. The full model is depicted in Figure 1.

The primary objective of the PIvOT model is to describe the effect of patient involvement on health outcomes and DFDC is a central component to this conceptualization of the treatment experience. Prior research in both qualitative and
quantitative domains demonstrates that having the feeling that one has control in a situation is important for health and well-being (Langer & Rodin, 1976; Lefcourt, 1973; Thompson, 1981) and that the loss of control and helplessness can have detrimental effects (e.g., Peterson, Maier, & Seligman, 1995). Studies also show that participants will elect to exert control (by making an irrelevant choice) even when they are told their behavior will have no impact on outcomes (Suzuki, 2002). Due to this strong effect of the desire for control, it is the focal point of the PIvOT model.

Control over treatment decisions can be characterized by a gradation of opportunity to express preferences and provide input rather than a single choice event consisting of dichotomous selection between treatment A or B (e.g., Geers & Rose, 2011). This continuum of involvement can be conceptualized as the patient’s DFDC. For example, a patient might have low decisional control if their final treatment selection was made by a medical professional without any consultation or discussion of other options. Alternatively, a patient might experience a high degree of decisional control when they are presented with two treatment options, such as a surgery or a medication regimen, and the patient elects to have surgery. Between these extremes, a patient may have a degree of decisional control such that they select the method of treatment administration (e.g., pill to be taken orally versus intravenous injection of the same medication) or express their treatment preference to a physician while the physician makes the final decision. Mounting evidence suggests that patients who perceive that they have control over their situation, whether this be a more active role in the consultation (Greenfield, Kaplan, & Ware, 1985), recovery (Mahler & Kulik, 1990), or general locus of control (Reynaert, Janne, Vause, Zdanowicz, & Lejeune, 1995) tend to
have better outcomes. Patient perceptions of their decisional control in the treatment context are integral to this decision-making process (Kaplan, Greenfield, & Ware, 1989; Stewart, 2001) and can be represented on a continuum from low control to high control. Despite the research suggesting that patients benefit from control, there is conflicting evidence in the literature regarding patient preferences for the role they want to play in treatment decision contexts. In general, much of the research indicates that patients prefer that the physician make the final treatment decision (Bruera, Sweeney, Calder, Palmer, & Benisch-Tolley, 2001; Ende, Kazis, Ash, & Moskowitz, 1989; Singh et al., 2011; Sutherland, Llewellyn-Thomas, Lockwood, Tritchler, & Till, 1989; Vertinsky, Thompson, & Uyeno, 1974) and fare better when provided with the opportunity to express these preferences (Mahler & Kulik, 1991). However, other research shows that patients are seeking more active participation in their treatment decision-making, with 66 to 78% of women in need of breast cancer treatment expressing a preference for either sharing the final treatment decision with their physician or making that decision themselves (Deber, Kraetschmer, Urowitz, & Sharpe, 2007; Degner et al., 1997). Physicians tend to believe that the majority of patients want this decisional control themselves (Singh et al., 2011; Strull, Lo, & Charles, 1984), perhaps failing to adjust for differences in individual patients and the effects of the decision context. This incongruence in the perception of patient preferences could lead physicians to increase the pressure for involvement above the patients’ natural DFDC, resulting in negative affect and decreased satisfaction with the care received (Botti & Iyengar, 2004; Calne, Calne, & Calne, 2009; Roter, 1977). As an individual’s DFDC can have important impacts on treatment outcomes, this investigation will focus on the factors that contribute
to the DFDC and how it might influence the relationship between the facets of the
decision environment and health outcomes.

In a treatment decision-making context, some individuals may be motivated to
exercise increased amounts of control or, conversely, rely more heavily on the physician.
Their final DFDC in a given context will be influenced by their set point and the degree
to which contextual factors and treatment characteristics cause them to adjust from that
set point. Before the contextual factors that influence an individual’s DFDC can be
thoroughly investigated, it is essential to determine the variables that contribute to an
individual’s “set point” or baseline DFDC. Some individuals may have a tendency to
deer to others in decision-making situations (low DFDC) while others would rather
make the decision on their own (high DFDC). Factors such as locus of control (i.e.,
internal or external), self-construal (i.e., independent or interdependent), need for
cognition, and optimism may all speak to an individual’s orientation toward control and
their perception of the decision environment. These stable and measurable person
variables may contribute to an individual’s set point and will be an important component
of the present research.

There is research to suggest that the DFDC may manifest differently across
cultures. Individuals raised in an independent, Western environment may have a higher
set point for DFDC as they are more focused on how events impact the self and thus seek
to gain control over those events (White et al., 2006). Conversely, Eastern individuals
with a more interdependent self-construal may not be looking to attain this control and in
turn express a lower DFDC. Further, individuals from these distinct environments may
derive their sense of control from disparate sources and be differentially attuned to the
utility of decision-making environments (Markus & Schwartz, 2010). In a treatment context, we might expect a difference between how independent and interdependent individuals make choices and their processes for interpreting, selecting, and justifying their chosen option. As a result, the increased autonomy and subsequent responsibility for treatment decision-making may have varying impacts on outcomes across patients from different cultural backgrounds.

While DFDC likely plays a role in treatment decision-making, DFDC alone cannot account for differences in treatment outcomes. Of particular interest for the present investigation are the contextual factors that interact with an individual’s DFDC to influence the treatment decision process and in turn, treatment outcomes.

**Impact of Others**

As patients are making more of their own health decisions, they are reaching out to individuals outside of the medical profession and consulting family, friends, and others in similar situations across the globe via online support networks. Individuals in each of these roles have varying levels of experience with the patient and expertise related to the specific treatment decision, potentially impacting how the patient approaches the treatment decision process as well as their subsequent treatment outcomes. A patient’s DFDC may provide a cue to their tendency to seek information from others as well as an insight into how this information may lead to different treatment outcomes. For example, when a patient has a high DFDC, they may not benefit from advice from others as they are looking to exercise their own control in the treatment situation. On the other hand, patients who have a low DFDC may be more likely to defer to others in their decision-making and benefit from the additional advice. However, even if low DFDC patients
benefit more from additional input, not all advisors and resources are the same; information may be considered and weighted differently depending on the source.

The relationship of an individual to their advisor is an important facet in the decision process that has yet to be investigated. Specifically, the interpersonal closeness, defined here as the social closeness or connectedness one feels with another entity, may impact treatment decisions and ultimate treatment outcomes. For example, the information gained from an interpersonally close family member or friend may more heavily impact an individual’s treatment decision and resulting outcome compared to information acquired through interpersonally distant online or print resources. Little research has investigated how the interpersonal closeness of these individuals may affect patient outcomes.

One of the challenges in integrating others into the decision process is that advisors tend to approach situations differently than they would if they were choosing for themselves. Research on self-other decisions demonstrates that these differences may be driven by perceived value placed on risk (Stone & Allgaier, 2008). Within relationship contexts, Beisswanger, Stone, Hupp, and Allgaier (2003) have shown that individuals are more willing to suggest that others engage in potentially risky behaviors (e.g., give out their phone number, go on a blind date) than they were to engage in those behaviors themselves. This discrepancy could be due to a differential focus on the potential benefits of taking the risk when choosing for others (e.g., meet a lifelong partner) compared to the potential costs of taking the risk when choosing for the self (e.g., having dinner with an unsavory individual). In the health context, this would translate to an advisor assessing the treatment options by examining which will be the most beneficial.
for the patient rather than focusing on the risks and side effects. Thus, consulting another individual in the decision process may result in more beneficial outcomes than just deciding for the self, but there may be reason to believe that the interpersonal closeness of that advisor to the patient also plays a key role.

An explanation for this differential weighting of benefits and risks is what Loewenstein (2005) termed the hot-cold empathy gap. This basic principle suggests that people will not make the same decisions when they are distant from the situation and in a “cold” state compared with when they are in “the heat of the moment,” near to the situation and in a “hot” state. Most relevant to this discussion, the hot-cold empathy gap extends to decisions made by or for others (Loewenstein, 2005). In the medical context, the physician is tasked with informing the patient of his or her options and tends to be in a cold state, distant from the situation. Because of this distance, the physician may be unable to fully empathize with the emotional experience of the patient. The patient, on the other hand, is likely operating in a hot state, acutely aware of how this decision will change not only his or her life, but the lives of close family and friends. Patients in a hot state are more focused on their affective experiences and may seek to establish control over their situation, perhaps making a different selection for themselves than the selection made by their advisor.

The empathy gap might also be expressed on a continuum where those closest to the patient (e.g., family, friends) would have the smallest gap in their understanding of the patient’s desires and goals. This congruence could ultimately influence treatment outcomes by way of bolstering the patient’s confidence in their decision when consulting an advisor who is interpersonally close. On the other hand, those farthest from the
patient (e.g., online support networks, print resources) would have a much larger empathy gap as the authors do not know the patient directly and this type of information is limited in its ability to be tailored to the patient (e.g., decision aids). As advisors are likely to be focusing on different components of the treatment than the patients, the disparity in perspectives and empathy states between advisors and patients may be problematic when making a decision on a course of treatment.

Cultural context may play a role in the manifestation of empathy gaps (Boven, Loewenstein, & Dunning, 2013). As previously discussed, individuals from interdependent cultures are more collectivistic and tend to account for thoughts, emotions, and perspectives of others. Through practice in their everyday social environment, interdependent individuals become quite skilled at attuning to the perceptions of others they trust. Further, research suggests that those who have an interdependent orientation are more likely to feel positively about the success of others than those with an independent orientation (White et al., 2006). Extending this to a treatment decision-making context, individuals with an interdependent orientation may be more willing to accept advice from others they are close to, especially if they have experienced a similar situation. In another study, researchers demonstrated that interdependent East Asians were more accurate judges of the emotions of close others (friends) and less accurate judges of the emotions of distant others (strangers) compared to more independent European Americans (Ma-Kellams & Blascovich, 2012). It is yet unknown if the empathy gap between a decision maker (e.g., patient) and an advisor has reciprocal effects on the decision and decision outcomes. However, one might anticipate that patients may see the greatest benefit in outcomes when they are talking with an
interpersonally close advisor, and this may be particularly true for patients low in DFDC, such as those from an interdependent cultural context.

Patients across cultures report consulting resources from various degrees of interpersonal closeness for information (Powell, Darvell, & Gray, 2003; Sakai, Kunimoto, & Kurata, 2012; Wald, Dube, & Anthony, 2007). As a preliminary investigation into their health concerns, patients often seek information from impersonal online and print resources including websites, brochures, and medical decision aids. This advice comes from individuals who will never be exposed to knowledge about a particular patient’s condition. Instead, these resources are designed to transmit information to patients en masse and help them focus in on the important characteristics of their condition and treatment options and have become a standard component of the shared decision-making environment (O’Connor et al., 2007). Although informative, the authors of these resources have a fairly large empathy gap and only limited ability to tailor advice to the patient (e.g., decision trees) and may be considered the most interpersonally distant resources. Though the information provided may be useful and relevant to the treatment decision, there is little room to personalize the treatment to the patient, potentially falling short of important outcomes that could be attained otherwise.

To further assist in making treatment decisions, patients are reaching out to gain information from not only print materials and online resources, but to both known and unknown others. To investigate the influence of distant others, a meta-analysis of engagement in peer-to-peer online support groups (e.g., virtual discussion board interactions on a forum about quitting smoking) found limited significant effects for either positive or negative health outcomes (Eysenbach, Powell, Englesakis, Rizo, &
Stern, 2004). For example, a patient may seek out others who have previously been in a similar decision state and thus have a slightly smaller empathy gap than impersonal web pages or brochures. The patient may consult an online support network in which many of the contributors are not medical professionals but rather are lay individuals sharing their experience with a particular condition and its associated treatments (Culver, Gerr, & Frumkin, 1997). Oftentimes these individuals merely provide anecdotal information regarding their specific experience and do not cite any research to back up their claims. As the individuals in virtual environments are typically anonymous and not connected to the individual making the decision, it should not be surprising that advice from someone so distant does not have a discernible impact on treatment outcomes.

In order to attain personalized advice, patients may choose to seek advice from interpersonally close family and friends throughout the treatment decision process to gain a perspective from someone who knows them well and has a comparatively smaller empathy gap (Charles, Gafni, & Whelan, 1999). One study indicated that patients report seeking advice from family and friends more often than a medical professional and also suggested that some demographic factors (e.g., race, need for social support) differentially predict where patients will seek their information from (Percheski & Hargittai, 2011). It might also be the case that when patients make a decision with an interpersonally close other, they have more confidence in their chosen treatment and, as a result, improved outcomes. However, relatively little research has been done to experimentally investigate how this additional input from sources varying in interpersonal closeness actually influences the decision-making process and treatment outcomes.
These findings suggest that while individuals are increasing the breadth of their search for information, ranging from family to physicians to unknown other across the internet, the benefit of that information may be wanting, especially when many of the advisors may not have a medical background or an intimate knowledge of the patient’s personal characteristics and treatment history. Further research into the characteristics of advisors is required. Moreover, at present, little to no controlled research exists which focuses directly on how advisor characteristics influence the experience of treatment decision-making and the psychological component of a treatment outcome.

Mechanisms

Throughout this discussion, certain mechanisms for the beneficial effect of consulting an interpersonally close other have been alluded to, where close others may bolster the patient’s confidence or increase their positivity. For example, positivity toward a treatment has been shown to induce reward mechanisms in the brain (e.g., Benedetti, 2008; Leotti, Iyengar, & Ochsner, 2010) and has been linked to reductions in discomfort in placebo paradigms (Rose, Geers, Fowler, & Rasinski, 2013). A positive evaluation of a decision-making process has demonstrated a mechanistic relationship between treatment options and subsequent outcomes (Brown et al., 2015). Further, there is evidence to suggest that people feel more favorably toward in-group members (Tajfel & Turner, 1986); members of in-groups are often considered to be close others. Thus, it is plausible that individuals who select a treatment in consultation with a close other would experience an enhanced sense of positivity toward their treatment and in turn, experience better treatment outcomes.
There are of course other pathways through which consulting a close other would be beneficial. Research shows that choosing one treatment over another increases liking for the selected option (Brehm, 1956) and the perception that one is able to match a treatment to him- or herself has been demonstrated to reduce discomfort in an acute pain task (Rokke & al’Absi, 1992). It is possible that making a selection in consultation with a close, liked, other may further augment this beneficial effect of treatment matching.

Additionally, the amount of effort exerted in making a treatment decision may impact the relationship between the treatment advisor and treatment outcomes. According to the effort justification framework, participants who are highly involved in a decision and subsequently exert a high amount of effort to carry out their selected option will lead to more positive outcomes in a psychotherapy context (Axsom & Cooper, 1985). The inclusion of others in the decision process may bolster this effect, leading individuals to perceive a high degree of investment into the treatment selection process and perhaps enhancing treatment outcomes. These three different mediational mechanisms have each been supported by research and theory in other contexts and appear worthy of investigation here.

**Purpose of the Present Studies**

In sum, the present studies sought to clarify the relationships between person variables, the treatment context, the desire for decisional control, and patient outcomes using the framework provided by the PIvOT model. Specifically, this research endeavored to determine how the characteristics of an advisor influence treatment outcomes. However, in order to thoroughly investigate the components of interest in the PIvOT model and how DFDC interacts with the treatment context to impact outcomes,
the person variables that led an individual to have a low or high DFDC were established (Pilot Study). Second, the research aimed to determine if the interpersonal closeness between an individual and their advisor influences treatment outcomes when participants are provided with a choice between treatment options. Relatedly, the degree to which an individual’s DFDC moderated the relationship between the interpersonal closeness of an advisor and treatment outcomes will be investigated and mediational associations were tested. Finally, each of the previous relationships were addressed in terms of independent and interdependent cultural contexts.
Chapter Two

Research Questions and Hypotheses

Research Question 1: Is there a set of variables that predict desire for decisional control in medical contexts?

Hypothesis 1: Desire for control, internal locus of control, and independent self-construal will predict desire for decisional control in a treatment decision.

According to the Health Belief Model (Becker, 1974), demographic and social psychological factors lead to the interpretation of a disease state (e.g., severity, perceived threat), which ultimately leads to the actions that will be taken to address that disease. It then follows that individuals who are motivated to take action would have a high DFDC. Research demonstrates that there are certain factors that are indicative of an individual’s orientation toward control and their agency in a decision-making context. Here I predicted that three factors (i.e., desire for control, internal locus of control, independent self-construal) would lead to a comprehensive assessment of an individual’s expressed DFDC across treatment scenarios.

However, to not be overly limited in my investigation of relevant person variables, in an initial study I chose to investigate eleven constructs that may be associated with an individual’s set point for DFDC. The constructs fell into three broad categories of interest. First I wanted to investigate person variables associated with control and decision-making (i.e., desire for control, need for cognition, health locus of control, maximizing). Second, I felt it was important to include variables that speak to an individual’s beliefs about themselves and their environment (i.e., self-esteem, self-mastery, optimism). Finally, to get at how the participants’ interpersonal orientation may
affect their DFDC, I included questionnaires to assess these factors from a variety of perspectives (i.e., belongingness, self-construal, interpersonal closeness, ladder measure of subjective social status). See Appendix A for a description of the measures.

**Research Question 2: Does the interpersonal closeness of an advisor impact decision-makers’ treatment outcomes?**

**Hypothesis 2: An interpersonally close advisor will have a more positive impact on outcomes compared to an interpersonally distant advisor or no advisor.**

Research suggests that individuals may respond to advice from advisors differently depending on how interpersonally close they are. First, advisors tend to focus on benefits of options rather than the costs, providing individuals with a less affectively-laden perspective. Second, an interpersonally close advisor is in a similar empathy state to the individual making the decision, having a much smaller empathy gap than an interpersonally distant advisor. Both of these perspectives suggest that consulting with an interpersonally close advisor would lead to decisions that are more representative of the decision-makers’ preferences, potentially changing the interpretation of the decision process and ultimately resulting in better treatment outcomes. That is, the involvement of an interpersonally close advisor may have beneficial effects on the psychological mechanisms involved in the decision-making process and subsequent outcomes over and above selecting the “correct” option in an active treatment context.

**Hypothesis 3: An individual’s DFDC will moderate the relationship between interpersonal closeness and outcomes.** If in fact individuals differ in their desire for decisional control, it would follow that this particular set of person variables might impact whether they show benefit from involvement of others in the decision process.
Further, they may demonstrate benefit from a particular type of other. Based on the
tenets of the PIvOT model, I hypothesized that individuals with a low DFDC will have
improved treatment outcomes when advised by a close other. They do not desire to make
the decision themselves but would likely fare best when someone with a similar
perspective (i.e., a close other) provides advice. On the other hand, I predicted that
individuals with a high DFDC would show no difference in outcomes when advised by
close or distant others. These individuals likely want to have more input into their final
decision and would prefer not to have advice from either a close or a distant other.

**Research Question 3: Does cultural context affect treatment outcomes via
moderation of the relationship between interpersonal closeness and outcomes?**

**Hypothesis 4: Culture will moderate the relationship between interpersonal
closeness and treatment outcomes.** Substantial amounts of research demonstrates that
cultural background can impact decision processes (Markus & Kitayama, 1991). One of
the primary cultural differences is that of interpersonal orientation. Individuals from
interdependent cultures are more oriented toward others around them and because of this
other-focused perspective, I predicted they would benefit more from an interpersonally
close advisor than an interpersonally distant advisor. Conversely, individuals from
independent cultures tend to focus on aspects of the self. Due to this self-focus, I
predicted that independent individuals would not differ in their outcomes based on
advisor closeness.

**Research Question 4: Is there a mediational mechanism that can help explain the
relationship between the interpersonal closeness of an advisor and treatment
outcomes of a patient?**
As there are a number of mechanisms that could help explain the relationship between advisor closeness and treatment outcomes and little to no data exist on these mechanisms in this context, I did not have any specific predictions. Instead, I conducted an initial exploration of three potential mechanisms: participant evaluations of the decision process, degree of treatment match experienced by the participant, and effort put into the decision process as possible mediators of the relationship between treatment advisor and culture on treatment outcomes.
Chapter Three

Pilot Study: Establishing the Desire for Decisional Control

To more effectively determine how DFDC impacted the relationship between factors associated with the treatment context and subsequent treatment outcomes, the person variables that comprised DFDC needed to be established. The Pilot Study addressed Research Question 1: Is there a set of variables that predict DFDC? I hypothesized that three primary variables (i.e., desire for control, locus of control, independent self-construal) would predict DFDC across a series of medical decision-making vignettes.

Methods

Participants and Design

Sixty-five men and 100 women undergraduates at the University of Toledo participated in this study in return for course credit toward Introductory Psychology. This study had a correlational design where participants responded to a series of validated questionnaires assessing their levels of social-psychological constructs. Participants read a series of vignettes and responded to questions regarding how much decisional control they would exercise in each scenario.

Materials

Each of the measures included in the Pilot Study can be found in Appendix B. These measures included the Social Connectedness and Social Assurances scales to measure belongingness (Lee & Robbins, 1995), the Health Locus of Control Scale to assess locus of control as it relates to health contexts (Wallston, Wallston, Kaplan, & Maidcs, 1976), the Life Orientation Test to measure optimism and pessimism (Scheier,
Carver, & Bridges, 1994), the Maximization Scale to measure the degree to which individuals engage in maximizing or satisficing behaviors in their decision-making (Schwartz et al., 2002), and the Self-Construal Scale to assess independent and interdependent orientations (Singelis, 1994).

**Vignettes.** Eight vignettes were crafted based on a scenario from previous work investigating patient choice and control (Ogden, Daniells, & Barnett, 2009). The vignettes asked participants to imagine themselves in a scenario where they were being treated for a certain condition, with each vignette describing a different condition. The vignettes were divided into two sets of four and contained variations to determine if situational factors might influence an individual’s desire for input into the treatment situation or who they turn to for advice. In one set, the vignettes varied on the amount of prior knowledge the physician had about the condition (i.e., has never treated before, has treated many times) and whether or not the patient brought someone with them to the consultation (i.e., imagine you go to the physician, imagine you go the physician and bring your closest family member). In the other set, the vignettes varied on the severity of the condition (i.e., appendicitis and kidney stones are severe; plantar warts and a deep cut are minor) and whether the condition had many or few treatment options (i.e., description of a single treatment, description of multiple treatment options). Following each vignette, participants were asked a series of questions pertaining to their decision-making in the scenario. The primary questions of interest were: In this scenario, how much input would you like into your treatment decision (1 no input at all – 7 as much input as possible); In the above scenario, who would you seek out information from (physician, nurse, other medical practitioner, family member, friend, internet/online
resources, print resources); How much importance would you place on information about
this condition coming from a physician (nurse, other medical practitioner, etc.; 1 no
importance – 7 a lot of importance).

**Procedures**

Participants signed up online for an experimental study titled “Treatment and
Well Being” and reported to the lab in groups of two to eight. All measures were
presented on individual computer terminals separated by dividers.

Participants were asked to report basic demographic information including sex,
age, parent income (an indicator of socioeconomic status), exercise habits, and basic
health history. To induce a patient-focused mindset, participants responded to items
regarding their most recent visit to the physician. These questions concerned how
involved they were in their visit, how much information they typically want when they
visit their physician, and if they had to make any decisions (see Appendix A for a list of
questions).

After the participants responded to the demographic and physician questions, half
of the measures were randomly presented. Participants then read four of the eight
vignettes, also randomly presented. Finally, the remaining measures were presented
(randomly ordered), followed by the four remaining vignettes. The arrangement of the
items was designed to minimize fatigue that could be caused by answering a series of
questionnaires or vignettes all in a row. Displayed in this manner, I was able to break up
the participants’ patterns of responding.

**Results and Discussion**

**Planned Analyses and Results**
**Demographics.** Participant age ranged from 16 to 41 ($M = 19.1$, 3 undisclosed). Participants were asked to mark their parents’ household income; 12.7% had an income under $25,000, 23% had an income between $25,000 and $50,000, 30.9% had an income between $50,000 and $80,000, and 32.7% reported an income above $80,000. Participants were also asked to report their race; 72.7% selected Caucasian/White, 17.0% selected African American, 8.5% selected Hispanic, 3% selected Asian/Pacific Islander, 3% selected American Indian/Alaskan Native, and 7.9% selected Other (participants could mark more than one race and thus percentages will not add up to 100).

**Correlations.** First, a correlational analysis demonstrated which of the individual-difference measures were significantly correlated and thus not independently predictive of desire for decisional control. It was predicted that the constructs being tested would not overlap as each claims to tap into a slightly different aspect of the self-concept and personality. That is, I predicted modest to moderate correlations among the measures.

Self-mastery (Pearlin & Schooler, 1978) was significantly correlated with eight of the remaining ten constructs, indicating that it is not a completely independent measure ($r = .166 - .329$, $ps < .05$). Independent self-construal (Singelis, 1994) overlapped with seven constructs and belongingness-social connectedness (Lee & Robbins, 1995) and optimism (Scheier et al., 1994) were each significantly correlated with eight of the eleven constructs ($r = .170 - .353$, $ps < .05$).

These intercorrelations suggest that each of the constructs will not contribute independently to an individual’s DFDC. This will help narrow the pool of measures to include in the Primary Study to assess DFDC.
**Desired input.** A regression was conducted to determine which factors predicted the degree of input an individual would like to exercise. The desire for input variable was collapsed across all eight vignettes for ease of interpretation ($\alpha = .90$). Desire for control, belongingness (social assurances subscale; reversed), regret (maximization subscale), and relational-interdependent self-construal (reversed) were all significantly predictive of desire for input (all $ps < .01$).

**Information seeking.** A series of logistic regressions were conducted to predict if individuals with a certain combination of characteristics reported that they would seek information from their physician, nurse, other medical professional, family member, friend, internet resources, or print resources. The outcome for each regression was coded as 1 = would seek information from this source or 0 = would not seek information from this source.

Individuals high in self-mastery and the social connectedness subscale of the belongingness measure were more likely to report they would seek information from a physician ($ps < .05$) while only self-mastery was predictive of the importance individuals placed on that information ($p < .01$). Individuals high in optimism were more likely to report they would seek information from a nurse while self-mastery was predictive of importance ($ps < .01$). Individuals high in need for cognition were more likely to report they would seek information from another medical practitioner ($p < .01$) while self-mastery and self-esteem were predictive of the importance individuals placed on information from other medical practitioners ($ps < .05$). Individuals high in both the social connectedness and social assurances subscales of the belongingness measure as well as high on regret were more likely to report they would seek information from a
family member while both belongingness subscales as well as interdependent self-
construal were predictive of the importance individuals placed on that information ($ps < .05$). Individuals high in regret, optimism, and the social assurances subscale of the belongingness measure were more likely to report they would seek information from a friend while only social assurances and interdependent self-construal were predictive of ratings of importance ($ps < .05$). Finally, individuals high in regret and internal health locus of control were more likely to report they would seek information from an internet resource ($p < .05$) and individuals high in need for cognition were more likely to report they would seek information from a print resource ($p < .01$). No measures were predictive of the importance individuals placed on information from either internet or print resources. See Table 1 for regression coefficients for all measures.

**Manipulations.** Regressions were conducted for each of the dependent variables to determine if any of the manipulations in the vignettes (i.e., advisor knowledge, condition severity, presence of others, number of options) were influential in participant responding.

Of particular interest to this investigation is the interpersonal closeness between the individual making the decision and their advisor. For the vignettes in which participants were informed a family member was present, they were more likely to report that they would seek information from a family member compared to the vignettes where there was no mention of a family member, $t(164) = 2.87, p = .005$. Additionally, participants reported placing marginally more importance on the information from family members in these scenarios compared to scenarios without the mention of a family member, $t(164) = 1.91, p = .058$. 

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**Discussion**

The above results suggest that desire for control, regret, belongingness (social assurances subscale, reversed), and relational interdependent self-construal (reversed) were all predictive of an individual’s desire for input into the treatment decisions. These measures will be included in the Primary Study as indicators of DFDC and interpersonal closeness.
Chapter Four

An Investigation of Interpersonal Closeness

The aim of the Primary Study is to determine if the interpersonal closeness of an advisor can impact the way a participant responds to a treatment. Specifically, this study addressed Research Questions 2, 3, and 4. First, Research Question 2 asked if the interpersonal closeness of an advisor impacts decision-makers’ treatment outcomes. It was hypothesized that an interpersonally close advisor would have a more positive impact on outcomes than an interpersonally distant advisor. It was also predicted that the desire for decisional control would moderate this relationship such that individuals with low DFDC would benefit most from a close advisor while those with high DFDC would not show any difference due to advisor closeness.

Research Question 3 sought to determine if the relationship between interpersonal closeness and treatment outcomes would be moderated by cultural context. It was predicted that individuals from an interdependent cultural context would benefit the most when interacting with a close other while individuals from an independent context would not be influenced by advisor closeness.

Research Question 4 asked what mediational mechanisms can explain the relationship between interpersonal closeness and treatment outcomes. As there is yet to be research on the mechanisms of this particular relationship, there were no specific predictions regarding the mediating factors. However, three mediators of interest were explored: evaluation of the decision process, effort put into the treatment decision, and the degree of treatment match that participants felt they attained.
To investigate these questions, participants engaged in a sleep task that they believed they selected either on their own or with an advisor. This paradigm has been used in prior decision-making research (Geers, Weiland, Kosbab, Landry, & Helfer, 2005). Participants took the task home, outside of the artificial laboratory environment, reported initial evaluations of the sleep task the following morning, and responded to a longer questionnaire online later the following day to more comprehensively evaluate their sleep. Critically, although participants went through the experience of deciding among treatments, in actuality they all received the same inert (placebo) sleep treatment. This procedure was employed to ensure the direct causality of the experimental manipulations and culture on treatment outcomes. That is, if different active treatment were used, it would leave open the possibility that treatment efficacy is not maximized by advisor characteristics and culture, but rather the differences could be emerging due to actual differences in treatment ingredients. In order to remove active treatment effects in the present work, I presented all participants with the same inactive treatments.
Chapter Five

Method

Participants and Design

Twenty-nine men and 127 women students recruited from the University of Toledo online subject pool represented the U.S. sample. Participants age 25 or above were excluded from the sample as they are not representative of an undergraduate college student sample (Horn & Carroll, 1996), leaving 27 men and 125 women in the U.S. sample. The mean age for the U.S. participants was 18.82 years (SD = 1.16). These individuals were enrolled in Introductory Psychology and earned course credit in exchange for their participation. Friends and family members who accompanied participants in the close other condition were entered into a drawing for one of two $15 gift cards to a coffee chain.

The cross-cultural sample was recruited from Doshisha University in Kyoto, Japan and consisted of 49 men and 51 women. The mean age for the Japanese sample was 19.46 years (SD = 1.29), significantly older than the U.S. sample, t(250) = 4.09, p < .001. No age exclusions were necessary for the Japanese sample. Additionally, the distribution of sex was not equivalent across the samples, with the U.S. sample having fewer men and more women than expected, $\chi^2(1, N = 252) = 27.94, p < .001$. See Table 2 for additional demographic information by culture. Individuals signed up online to participate in the study and earned extra credit toward a psychology course in return for their participation. Friends were compensated in the same manner as close others from the U.S. in a separate drawing (no Japanese participants brought in a family member as their close other).
This study had a 4 (interpersonal closeness: self, impersonal, close, distant) x 2 (culture: United States, Japan) between-subjects design. G*Power (Faul, Buchner, Erdfelder, & Lang, 2013) was used a priori to determine the required sample size for this study. For a medium effect size, alpha of .05, and power of .90, this power analysis recommended 231 participants. For ease of data collection and accounting for dropouts, the target number was rounded up to 240: 120 participants from each culture, with 30 participants in each condition within both the U.S. and Japanese samples.

Though our total number of 252 participants exceeded this initial goal of 240, the data analyses were not conducted on the entire sample of 252 participants between the ages of 17 and 24 for two primary reasons. First, 18 participants were excluded from data analysis for failure to follow directions either in the experimental session in the laboratory or at their home (i.e., did not perform the writing task immediately prior to going to sleep, did not listen to experimenter in session). Another 3 participants were excluded due to reports of prior diagnosed sleep difficulty (e.g., insomnia), 5 participants reported being suspicious of either the task or the confederate, and one participant had prior experience with the sleep task from an earlier study, leaving a sample of 225, 130 in the U.S. sample and 95 in the Japanese sample. No fewer than 22 participants are in each condition. There were no differences in age, sex, or culture between the excluded participants and the retained participants.

Finally, due to the complex nature of the design, subsets of participants are not included in certain analyses depending on the outcome measure under investigation. First, some of the dependent variables of interest were collected in the morning questionnaire right as participants woke up while others were collected in the more
comprehensive follow up questionnaire answered later in the day. Eighteen participants
did not return the morning materials to the laboratory and thus cannot be included in the
analyses involving these dependent measures. These 18 participants were not equally
distributed across the conditions; an unexpected number of participants in the close other
condition failed to return these materials, \( \chi^2(3, N = 225) = 10.28, p = .016 \). However,
due to the initial oversampling of participants in the U.S., there remain 24 participants in
the close other condition in each culture sample after this exclusion, and the excluded
participants do not significantly differ on age or sex when compared to the retained
participants.

Seven participants failed to complete the follow up questionnaire but did submit
their responses to the morning questions. These seven participants were equally
distributed across conditions, \( \chi^2(3, N = 225) = 1.86, p = .602 \). The excluded participants
do not significantly differ on age or sex when compared to the retained participants.

Translation and Presentation of Materials

Both English and Japanese versions of the materials were developed for this
study. English materials were presented using paper questionnaires as well as MediaLab
software (Jarvis, 2008) and Japanese materials were translated from the English stimuli
and presented using paper questionnaires as well as using Superlab software
(“SuperLab,” 2012). Translation and backtranslations of the materials were performed
based on methods outlined in Hambleton and Zenisky (2011).

In order to ensure similar interactions between experimenters and participants
across cultures, a training video was created which included a demonstration of the
procedure for each condition. This video was used to train researchers across both cultural contexts.

**Materials**

Materials and procedures were approved by ethics review committees at both the University of Toledo in the United States and Doshisha University in Japan.

**Preliminary sleep quality questionnaire.** Participants completed a survey about general health behaviors such as “How many hours do you sleep on an average weekday night?” and “How many days a week do you typically engage in aerobic activity (e.g., running, biking) for over 30 minutes?” Participants also responded to a series of questions regarding their sleeping habits and their previous night’s sleep quality. Some of these items were a part of the Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds III, Monk, Berman, & Kupfer, 1989). These questions were rated on scales from 1 = *not very* to 7 = *very*. Additional sleep questions assessed how comfortable, deep, easy, peaceful, quality, relaxed, sound, how restful participants’ sleep was the previous evening, how rested the participant felt that morning, and how energized and relaxed they felt during the day. These pre-test items were derived from a scale used in two prior studies (Geers, Kosbab, Helfer, Weiland, & Wellman, 2007; Geers et al., 2005). They also completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).

After participants selected their sleep task for the evening, they were also asked a few short questions regarding their evaluation of the task (e.g., rating from 1 = *bad* to 7 = *good*; \( \alpha = .838 \)), the degree to which they felt they were able to select a treatment that matched them (1 = *not at all* to 7 = *very much*), as well as the degree of effort they put
into their decision (1 = none at all to 7 = very much). Finally, participants were asked to rate their interaction partner (if applicable) on dimensions of expertise, warmth, positivity, ease of conversation, and contribution to the decision. There was also a fill-in-the-blank section for individuals to note their thoughts about their interaction and subsequent decision. See Appendix E for preliminary questions and evaluation items.

**Sleep task.** Participants all completed the same task prior to going to sleep on the night of the study. As discussed previously, because I was looking to determine the effects of advisor characteristics and culture on sleep treatment outcomes, it was important to ensure that the results were not confounded by verum treatment effects. To this end, a placebo treatment was employed such that participants chose from different task descriptions but ultimately performed the same task regardless of their choice. This placebo treatment was a writing task where participants were asked to write down all of their thoughts that came to them before bed. They were instructed to spend ten minutes performing the thought listing task and were asked to return the sheet listing their thoughts the following day. There were three different sleep task descriptions that participants selected from. For example, one technique was titled “Emptying of the Mind”. The objective of this technique was purportedly to empty the mind and help participants move past the chaos of their day-to-day life. The other techniques were titled “Mental Grounding,” and “Thought Management” and all were paired with descriptions similar to the one above (see Appendix F).

A sleep task was selected for this young adult college sample as sleep problems are frequently observed and selecting a sleep treatment could act as a relevant treatment choice (Buboltz Jr., Brown, & Soper, 2001). Prior research has revealed that young adult
college students experience higher than average rates of sleep difficulties, in part, due to heightened stress and adjustments to new social and physical surroundings (Buboltz Jr. et al., 2001). Additionally, prior studies indicate that in these types of samples, the ten minute sleep task on its own has no detectable influence on sleep (Geers et al., 2007, 2005).

**Morning survey.** Participants were asked to complete a short questionnaire after they woke up in the morning to assess their sleep quality. Ten items were used to assess sleep quality immediately upon waking (Appendix G). Importantly, this included the same seven items used to assess quality of sleep (e.g., “How would you rate your sleep quality last night?”) in the initial session. These items were combined to create a global dependent measure of sleep quality.

**Follow-up sleep questionnaire.** When participants completed the online questionnaire on the following day, they responded to a similar set of items as the initial day. One of these items assessed how long participants spent sleeping on the previous night and was used as a dependent measure of sleep quantity. Participants also responded to several questions regarding the thought-listing task itself (e.g., “Did you complete the thought listing task last night?”; Appendix H).

**DFDC measures.** Measures of person variables demonstrated in the Pilot Study to be predictive of DFDC were included in the Primary Study to determine if DFDC moderates the relationship between interpersonal closeness and treatment outcomes. These measures were desire for control, regret, belongingness, and relational-interdependent self-construal.

**Procedure**
Participants were assigned to one of four conditions: individual, impersonal, close other, and distant other. Participants assigned to an “individual” condition signed up for the study session alone and completed the procedures detailed below with no input from others. Their responses served as a baseline condition for comparison. Participants assigned to an “impersonal” condition also signed up for the study session alone but completed the decision period interacting with a computerized decision tool. This condition represented the most interpersonally distant condition. Participants assigned to a “distant other” condition signed up individually and participated in the decision period with a confederate. The confederate represented an interpersonally distant other that the participant has no social connection with. Participants assigned to a “close other” condition signed up for the study alone but were instructed to bring someone they know well (e.g., a close friend, a relative) to the study session with them. Conversing with a family member or friend about treatment options would be similar to other decision-making scenarios with interpersonally close others.

Upon arrival at the lab, participants were greeted by the experimenter who described that the study would occur in four parts: an initial survey, a decision period, a mental relaxation task for that evening, and a follow-up survey to be completed online. To ensure participants were able to complete the survey on the following day, they provided verbal confirmation to the experimenter that they could do this task prior to 5pm. If they were not able to complete the follow-up questionnaire on the subsequent day, they were asked to sign up for the study on a different day that was more conducive to their schedule. After confirming their availability, participants who could continue
with the study were asked to read and sign an Informed Consent Document stating their understanding of the procedures of the study.

Next, participants across all conditions filled out the preliminary sleep questionnaire assessing typical sleep habits and qualities about their previous nights’ sleep. Additionally, they were asked to fill out measures identified in the Pilot Study as indicative of their desire for decisional control. Advisors (i.e., close and distant others) were also asked a few questions regarding how they felt their own sleep experience can help the primary participant.

After participants completed their surveys, the experimenter gave further instructions about the task. Participants were told that the researchers are interested in different sleep treatments and how they impact sleep quality. To investigate these differences they were going to engage in a decision period to determine which sleep task would be most beneficial for them. The experimenter provided the participant (and their partner, if applicable) with visual descriptions of the three (placebo) treatments. Instructions during this decision period differ between conditions. Participants in the “individual” condition were asked to think about their sleep patterns and any other information they believed would be relevant to selecting a treatment. Participants in the “impersonal” condition were directed to a computer terminal to respond to questions designed to help determine which type of sleep treatment would be beneficial (Appendix I). Participants in “close other” and “distant other” conditions discussed their general sleep patterns with their advisor for approximately two minutes using the same questions from the impersonal condition as prompts. The experimenter moved to another part of the room while the participant made their decision, either in consultation with their
advisor or alone. When the experimenter returned, he or she handed the participant the envelope containing the chosen sleep treatment, a writing task. Unbeknownst to the participant, the contents of the envelopes were identical for all participants.

In each envelope were instructions about a relaxation technique participants were to follow immediately before going to sleep that evening. The envelope also included the survey to be completed immediately upon awakening. The participant (and their advisor, if applicable) had the opportunity to read the task and make initial evaluations on a brief questionnaire. At this point they also rated their advisor on a variety of dimensions.

The next day the primary participants completed the online follow-up survey consisting of the final set of questions about their completion of the sleep task and previous nights’ sleep. They also returned their sleep task and morning questionnaire to the researchers within one week of their initial participation. The advisors did not complete a second session. Finally, participants were thanked for their time and were fully debriefed about the nature of the study, including the presence of a confederate if they were in the “distant other” condition. Sample scripts are included in Appendix J.

Analyses and Predictions

The seven sleep quality items from the morning ratings were correlated to determine if it was possible to collapse across the items for an overall sleep quality variable. Based on previous work, I expected the sleep quality measures to be highly correlated and thus reduced to a single variable. This variable was then submitted to a 4 (interpersonal closeness: self, impersonal, close, distant) x 2 (culture: United States, somewhere else) between-subjects analysis of covariance, controlling for pre-treatment sleep quality ratings as individuals may vary on their sleep quality upon entering the
study. The amount of time participants spent sleeping was also submitted to this ANCOVA, again controlling for the time spent sleeping during the previous night. For the two ANCOVAs I expected that there would be a main effect of interpersonal closeness such that the close advisor would have a more positive impact on sleep outcomes compared to an interpersonally distant advisor or no advisor (Hypothesis 2). Further, I anticipated that advisor closeness would interact with culture whereby individuals from the U.S. would not show much difference in outcomes based on advisor closeness while participants from Japan would benefit most from talking with an interpersonally close advisor (Hypothesis 4).

In order to determine if there was an effect of the moderator, DFDC, I submitted the post treatment sleep outcome ratings (separate analyses for sleep quality and sleep quantity) to a regression using the interpersonal closeness variable as a categorical predictor and DFDC as the continuous moderator (Baron & Kenny, 1986). Previous night’s sleep outcomes were entered into the regression models as covariates. I predicted that individuals with high DFDC would have improved sleep outcomes in the conditions where made the treatment selection alone (i.e., individual, impersonal) compared to the conditions where they made a decision with another individual (i.e., close other, distant other). Furthermore, I predicted that individuals with low DFDC will have improved sleep outcomes in the conditions where they are making a decision with another individual (i.e., close other, distant other) compared to the conditions where they are making the treatment selection alone (i.e., individual, impersonal; Hypothesis 3).

Finally, to investigate mediational mechanisms (Research Question 4), I used the Preacher and Hayes (2008) bootstrapping methodology to determine if the mediation
effects were is significant. Specifically, I investigated the mediators listed in Appendix E, Evaluation Questions. If the path between the mediator and interpersonal closeness was significant, it indicated partial mediation. If this path was significant and the path between interpersonal closeness and treatment outcomes is not significant, full mediation would be demonstrated.
Chapter Six

Results

The research questions of interest along with their associated hypotheses are reported below for the Primary Study. Separate analyses were conducted for the two main dependent measures: sleep quality and time spent sleeping (sleep quantity) measures. Before moving to the research questions, demographic differences are discussed.

Demographic Differences

Table 3 reports the descriptive relationships between age and sex by culture within each of the primary dependent measures. There were no sex differences within the sleep quality measure across cultures. However, men from the U.S. spent significantly more time sleeping than women from the U.S., \( p = .003 \), men from Japan, \( p < .001 \), and women from Japan, \( p < .001 \). Women from the U.S. spent significantly more time sleeping than both men, \( p = .001 \), and women, \( p < .001 \), from Japan.

Table 3 also reports the correlations for age with each dependent measure by culture. The only marginally significant relationship between age and either of the outcome measures is a slight negative association between age and sleep quality for U.S. participants. That is, there was a trend for older participants to report lower sleep quality.

Research Question 2: Does the presence interpersonal closeness of an advisor impact decision-makers’ treatment outcomes?

Hypothesis 2: An interpersonally close advisor will have a more positive impact on outcomes compared to an interpersonally distant advisor or no advisor.
**Sleep quality.** To investigate the dependent measure of sleep quality, the items asking participants to rate their quality, comfort, ease, soundness, relaxation, peacefulness, and depth of their sleep (1 = *not at all* to 7 = *very much*) were correlated and averaged into a composite score in the preliminary questionnaire (α = .910) as well as in the morning questionnaire (α = .914).

The sleep quality composite measure was submitted to a 4 (interpersonal closeness: self, impersonal, close, distant) x 2 (culture: United States, Japan) between-subjects analysis of covariance, controlling for preliminary sleep quality ratings as individuals may vary on their sleep quality upon entering the study. Age and sex were also included as covariates in the ANCOVA as there were significant differences between samples, noted above. There was no main effect for culture, $F(1,196) = 0.04, p = .845, \eta^2 = .000$, indicating there was no difference in reported sleep quality between Japanese and U.S. participants. There was also no main effect for condition, $F(3,196) = 1.41, p = .242, \eta^2 = .016$, suggesting the conditions did not significantly differ in their reports of sleep quality. Finally, there was no interaction effect between condition and culture, $F(3,196) = 1.45, p = .229, \eta^2 = .017$. Together, these results indicate that participants across cultures reported similar sleep quality regardless of how they decided on their sleep treatment. See Table 4 for means by condition.

To investigate the specific hypothesis that participants would report the best outcomes in the close other condition (i.e., the most interpersonally close advisor condition), I conducted two contrasts (Rosenthal & Rosnow, 1985). The first contrast compared groups where the decisions were made alone (i.e., alone, impersonal) to groups where decisions were made with another individual (i.e., confederate, close other). The
contrast demonstrated no difference between these sets of individuals in sleep quality, $F(1,196) = 2.28, p = .133, \eta^2 = .009$, suggesting that the mere presence of another individual when making a treatment decision does not impact sleep quality outcomes.

The second contrast compared the close other group to the three other groups (i.e., alone, impersonal, confederate) to determine if sleep quality is influenced by discussing treatment options with someone who has a close personal connection. The effect of this contrast was significant, $F(1,196) = 3.99, p = .047, \eta^2 = .015$, indicating that individuals who discussed treatment options with a close other reported better sleep quality than individuals in the other groups.

**Sleep quantity.** The time spent sleeping measure was submitted to the same 4 (interpersonal closeness: self, impersonal, close, distant) x 2 (culture: United States, Japan) between-subjects analysis of covariance, controlling for the previous night’s time spent sleeping as individuals may vary on the amount of time they typically spend asleep. Age and sex were again included as covariates. There was a main effect for culture, $F(1,207) = 28.62, p < .001, \eta^2 = .102$, indicating that U.S. participants spent significantly more time asleep than Japanese participants. There was also a main effect for condition, $F(3,207) = 3.59, p = .015, \eta^2 = .039$. Post-hoc analyses using a Bonferroni correction demonstrate that individuals in the impersonal condition slept significantly less than individuals in the close other condition, $p = .024, d = -.55$, and marginally less than individuals in the confederate condition, $p = .073, d = -.50$. Finally, there was no interaction effect between condition and culture on the time spent sleeping, $F(3,207) = 0.15, p = .931, \eta^2 = .002$. See Table 4 for means by condition.
The same contrasts described above for sleep quality were conducted on the dependent measure of time spent sleeping. The comparison between alone conditions (i.e., alone, impersonal) and partner conditions (i.e., confederate, close other) showed a significant difference, $F(1,207) = 9.23, p = .003, \eta^2 = .030$. This result indicates that individuals who discussed their treatment options with another individual reported more time sleeping than individuals who made the decision alone. The second contrast comparing the close other condition and the remaining conditions was also significant, $F(1,207) = 4.10, p = .044, \eta^2 = .015$. This finding indicates that individuals who spoke with a close other spent more time sleeping than individuals who did not speak with a close other.

**Relationship between outcome measures.** Though the outcomes seem to be providing slightly different information regarding the relationship between culture and advisor characteristics, the measures of sleep quality and time spent sleeping are significantly correlated, $r = .181, p = .010$. This relationship was not significant within women ($r = .095, p = .272$), but rather seemed to be driven by the men in the sample ($r = .343, p = .005$). That is, for the men that completed all parts of the study, reporting a higher sleep quality was associated with reporting more time spent sleeping.

**Hypothesis 3: An individual’s DFDC will moderate the relationship between interpersonal closeness and outcomes.** I hypothesized that participants’ desire for decisional control (DFDC) would moderate the relationship between culture and advisor condition on treatment outcomes (i.e., sleep quality, time spent sleeping). To create the DFDC moderator, I first checked to see if the proposed measures (i.e., desire for control, regret, belongingness, and relational-interdependent self-construal) were correlated as in
the pilot study. Three out of the four measures were highly intercorrelated, \( ps < .010 \) (see Table 5), with the exception of relational interdependent self-construal. Thus this measure was not included in the creation of the composite DFDC moderator. Desire for control scores were significantly higher within the U.S. sample, \( t(216) = 4.81, p < .001, d = .65 \). Though none of the other measures showed significant mean differences, I accounted for the different distributions of scores across cultures by standardizing each of the measures within culture and then averaged to create the moderator of DFDC. All models reported below include age and sex as covariates.

**Sleep quality.** First I tested whether the effect of culture and advisor condition on sleep quality was moderated by DFDC. The moderation model explained a significant proportion of the variance in the sleep quality, \( R^2 = .23, F(8,192) = 7.12, p < .001 \), however the only significant predictors were the intercept and the covariate of the quality of the previous nights’ sleep, \( ps < .010 \). Thus the calculated DFDC did not significantly moderate the relationship between culture and advisor condition on sleep quality. See Figures 2a and 2b for a depiction of the means by level of DFDC and advisor condition. See Figure 3a for the moderation model.

**Sleep quantity.** Next I sought to determine if the DFDC moderator would have an impact on the same model with the outcome variable of time spent sleeping. The moderation model explained a significant proportion of the variance in the sleep quality, \( R^2 = .24, F(8,209) = 8.44, p < .001 \). Again, two significant predictors were the intercept and the covariate of the quality of the previous nights’ sleep, \( ps < .050 \). However, when controlling for age, advisor condition, culture, and previous night’s sleep, men reported having slept for more time than women, \( \beta = .43, p = .069 \). Further, when controlling for
age, advisor condition, sex, and previous night’s sleep, culture is again predictive of time spent sleeping where the U.S. participants report having more sleep, $\beta = -1.07, p = .035$.

Although the moderator overall did not significantly impact the model, there were significant effects of advisor condition on time spent sleeping for U.S. participants at mean levels of DFDC ($\beta = 0.24, p = .049$) and one standard deviation below the mean of DFDC ($\beta = 0.30, p = .042$). Investigation of the means reveals that at average levels of DFDC, U.S. participants got the most sleep after talking with close others regarding their treatment options. However, at low levels of DFDC, U.S. participants reported the most sleep after talking with the confederate. That is, low and moderate levels of control were the most influential on treatment outcomes for U.S. participants. See Figures 4a and 4b for a depiction of means across all conditions and levels of DFDC. See Figure 3b for the moderation model.

**Research Question 3: Does cultural context affect treatment outcomes via moderation of the relationship between interpersonal closeness and outcomes?**

**Hypothesis 4: Culture will moderate the relationship between interpersonal closeness and treatment outcomes.**

I hypothesized that participants’ cultural context would moderate the relationship between advisor condition on treatment outcomes (i.e., sleep quality, time spent sleeping). Cultural context was operationalized in two ways, by country of origin and self-construal orientation. Although these two operationalizations of culture are often conflated, it has been suggested that they are not in fact interchangeable (Matsumoto, 1999). Thus, both were investigated in the present research.
**Country of origin.** The country of origin factor was tested in the ANCOVA described in Research Question 2, Hypothesis 2. The moderation of country of origin was tested by investigating the interaction effect between country and advisor condition on each dependent measure. There was no moderating effect on either sleep quality or sleep quantity. Thus, there was no evidence in support of Hypothesis 4 using the country of origin variable as an indicator of culture.

**Self-construal.** Second, I used measures self-construal orientation as an indicator of cultural context. There is research to suggest that certain processing styles are characteristic of cultural contexts and country of origin (Markus & Kitayama, 1991; Singelis, 1994). Specifically, I used the measure of relational interdependence self-construal to be consistent with the measures reported in the Pilot Study. A high score on this variable indicates a more pronounced tendency toward relational interdependent self-construal (characteristic of the thinking style of many Eastern cultures) and a low score on this variable indicates a tendency towards low relational interdependent self-construal (characteristic of the thinking style of many Western cultures).

**Sleep quality.** I tested whether the effect of advisor condition on sleep quality was moderated by country of origin. The moderation model explained a significant proportion of the variance in the sleep quality, $R^2 = .25, F(6,200) = 11.06, p < .001$, however the only significant predictors were the intercept and the covariate of the quality of the previous nights’ sleep, $p < .010$. There were no significant direct effects of advisor condition on sleep quality at one standard deviation below the mean of self-construal. However, there was a marginally significant direct effect of advisor condition on sleep quality at the mean level of self-construal, $\beta = 0.11, p = .054$, as well as a
significant direct effect of advisor condition on sleep quality at one standard deviation above the mean of self-construal, $\beta = 0.17, p = .040$. These findings suggest that individuals with increasing degrees of relational interdependence may show stronger effects of advisor condition on sleep quality. Specifically, interdependently-oriented individuals reported better sleep quality after discussing options with close others. See Figure 5a for a depiction of the means across conditions and construal levels and Figure 6a for the moderation model.

**Sleep quantity.** The moderation effect of self-construal on the relationship between advisor condition on sleep quantity was also tested. The moderation model explained a significant proportion of the variance in the sleep quality, $R^2 = .14, F(6,211) = 5.94, p < .001$. The only significant predictor was the covariate of the quantity of the previous nights’ sleep, $p < .001$. There was a significant direct effect of advisor condition on time spent sleeping at the mean level of self-construal, $\beta = 0.23, p = .015$, but not for one standard deviation below or above the mean, $ps > .080$. That is, individuals at mean levels of interdependence reported more time spent sleeping after speaking with a close other. See Figure 5b for a depiction of the means and Figure 6b for the moderation model.

**Research Question 4: Is there a mediational mechanism that can help explain the relationship between the interpersonal closeness of an advisor and treatment outcomes of a patient?**

To investigate the proposed mediational mechanisms, I used the Preacher and Hayes (2008) bootstrapping methodology and controlled for age, sex, and the previous night’s ratings in the model. Specifically, a moderated mediation was performed such
that advisor condition served as the primary independent variable predicting sleep outcomes (i.e., quality, time spent sleeping), with this relationship moderated by culture. I tested a series of mediational mechanisms including the participants’ evaluation of the decision process, effort put into the decision, and whether they felt they were able to select a task that matched them.

Unstandardized indirect effects were computed for each of 1,000 bootstrapped samples, and 95% confidence intervals (CIs) were computed to determine the significance of the mediation effects on the relationship between the culture by advisor condition interaction on sleep outcomes.

**Evaluation of the decision process.** First, I report the effects for the participants’ evaluation of the decision experience mediator on the relationship between culture and advisor condition. A composite score was created for the decision evaluation variables by taking their arithmetic mean, $\alpha = .845$.

**Sleep quality.** The model was first tested on the dependent measure of reported sleep quality. This mediation model explained a significant proportion of the variance in sleep quality, $R^2 = .26$, $F(8,198) = 8.90$, $p < .001$. There was a bootstrapped unstandardized indirect effect for Japanese participants of $\beta = 0.06$ (95% CI: 0.01 to 0.15 with 1,000 resamples). For U.S. participants the bootstrapped unstandardized indirect effect was $\beta = 0.01$ (95% CI: -0.02 to 0.07 with 1,000 resamples). These findings indicate that there was in fact an indirect effect for the decision evaluation mediator. An inspection of the means indicates that Japanese participants experienced the decision process more negatively than the U.S. participants in all conditions with the exception of participants in the close other condition. More negative experience of the decision
process, in turn, led to reports of lower sleep quality for the Japanese participants. See Figure 7a.

**Sleep quantity.** I also tested this same mediation model for the relationship between culture and advisor condition on the more objective measure of time spent sleeping. Though the mediation model explained a significant proportion of the variance in sleep quantity, $R^2 = .25$, $F(8,209) = 8.63, p < .001$, there were no significant mediation effects for either culture (Japan: $\beta = 0.04$ [95% CI: -0.02 to 0.14]; U.S.: $\beta = -0.01$ [95% CI: -0.06 to 0.02]). However, there was a marginally significant direct effect for culture, indicating that U.S. participants reported more time sleeping across conditions than Japanese participants, $\beta = 0.24$ (95% CI: 0.001 to 0.47). Thus time spent sleeping was not influenced by how participants across cultures and advisor conditions experienced the decision process. See Figure 7b.

**Decision effort.** Next I investigated whether the effort participants put into their decision mediated the relationship between culture and advisor condition on the outcomes of sleep quality and time spent sleeping.

**Sleep quality.** The mediation model for decision effort explained a significant proportion of the variance in sleep quality, $R^2 = .24$, $F(8,198) = 7.86, p < .001$. However, there were no significant mediation effects of effort for either culture for the sleep quality measure (Japan: $\beta = -0.004$ [95% CI: -0.05 to 0.01]; U.S.: $\beta = -0.003$ [95% CI: -0.06 to 0.02]). See Figure 8a.

**Sleep quantity.** Additionally, the mediation model for decision effort explained a significant proportion of the variance in sleep quantity, $R^2 = .25$, $F(8,209) = 8.48, p < .001$. Yet again, there were no significant mediation effects of decision effort on the time
participants spent sleeping (Japan: $\beta = -0.004$ [95% CI: -0.06 to 0.02]; U.S.: $\beta = 0.01$ [95% CI: -0.02 to 0.10]). Effort put into selecting a treatment did not mediate the relationship between culture and advisor condition on treatment outcomes. See Figure 8b.

**Treatment match.** Finally I tested whether the degree participants felt they could find a treatment that matched them mediated the relationship between culture and advisor condition on the outcomes of sleep quality and time spent sleeping.

**Sleep quality.** The mediation model for finding a treatment match explained a significant proportion of the variance in reported sleep quality, $R^2 = .24$, $F(8,198) = 7.94$, $p < .001$. However, there were no significant mediation effects of treatment match for either culture for the sleep quality measure (Japan: $\beta = 0.01$ [95% CI: -0.03 to 0.07]; U.S.: $\beta = -0.01$ [95% CI: -0.08 to 0.01]). See Figure 9a.

**Sleep quantity.** The mediation model for treatment match also explained a significant proportion of the variance in time spent sleeping, $R^2 = .25$, $F(8,209) = 9.30$, $p < .001$. Although, again, there were no significant mediation effects of treatment match for this dependent measure by culture (Japan: $\beta = -0.02$ [95% CI: -0.11 to 0.05]; U.S.: $\beta = 0.04$ [95% CI: -0.01 to 0.13]). The degree to which participants felt their selected treatment matched them did not mediate the relationship between culture and advisor condition on treatment outcomes. See Figure 9b.
Chapter Seven

General Discussion

The goal of the present investigation was to determine how the environment surrounding a treatment decision can influence treatment outcomes. Specifically, I investigated the effects of the interpersonal closeness of different consultation advisors on treatment outcomes. This research included conditions with advisors who were interpersonally close (e.g., family member, friend), interpersonally distant (e.g., another student), or not present (e.g., online decision aid). The influence of these different consultation advisors on both subjective and more objective treatment outcome measures were compared to a condition in which treatment decisions were made in isolation. Further, I predicted that the effects of the interpersonal closeness of the advisor might be different in cultures where decisions are made from a predominantly independent perspective (i.e., Western-oriented U.S.) than in cultures where perspectives are more interdependent (i.e., Eastern-oriented Japan). In particular, I hypothesized that individuals from Japan would find the most benefit from discussing their options with an advisor who was interpersonally close while individuals from the U.S. would benefit most from conditions in which they decided alone. To assess this latter hypothesis, the experiment was conducted across two cultural contexts. Finally, I sought to determine if an individual’s desire to participate in the decision-making process affected treatment outcomes. That is, I predicted that individuals with a low DFDC (i.e., do not want to make their own treatment decision) would have the best treatment outcomes after talking with an interpersonally close advisor whereas individuals with a high DFDC (i.e., want to
be very involved in their treatment selection) would not differ in outcomes between conditions of varying interpersonal closeness.

The results from this investigation, though varied, have one clear message: characteristics of the decision environment can impact aspects of sleep treatment outcomes. Though the specific hypothesized interaction between advisor characteristics and culture was not statistically significant, much can be taken from the results that emerged from the experiment. The results and interpretations of each research question proposed, associated hypotheses (where applicable), and demographic differences, can be found in the following sections.

**Research Question 1: Is there a set of variables that predict desire for decisional control in medical contexts?**

**Hypothesis 1: Desire for control, internal locus of control, and independent self-construal will predict desire for decisional control in a treatment decision.** Hypothesis 1 was tested by aggregating responses to a series of vignettes in a Pilot Study. Participants were first asked to complete a set of validated questionnaires indicating their level of particular social-psychological constructs (e.g., optimism, locus of control, desire for control, self-construal) and then read a series of vignettes about medical decisions, indicating their desired level of input into the hypothetical scenarios. A regression was conducted to predict desire for input into treatment decisions from the scale scores of the social-psychological constructs. Out of the three hypothesized constructs, only desire for control was indicative of desire for input into a treatment decision. Thus, as predicted, individuals with a greater tendency to desire control over events in their environment were more likely to want more input into treatment decisions than individuals low on this
tendency. This finding held across an array of hypothetical medical vignettes. Although this variable performed as predicted, neither locus of control nor independent self-construal (from the Self-Construal Scale; Singelis, 1994) were significant predictors of desire for treatment input.

It was initially hypothesized that having an internal locus of control, the belief that an individual’s state is the result of their personal behavior rather than external forces, would be predictive of desire for input into a treatment decision. Though an internal locus of control has been associated with desire for involvement in health decision contexts (Wallston et al., 1976) and a greater benefit from this involvement (Rokke, al’Absi, Lall, & Oswald, 1991), there are some studies suggesting that the relationship might not be as clear cut (e.g., locus of control directly predicting desire for input), but rather be more complicated (Wallston & Wallston, 1978). Specifically, other factors including schematic expectations of the healthcare situation as well as the presence of and reliance on social support systems may have interactive effects with an individual’s locus of control in predicting treatment outcomes. As medical decisions are inherently complex, it may be that single individual difference factors, such as an internal locus of control, drive the desire to seek information or be involved in the treatment decision-making process in some situations, but not in others. Thus, one reason locus of control may not have predicted the desire for decisional control in the present work is that the predictive ability of this construct may be highly sensitive to context. In fact, it has been suggested that the reason locus of control does not have the predictive power that other measures of control have could be due to its nature as a precursor to perceiving and exerting control (Luszczynska & Schwarzer, 2005).
It was also hypothesized that an independent self-construal would predict an individual’s desire for input into a treatment decision. Research suggests that independently-oriented individuals, such as those from Western contexts, are more likely to want to exert control in a decision-making environment (White et al., 2006) and see decisions as an opportunity (Markus & Schwartz, 2010) when compared to interdependently-oriented Easterners. However, the independent self-construal variables did not predict desire for input into the vignettes presented in the Pilot Study. Few investigations have assessed self-construal processes in a health context and the relevant studies have primarily investigated outcomes such as well-being (Cross, Gore, & Morris, 2003) and experience of stress (Cross, 1995), but not the health decision-making process itself. One study conducted in China suggested that an independent self-construal was predictive of preference for patient-made decisions (rather than physician-made decisions). However, as this was not a cross-cultural investigation, it might be that in the Eastern (i.e., interdependent) Chinese context, individuals who were relatively more independent did prefer to be involved while in a predominately independent sample one might expect the opposite, that the individuals expressing more counter-normative interdependence would have less of a desire for involvement. Thus, the generalizability of these findings are limited by the particular sample investigated (M. S. Kim, Smith, & Yuego, 1999). It remains unclear if the self-construal effects seen in other decision-making environments (e.g., consumer-based decisions) translate to health environments across cultures, though results from the present sample would suggest that there may be distinct processes at play.
While two of the three constructs that were predicted to be indicative of the desire for input into a treatment decision were not supported in this study, three additional constructs also demonstrated some predictive ability. Along with the main measure of desire for control, desire for input was also driven by participant’s degree of belongingness (reversed), regret, and relational-interdependent self-construal (reversed).

Though there were no initial predictions for the relationship between belongingness and the desire for input into a treatment decision, the social assurances subscale was significantly predictive of responses to the vignettes. Specifically, individuals low in social assurances (e.g., people who disagreed with statements such as “I’m more at ease doing things together with other people” and “It’s hard for me to use my skills and talents without someone beside me”) were more likely to want to play a role in making their treatment decision. That is, individuals who expressed more autonomy from others tended to express a desire for involvement. Though research on the belongingness construct has primarily focused on the social connectedness subscale rather than social assurances (e.g., Lee, Keough, & Sexton, 2002), we might surmise that individuals who disagree with statements like the ones listed above are less likely to allow others to exert total control over a decision and would prefer to assert their own perspective. It is possible that individuals who do not feel the need to have an extremely intimate social support network either due to a general social orientation or past experience are compelled to take matters into their own hands, so to speak. However, as the research on this particular subscale is so limited, the source of these effects remains to be seen.
Second, high scores on the regret subscale of the Maximization Scale were significantly predictive of desire for input into the treatment decisions presented in the vignettes. Though not initially hypothesized to play a significant role in the DFDC, proclivity toward thoughts of regret may very well be associated with feelings toward the treatment decision-making process. The results of the Pilot Study indicate that higher trait-levels of regret were predictive of a greater desire to be involved in the decision process. Interestingly, however, prior research appears contradictory to this effect. Specifically, it has been suggested that when participants conceptualize regret as a potential outcome of selecting one treatment over another, higher levels of anticipated regret can be associated with less of a desire to make a final decision (Hershey & Baron, 1987), and perhaps a desire to remain unaware of the possibility of the presence of alternatives in the first place (Thaler, 1980). This incongruency between previous research and the present findings may stem from differences in the gravity of the decisions being made paired with dissimilar conceptualizations of regret across these investigations. In the Pilot Study, participants made simple vignette decisions for relatively minor ailments within the perspective of a medical context. It seems plausible that in this vignette context the potential for experiencing regret was not conceptualized as a possible cost of choosing incorrectly, but rather a feeling state that could be avoided by initiating greater involvement in the decision-making process (thus to avoid feeling bad for not becoming involved). In the work by Hershey and Baron (1987) and Thaler (1980), on the other hand, regret was conceptualized more as an aversive feeling that would potentially result as an outcome of a weighty decision-making processes. That is, it is thought that individuals faced with an important, life-altering decision would desire
less involvement in the decision-making process to avoid the possibility of making an incorrect decision. Future experimental work is needed to disentangle these issues and to test whether variables such as magnitude of the medical decision can help account for these discrepant results.

Finally, it was also found that low scores on the relational-interdependent self-construal measure were predictive of desire for input into the treatment decision-making vignettes. That is, individuals who indicated disagreement with statements including “When I think of myself, I often think of my close friends or family also” and “My close relationships are unimportant to my sense of what kind of person I am,” expressed a greater desire for input into the treatment decision scenarios. Though this impact of low scores on relational-interdependence was not anticipated, it was predicted that high independence would play a substantial role in the preference for involvement; the latter prediction was not supported. The difference between high independence and low relational-interdependence may lie in the perspectives of these two seemingly related constructs. High agreement on the independence scale is focused on being comfortable with being direct, standing up for oneself, and a strong sense of a distinct identity, which are not directly in opposition to the relational-interdependent statements above; relational-interdependence focuses on the extent to which others are a part of one’s self-concept (Cross, Bacon, & Morris, 2000). An individual low in relational-interdependence may not be as other-oriented, but does not necessarily express the same degree of directness as someone who scores high on the independence construct. Individuals across the spectrum of independence might still have a desire to engage in a treatment decision but express that engagement in different ways (e.g., directly or
indirectly). However, within the spectrum of relational-interdependence, individuals high on this scale may have a self-concept that is more intertwined with others and as a result shy away from solo decision-making. The distinction between these constructs as they related to health behaviors and medical decision-making need to be further investigated.

Though the specific predicted constructs were not all significant indicators of desire for input into a treatment decision, four primary factors were responsible for this drive: desire for control, belongingness social assurances, regret, and relational-interdependent self-construal. The theoretical reasons for the association of these constructs with desire for input are not yet perfectly clear, but future research across decision domains and cultural contexts can help elucidate these relationships. The factors found to be predictive of the desire for decisional control in the Pilot Study were subsequently used to test for moderation effects in the Primary Study, detailed below.

**Research Question 2: Does the interpersonal closeness of an advisor impact decision-makers’ treatment outcomes?**

**Hypothesis 2: An interpersonally close advisor will have a more positive impact on outcomes compared to an interpersonally distant advisor or no advisor.**

This research question and subsequent hypothesis was the primary impetus for conducting the present set of studies. I was interested in determining if the interpersonal closeness of an advisor (e.g., how close the advisor is with the participant) could impact treatment outcomes. Specifically, based on the literature regarding empathy gaps, decision-making, and culture (Boven et al., 2013; Loewenstein, 2005), I hypothesized that the more interpersonally close a source is to a participant, the more improvement the participant will have in their treatment outcomes. To manipulate this interpersonal
closeness, participants made treatment decisions with varying degrees of closeness to an advisor. Some participants were accompanied by a close friend or family member, others spoke with a confederate, and still others used a mock online decision aid. As a comparison group, a final set of participants made their treatment decision on their own. This research question and hypothesis was investigated via two outcome measures: a subjective measure of sleep quality and an objective measure of time spent sleeping.

Sleep quality. Though hypothesized, there was no main effect for advisor condition for the sleep quality measure. The overall ANOVA suggested that advisor condition did not impact participants’ subjective evaluations of their sleep after engaging in the writing task. However, to explore the more nuanced differences in advisor characteristics, I conducted a series of planned contrasts comparing sets of advisor conditions based on Hypothesis 2. First, I compared the conditions in which participants spoke with another individual (i.e., confederate, close other) to the conditions in which participants made the decision with no other person present (i.e., impersonal, alone) to determine if there was a helpful effect of speaking with someone about a treatment decision. There was no significant difference between these sets of conditions on the sleep quality measure.

Additionally, I compared the condition expected to be most helpful (i.e., close other) to the other three conditions (i.e., confederate, impersonal, alone). This comparison was significant, suggesting that a close, personal other can provide something that an online decision aid or an unknown individual cannot. These findings are in line with work on self-other decisions in the risk domain; an advisor will make riskier decisions than an individual, but tend to weight their selection based on the
potential benefits of the alternatives rather than the costs (Beisswanger, Stone, Hupp, & Allgaier, 2003; Stone & Allgaier, 2008). That is, the close other can focus on the benefits of the options while at the same time empathizing with the difficulty of the decision while a distant advisor may operate in a “cold” state with a larger empathy gap (Loewenstein, 2005). A close advisor may be able to provide a qualitative sense of support that is not present in conversations with unknown others or online decision-aid type resources. In fact, a comprehensive report on the utility of decision aids across treatment contexts suggests that while they can be useful for increasing knowledge on the treatment options, reduce decisional conflict, and in some cases improve satisfaction with the decision process, there were very few studies indicating improvements in general health or condition-specific health outcomes (O’Connor et al., 2008). Discussing treatment options with a close other may be beneficial over and above other sources of consultation.

**Sleep quantity.** I also investigated Hypothesis 2 in terms of a more objective outcome measure, time spent sleeping. A main effect of advisor condition demonstrated more widespread support for this hypothesis on sleep quantity. Specifically, individuals who were in the close other and confederate conditions reported getting more sleep than individuals in the impersonal, online decision aid condition. Across both cultures, increasing the closeness of the advisor had beneficial effects on time spent sleeping. The same sets of contrasts for the sleep quality variable were investigated for sleep quantity. In this case, participants who discussed their treatment options with another person, either a confederate of the experiment or a close other, slept for a longer period of time than
participants who made their treatment decision alone, suggesting that discussions with another may be helpful in improving objective outcomes.

The second contrast again compared the close other condition to the three “distant” conditions. These contrasts revealed a consistent effect for participants who talked with a close other to report better outcomes compared to those in the more distant conditions. The results of this contrast indicate that the process of discussing treatment options with a close other may be beneficial over and above merely talking with another person or making a decision alone, again suggesting that a smaller empathy gap might improve sleep outcomes.

**Interpretations.** Overall, the results produced a trend on both dependent measures for the benefit of discussing options with a close other. Notably, the effect sizes of the differences due to advisor condition were not large; the sizes of the differences observed due to advisor condition were greater for the sleep quantity measure than for the sleep quality measure. Specifically, contrasts comparing in-person advisors with autonomous decision-making revealed that discussion with a confederate did not yield a benefit on the sleep quality measure but it did so on the sleep quantity measure. The fact that results from the two sleep measures did not perfectly parallel each other makes sense given that the two were only modestly correlated. These data suggest that the two measures tapped into unique variance that may result from one being a subjective quality report measure and the other a more objective outcome measure. An examination of the mechanisms within the treatment decision process provides insight into this question and will be discussed later in the document (see Research Question 4).
Hypothesis 3: An individual’s DFDC will moderate the relationship between interpersonal closeness and outcomes. As reported above in Research Question 1, Hypothesis 1, in the Pilot Study I found four characteristics that predicted desire for decisional control (DFDC) across a series of treatment vignettes: desire for control, the social assurances subscale of the belongingness measure (reversed), regret, and relational-interdependent self-construal (reversed). In the Primary Study I combined these measures to create an overall DFDC score with the prediction that low, average, and high degrees of DFDC would differentially impact treatment outcomes. That is, individuals who did not desire control (a low DFDC) would benefit more from another person aiding them in a treatment decision whereas individuals who have a high DFDC would benefit more from conditions where they did not consult with anyone.

Sleep quality. Contrary to the prediction in Hypothesis 3, DFDC did not moderate the relationship between culture and advisor characteristics on sleep quality. Specifically, for low, moderate, and high levels of DFDC, participants across advisor conditions and cultures did not report any differences in sleep quality. It could be that this particular decision context was not substantive enough for participants low in DFDC to experience negative subjective outcomes even when they traditionally would prefer minimal involvement in deciding on a treatment. This possibility is discussed in more detail below.

Sleep quantity. DFDC did moderate (with marginal significance) the effect of advisor closeness and culture on the objective outcome of time spent sleeping. When U.S. participants had moderate levels of DFDC they slept most after talking with a close other. That is, participants who may have preferred to exercise some degree of control
over their treatment decision but may not have wanted to make the decision alone benefitted most from discussing their options with someone they knew. While this particular outcome is generally consistent with Hypothesis 3 (i.e., that there is a moderation effect of DFDC), the fact that DFDC did not display a complete moderation effect on the relationship between advisor condition and culture on treatment outcomes suggests that this composite measure may not be as crucial to this decision context as predicted.

**Interpretations.** While DFDC did not function as a moderator in the manner predicted, the findings of this study do not prohibit DFDC from playing some role in patient decision-making. First, there was some weak but supportive evidence on the sleep quantity outcome measure, thus suggesting some associations do exist. Second, a different operationalization of DFDC based on actual treatment decision contexts rather than ratings from vignettes may prove to be a stronger component of a treatment decision model. Additionally, DFDC might manifest itself via different constructs across cultures. These, and other, possibilities are detailed below.

One reason that Hypothesis 3 was not strongly supported and DFDC was not as impactful as originally anticipated may be due to the design differences between the Pilot Study and the Primary Study. In the Pilot, participants were exposed to a series of vignettes in which they were asked how much input they would like in a given treatment scenario. Additionally, participants reported who they would go to for advice in each situation. Responses to these questions were used to determine which types of people, defined by the personality measures collected, were more likely to desire input or to seek information from a given source. However, the input and advice questions may not tap
into the amount of control a patient would want in a context in which they are explicitly required to choose one of the multiple treatment possibilities provided. Instead of measuring decision-making behaviors, the questions in the Pilot Study recorded their thoughts on potential information-seeking behaviors. Thus different personality constructs might be predictive of DFDC if the questions were oriented more directly toward treatment decision making.

Another factor that might account for the difference in DFDC between the two studies is that the decision-making scenarios in the Pilot Study were potentially more impactful and anxiety-provoking than the sleep treatment context in the Primary Study. That is, considering different medical treatment options, while hypothetical, may lead to speculations about the side effects, costs, and efficacy of the treatments. However, in the Primary Study, the treatments were framed as different options to enhance sleep. The participants were not presenting with problems but rather seeking a means of improving their sleep. Further, there was nothing to lose should the sleep treatment fail. In this low impact context then, DFDC might not be important (e.g., participants with a low DFDC are okay with making a nonconsequential decision for themselves), thus producing the null effects for the moderation analyses.

Within these two distinct decision making scenarios, one may also find a difference in participants’ goals and motivations. Research demonstrates that having a goal for accuracy, such as selecting the best treatment option in a medical scenario, might be different than operating with a directional goal and arriving at a desired conclusion, such as finding a suitable treatment in more exploratory context (Kunda, 1990). For example, participants in the Pilot Study were asked to consider how much they would
want to participate in a treatment decision with fairly clear options and an implicit goal to find the option with the greatest efficacy. Thus the constructs most likely to align with this type of DFDC would tap into a motivation to be accurate. However, participants in the Primary Study were making an actual treatment decision. They were told to select the treatment that matched them best, but were not provided with any information about treatment efficacy. In this case accuracy is less of a guiding principle, suggesting that the DFDC moderator created in the Pilot Study context of accuracy motivation would result in an ineffective mechanism. In future work, ensuring the alignment of goals across preliminary and primary investigations may result in a more cohesive understanding of the moderating mechanisms.

The DFDC moderator had only marginally significant impacts on results for participants from the U.S. While unfortunate, this is not a particularly surprising finding considering the Pilot Study was conducted only with U.S. students. I did not determine which of the constructs predicted how Japanese participants would respond to the same treatment vignettes. In fact, the correlations among a few of the measures were small to nonexistent within the Japanese sample in the Primary Study. There could be a few reasons for these low correlations. First, there might actually be no relationship between desire for control, belongingness (social assurances), regret, and relational-interdependent self-construal in a Japanese cultural context, though no research thus far has investigated this possibility. Another factor to consider is that the items within each scale could be tapping into different constructs within each culture. For example, feelings of regret are more strongly associated with engaging in interpersonal contexts in Japan than in the U.S. (Komiya, Miyamoto, Watabe, & Kusumi, 2011), as such it would logically follow
that regret would be more strongly correlated with relational-interdependent self-
construal in the Japanese sample. Finally, as discussed further in the limitations, the
translations of certain words or concepts may carry different meaning for individuals
from each context. To desire control in Japan may manifest quite differently than
desiring control in the U.S. These design considerations can easily be addressed in future
investigations of DFDC.

Finally, it should also be noted that DFDC displayed marginal moderation effects
for one of the outcome measures but not the other. For participants from the U.S., DFDC
was only marginally impactful on the objective time spent sleeping measure but not on
the more subjective measure of sleep quality that was collapsed across multiple items.
One of the explanations for this difference, mentioned briefly above, is that making a
decision over sleep treatments may not be substantive enough to discriminate between
those who generally shy away from decision contexts (low DFDC) and those who
embrace them (high DFDC). In contrast to many medical decisions, there were not any
ramifications associated with involvement in selecting a sleep treatment. All options
were described as being beneficial and so even at low levels of DFDC the subjective
experience of the selected treatment may not have been detrimental enough for
participants should the decision be less than optimal.

**Research Question 3: Does cultural context affect treatment outcomes via
moderation of the relationship between interpersonal closeness and outcomes?**

**Hypothesis 4: Culture will moderate the relationship between interpersonal
closeness and treatment outcomes.** To investigate this research question and
hypothesis, I analyzed culture in terms of both country of origin and self-construal.
These two variables were selected to tap into different aspects of cultural context. Country of origin is often used as a proxy for culture in research settings, as it has been used in the other analyses reported here.

**Country of origin.** The country of origin variable was included in the analysis of covariance used to investigate Hypothesis 2 and did not turn out to be a significant predictor of either sleep quality or quantity outcomes. Considerations regarding the null results are discussed below.

**Interpretations.** There were a number of reasons to anticipate that individuals from an Eastern, interdependent context would experience a different trajectory of benefit across the advisor conditions than those from a Western, independent context. First, there is a general tendency of individuals from Eastern contexts to take into account the thoughts and feelings of others (Boven et al., 2013), especially those in their immediate environment (Ma-Kellams & Blascovich, 2012). As such, it was predicted that individuals with this interpersonal orientation would find more benefit from making a decision with a close other.

A second reason one might have anticipated an effect of country of origin in the present investigation is that individuals from Eastern and Western contexts may have different baseline levels of control that they are looking to exert in a decision context (Markus & Schwartz, 2010). Western individuals tend to focus on how events impact themselves and seek to gain control over these events (White et al., 2006) whereas Eastern individuals may not be seeking this same experience. These differences were expected to manifest in the models including DFDC. However, there were no significant
effects over and above the intercept and baseline ratings for these models, providing no support for Research Question 3, Hypothesis 4.

The null results of the analyses involving the country of origin measure, while not predicted, may not be as surprising as one might think. There is a growing body of research to suggest that country of origin is not a valid proxy for culture and that countries, especially the U.S. and Japan, do not differ as much on the dimension of independence/interdependence as originally postulated by Markus and Kitayama (Matsumoto, 1999; Oyserman, Coon, & Kemmelmeyer, 2002; Takano & Osaka, 1999). Future researchers might want to carefully consider if they are looking for orientation or country of origin differences; if the question of interest is in regards to the latter, it may be beneficial to explore two countries that are more distinct.

Self-construal. Self-construal is another way to describe how participants interact with others in their environment and is often described as a cognitive processing style. Typically self-construal is measured in terms of independence and interdependence, with Western cultures characterized as more independent and Eastern cultures as more interdependent (Markus & Kitayama, 1991). Of course, within a single country people may vary widely on their degree of independence and interdependence, with many individuals from the U.S. reporting low independence while many others from Japan reporting high independence, both counter to beliefs about characteristic orientations in the respective contexts (Matsumoto, 1999). These analyses were conducted using the relational-interdependent self-construal scale for the purposes of continuity throughout this investigation. The other self-construal measures displayed a similar pattern of results (Singelis, 1994). It was the hope that by assessing culture from
this alternate perspective I could determine if any outcomes were driven by cognitive processing differences evident in self-construal orientation.

Sleep quality. First, the results suggest that with increasing levels of relational interdependent self-construal, the benefit of advisor closeness on sleep quality increases. At average levels of self-construal there was a marginally significant direct effect of advisor condition on sleep quality and at high (one standard deviation above the mean) levels of self-construal there was a significant direct effect of advisor condition on sleep quality. While there were not significant overall moderation effects, the data indicate a trend in support of Hypothesis 4 for the sleep quality outcome measure. Individuals who indicated that their self-concept is intertwined with those close to them were more likely to experience better sleep quality compared to individuals who see themselves as unique, primarily when advisor closeness was high.

Sleep quantity. The sleep quantity measure shows a similar pattern of results as the sleep quality measure, albeit less pronounced. There were only effects for the mean levels of independent self-construal. At the mean, the more interpersonally close advisor conditions were marginally more impactful on time spent sleeping than other conditions. That is, individuals who integrate others into their self-concept to a moderate degree tended to experience modest improvements in time spent sleeping. This finding again provides suggestive support for Hypothesis 4, though marginal findings should be interpreted with caution.

Interpretations. Prior research on self-construal suggests that individuals with an interdependent orientation tend to integrate others into their self-concept (Cross et al., 2000) and make decisions that emphasize their similarity to the group (H. Kim &
Markus, 1999). Further, in interdependent contexts, positive health outcomes such as well-being are not the sole responsibility of the individual, but group members are responsible for one another (Markus & Schwartz, 2010). Thus for the marginal results for the self-construal measures when making the decisions with a close other, it could be that participants with a more relational-interdependent self-construal perceived that the responsibility for their well-being, in this case their sleep outcomes, were diffused over themselves and their close other. This may have alleviated the pressure on the participants themselves, allowing them to experience the treatment rather than worry about making a selection on their own. This explanation can be explored in future investigations of self-construal and treatment outcomes.

Although the effects for the mean level of self-construal were marginally significant, it is premature to conclude that these results have substantive or practical meaning. There are a few alternate explanations for these findings that warrant consideration. First, the operationalization of the construct of self-construal has mixed reception in the psychological literature (Markus & Kitayama, 1991; Matsumoto, 1999; Oyserman et al., 2002; Singelis, 1994). Some researchers strongly favor the conception in the measure used in the present research (Markus & Kitayama, 2002; Singelis, 1994). From this perspective, researchers have equated independence/interdependence to individualism/collectivism orientations, respectively. However, tests of these assumptions demonstrate that it is often the case that samples from the U.S. and East Asia do not always differ on these factors (Bresnahan et al., 2005; Matsumoto, 1999; Oyserman et al., 2002), thus calling into question the validity of the construct in terms of culture origins (Bresnahan et al., 2005). There are a few other options for the
operationalization and measurement of self-construal (e.g., abstract versus concrete; Henderson, 2013) and future investigators should be careful and deliberate when assessing self-construal orientation, perhaps including multiple measures of the construct.

A second consideration when assessing the analyses and the construct of self-construal as a whole is that there were not cross-cultural differences in this construct in our student sample as the literature would suggest (Markus & Kitayama, 1991). Prior research on this topic indicates that U.S. participants are generally more independent in their interaction patterns, focusing on how they will personally benefit and tend to make decisions with themselves in mind. On the other hand, as classified by the literature, an interdependent individual exhibits many more collectivistic tendencies and is overly concerned with the group’s well-being (Markus & Kitayama, 1991). In the present sample, these constructs did not differ by country of origin. As both samples were collected within a relatively homogenous university context, the self-construal of Japanese students may not be too different from that of the U.S. students. A sample from a more traditional, interdependent Asian context might yield the anticipated cultural effects. However, with the current operationalization of self-construal and the resulting homogeneity in the current sample across cultures, it is difficult to make the case that this particular moderator has high predictive power.

**Research Question 4: Is there a mediational mechanism that can help explain the relationship between the interpersonal closeness of an advisor and treatment outcomes of a patient?**

Research Question 4 was an exploratory query into a set of mediational mechanisms that may explain how differences in the interpersonal closeness of an advisor
could impact treatment outcomes across cultural contexts. I tested three different mediational mechanisms: evaluation of the decision process (positive/negative), effort put into deciding between the treatment options, and the ability to find a treatment that matched the participant. Each of these was represented by a question or series of questions that participants responded to immediately after selecting their treatment. Only one of the tested mechanisms affected treatment outcomes: evaluation of the decision process.

**Evaluation of the decision process.** Participants’ evaluation of the decision process demonstrated a significant moderated mediation for the sleep quality measure. Specifically, Japanese participants reported experiencing the treatment decision process more negatively, rating the process as bad, unpleasant, negative, and flawed, and, in turn, reporting lower sleep quality. This relationship was not mirrored for the participants from the U.S. nor for the time spent sleeping measure, suggesting that evaluations of the decision process might have great bearing on this particular outcome for Japanese participants.

This mediational mechanism has been demonstrated in at least one other study (Brown et al., 2015). Using a discomfort paradigm, these researchers showed that for complex choices (in lieu of the advisor characteristics under investigation in the present study), Japanese participants experienced the decision process more negatively and these evaluations mediated the influence of decision complexity on reported outcomes. It is notable that even though the decision context was completely different (i.e., advisor closeness versus decision complexity), the Japanese participants again evaluated the process of selecting a treatment negatively. It could be that individuals from
interdependent backgrounds think about the choice context differently, as a chance to enhance social relationships rather than from an independent perspective with the goal of establishing uniqueness (Markus & Schwartz, 2010; Savani, Markus, & Conner, 2008). Thus, if participants in Japan did not perceive this process as an opportunity to connect with others, even in the close other context, then the process may have been especially aversive for them.

Another possibility comes from research in a placebo context using a discomfort paradigm (Rose et al., 2013). In this study, focused on effects within a Western cultural context, making a selection between treatments increased positivity toward the selected treatment. The positive treatment evaluations, in turn, increased treatment efficacy. Using a similar logic, it could be surmised that the negative experience with the decision task resulted in unfavorable evaluations of the selected treatment for Japanese participants, which, in turn, reduced treatment efficacy. Additionally, participants who were speaking with a close other may have encountered more skepticism from their interaction partner, leading to more negative evaluations of the treatment selection process. These conversations were the least structured across the advisor closeness conditions and their content was not recorded, leaving this as an area ripe for future investigation. The overall replication of this mechanistic relationship for Japanese individuals in a different decision-making domain and treatment paradigm suggests that this is an important area of future investigation for Japanese samples.

Finally, it is unclear why the mediation outcome was revealed only on the sleep quality measure. One possibility for this finding could be that the evaluation of the decision process is a qualitative measure and as such may be more highly associated with
other qualitative reports. That is, subjective evaluations may have an impact on subsequent subjective evaluations such as sleep quality but perhaps not more objective measures such as time spent sleeping. Although there is typically a moderate association between subjective and objective measures depending on the domain, they are not normally completely overlapping measures (Bullens, van Loon, de Waal Malefijt, Laan, & Veth, 2001; Buysse et al., 1991; Joffe et al., 2009; Pilcher, Ginter, & Sadowsky, 1997; Weaver, 2001), suggesting that the experience of participants (and patients) may not be completely reflected by qualitative, subjective outcomes nor concrete, measurable outcomes, but the combination of them both.

**Decision effort.** Effort put into the decision was also investigated as potential mediating mechanism, though this variable did not significantly mediate the relationship between advisor closeness, culture, and treatment outcomes. It is possible that decision effort is not a mediator of this relationship. Another potential explanation for this null result is that the amount of effort put into a decision may have different meanings for different individuals. For example, an individual who is accustomed to making many decisions throughout the course of their day may have perceived this as a fairly normative decision and thus rated effort as minimal. On the other hand, those who do not interpret tasks throughout their day as decisions to be made may have found the task relatively more effortful (Markus & Schwartz, 2010; Savani, Markus, Naidu, Kumar, & Berlia, 2010), though not necessarily differentially impactful on the outcomes of the treatment. In this particular context, decision effort was not an informative mechanism for describing advisor effects on sleep outcomes.
**Treatment match.** Participants’ perceptions that they were able to find a treatment that matched them was also investigated as a potential mediating mechanism. Like the decision effort mediator, it was not significant. The simplest explanation for this null result is that treatment match is not a mediator of the relationship between advisor closeness and culture on treatment outcomes. However, another consideration for this particular mechanism is that treatment match may have been rendered irrelevant as the descriptions of the treatment options were (intentionally) vague and did not provide participants with information about the details of each treatment. For example, interpreting one treatment description as “matching” better than another option may have been challenging due to the applicability of the descriptions to many circumstances (Meehl, 1956). The mean ratings of treatment match across conditions and cultures were all above the midpoint on the rating scale, also indicating that there may have been a restriction of range concern with the treatment descriptions. In a context in which the treatment options are more discrete we might expect greater variation in the ability to find a match between participant and treatment thus allowing researchers to better distinguish the processes and build predictive, mechanistic models.

**Demographic Differences**

The calculation of means and correlations allowed me to determine if there were any broad cultural differences as well as demographic effects of sex and age on the dependent measures within each culture.

**Culture.** There was a significant difference between Japanese participants and U.S. participants in the amount of time spent sleeping. This cultural difference in sleep quantity is not uncommon (Mindell, Sadeh, Wiegand, How, & Goh, 2010; Steptoe,
Peacey, & Wardle, 2006). A few explanations may account for these cross-cultural differences. First, there are documented differences in bedtimes and total sleep times for infants and toddlers from predominantly Asian regions compared with predominately Caucasian regions (Mindell et al., 2010). Additionally, parents in Asian countries are more likely to bed-share or room-share with their infants and toddlers, demonstrating cultural values of interdependence and perhaps leading to more adult-like patterns of sleep for young children. These traditions may be carried throughout the lifespan for both Asian and Caucasian children, leading to further discrepancies in sleep duration.

Another explanation for the discrepancy in sleep duration across cultures is that there might be differences in the proportion of time spent in the different phases of sleep. Few studies have investigated the sleep phases across cultural context, but one study indicated that Asian Americans tended to have higher sleep efficiency (i.e., percentage of total time asleep to the total time in bed) than White, Black, American Indian, and Hispanic individuals (Redline et al., 2004). A separate investigation suggested that Asian participants had greater REM-density sleep, which is a measure of REM activity over the amount of time spent in REM sleep (Rao et al., 1999). Thus there may be cross cultural differences in the type and objective quality of sleep obtained, but further studies are required to explore these hypotheses.

**Sex.** There were significant sex differences across cultural contexts in the time spent sleeping measure, but not for reported sleep quality. Specifically, men from the U.S. slept longer than any other group and women from the U.S. also slept longer than both men and women from Japan. Research on sex differences in sleep duration suggest that men spend more time in slow-wave sleep and have a lower prevalence of insomnia
than women (Colten & Altevogt, 2006). This sex difference has also been demonstrated within Japanese samples (Liu et al., 2000; Tamakoshi & Ohno, 2004), though sex differences within the Japanese sample were not found in the present research.

**Integration with the Patient Involvement on Outcomes of Treatment Model**

In the present work I sought to determine which factors within a treatment decision making context would lead to changes in treatment outcomes. The findings reported here speak to the process of making a treatment decision in a few important ways. Although other decision- and health-focused models (e.g., expected utility theory, Health Belief Model) seek to explain components of the decision-making process from the perspective of either broad-level decision tendencies or more nuanced, context-specific decisions, they fail to capture the richness of a health decision environment. The PIvOT model was designed to provide a theoretical, social-psychological equilibrium perspective to elucidate how the experience of decision-making in a treatment context is influenced by interpersonal and socio-cultural factors. The present research sought to investigate how advisor closeness, a contextual factor, and culture, a person variable interacted to impact sleep quality and quantity. These relationships were further explored in terms of the DFDC.

As discussed above in Research Question 2, Hypothesis 2, the data suggested that increasing advisor closeness also led to increases in treatment outcomes, especially for the time spent sleeping measure. There was also suggestive evidence that individuals who had higher relational-interdependent self-construal had improved outcomes (both sleep quality and quantity) after discussing treatment options with more interpersonally close advisors (Research Question 3, Hypothesis 4). These results fit easily into the
PIvOT model framework. However, I did not find any moderating effects of DFDC in any of the predicted models (Research Question 2, Hypothesis 3). Thus, not all components of the PIvOT model were evident in this initial investigation of the treatment decision process.

The fact that the specific factors investigated in these studies did not fully support the PIvOT model do not prohibit this model from being a useful framework for future investigations. That is, the present definitions of cultural context (i.e., country of origin, self-construal) may not adequately tap into the core of the differences in decision-making between the United States and Japan. There may be additional person variables such as traditional value systems or even a construct such as optimism that drive the distinctions between the cultures. In the same manner, there are nearly infinite contextual factors that might account for the differences between talking to one advisor over another including length of time known, preexisting knowledge of certain treatment options, or the severity of the condition being treated (e.g., sleep problems, cancer).

To further test the model as it currently stands, it would be wise to operationalize the factors in a manner that more readily aligns with the question of interest. In the present research, DFDC only had marginal effects on the relationship between advisor characteristics, culture, and sleep outcomes (i.e., mean levels of DFDC indicated a trend toward moderating the relationship with time spent sleeping). Defining and measuring DFDC across cultural contexts might have important implications for the PIvOT model. As previously discussed, the measures comprising DFDC were determined based on a sample from the U.S. and were then applied to a cross-cultural sample. Thus, it was not surprising that DFDC was not a significant contributor to the relationship for the
Japanese sample. However, it also did not change any of the relationships among the variables within the U.S. sample. One explanation, detailed above, is that the context in which DFDC was initially assessed was asking about treatment seeking behaviors and the context in which it was applied was focused on active treatment selection, arguably two distinct processes even within a similar medical decision domain.

Another consideration with regard to the operationalization of factors within PIvOT model is that the outcome measures employed in these studies may not be sensitive to changes in model components such as DFDC. The quality of one’s sleep and the time spent sleeping might be too far removed from the treatment decision itself to respond to whether or not the individual wanted to play a role in the decision-making process. Another factor such as perceived control exerted may have a more impactful relationship as it would tap into the amount of control an individual believed they had in the decision process. The literature suggests that this perception of control may be the critical component of treatment outcomes (Kaplan et al., 1989; Stewart, 2001) rather than the desire for control or actual control exerted. Future operationalizations of the factors within the PIvOT model need to more specifically define the variables of interest within the context under investigation.

Based on the findings reported here, it could be argued that the DFDC construct may require a reconceptualization within the PIvOT framework. It is possible that DFDC on its own does not play as central of a role as initially theorized but instead is embedded within the other factors in the model. That is, perhaps all of the variance that would be accounted for with the DFDC measure is already incorporated within the person variables, treatment characteristics, and contextual factors. Testing the prediction that an
individual’s set point leads them to approach the decision context and experience outcomes differently than another individual requires further investigation into the meaning and function of desire for decisional control.

**Limitations**

There are a few limitations of note with the current set of studies, detailed below.

**Materials and procedures.** A primary concern in research with limited support for the initial hypotheses is the quality of the materials employed. Though the materials used in this investigation went through the proper translation and backtranslation procedures (Hambleton & Zenisky, 2011), many of the measures have not yet been validated within a Japanese sample. This is especially relevant for the measures included in the composite construct of desire for decisional control. That is, I cannot be certain that the items included in the measures have the same meaning across the two cultural contexts. For example, the first item in the Desire for Control measure (Burger & Cooper, 1979) reads “I prefer a job where I have a lot of control over what I do and when I do it.” Although this phrasing and meaning seem straightforward from an English-speaking, Western perspective, these words may only apply to individuals within the original evaluation population of interest. Perhaps “a lot of control” in an Eastern context does not mean the ability to set your own deadlines but instead the ability to pursue projects of interest. Even these small differences in interpretation may indicate that the measure of DFDC as interpreted from a Western lens may not be appropriate for the Eastern portion of the sample.

Another concern with the design of the study itself is the efficacy and strength of the manipulation within this placebo treatment context. A typical concern with placebo-
based studies is that the expectation for treatment efficacy may not be strong enough to elicit a response. That is, if participants do not believe that the treatment will be effective, there is a chance that there will not be any differences in outcome measures across groups. To determine if participants from the U.S. differed from participants from Japan in their expectations of treatment efficacy I compared their responses to the question “Did you expect that writing down your thoughts would help you sleep better?” (1 = not at all to 7 = very much) and found that Japanese participants had a higher expectation of efficacy ($M = 4.55$, $SD = 1.31$) than did U.S. participants ($M = 3.60$, $SD = 1.75$, $t(216) = -4.40$, $p < .001$, $d = -0.60$), though both means were around the midpoint of the scale. If the belief in the writing task were crucial to the efficacy of the treatment, there would have been a systematic difference in outcomes across cultures such that participants from the U.S. would have displayed worse outcomes (i.e., lower reported quality, less time sleeping). Considering this was not the case it can be surmised that there were other features of the decision environment that were impacting treatment outcomes, though it is always possible that a stronger manipulation might lead to more pronounced effects.

The single night, self-report design of this study may have limited the caliber of information gained. Participants reported their previous night’s sleep, selected a treatment to try, went through the procedures that night, and reported on their experience the following day. There are a few improvements to be made on this design including, but not limited to, collecting more baseline sleep data, recording the treatment effects for a longer period of time (e.g., a week rather than one night), and collecting more objective dependent measures. Research investigating a sleep paradigm over multiple days across
both subjective and objective dependent measures can be useful in speaking to the overall
nature and patterns of sleep (Lauderdale, Knutson, Yan, Liu, & Rathouz, 2008).

Finally, there was a substantial proportion of participants whose data were not
able to be used in the present investigation. The majority of participants that were
excluded from the analysis fell into one of three categories: they either did not follow
directions, did not submit responses to the morning questions, or did not complete the
more comprehensive post questions. The majority of the individuals that did not follow
directions were from the U.S., which may indicate a difference in responsibility and/or
accountability in the two university contexts. However, as mentioned in the method, the
individuals who did not have complete data did not differ on any other demographic
characteristic from individuals who completed all parts of the study. Increasing
participant retention will be beneficial in future investigations.

**Generalizability and sampling considerations.** As with a considerable
proportion of social science research, there are limitations in the generalizability of the
data acquired from college student samples. The participants were drawn from two
different pools of introductory psychology students participating in exchange for course
credit. As research participation is a common requirement in these courses, this sample is
not markedly different from other college student populations. Though some research
suggests that there may be self-presentational differences between students from the U.S.
and students from Japan (Bernardi, 2006), an investigation in a similar decision-making
paradigm did not find that self-presentation was a significant mediational mechanism
(Brown et al., 2015). However, self-presentation information was not collected in the
present research so I cannot say with certainty that there were no differences in self-presentation across cultures.

There was a significant difference in participant age across cultures prior to the application of the filtering factors. However, it seems that the average age was influenced by extreme outliers in the U.S. sample. Thus, as we have limited our population of interest to college-aged college students, this initial difference likely does not have any impact on the conclusions drawn from the present sample.

Finally, the cultural representativeness of the two samples must be considered. Though both the University of Toledo and Doshisha University in Japan are large institutions, the participants sampled from these universities may not reflect the education level, sex distribution, or other demographic characteristics of similar age groups within the respective cultural populations. The sample drawn from the University of Toledo was predominately female, which does not reflect the distribution of sex throughout the country for college-aged students; the population consists of just under 50% women (U.S. Census Bureau, 2014). Around 38% of the population in this age range in the U.S. have attained some college experience, with an additional 15% having attained a degree (U.S. Census Bureau, 2014). The sample drawn from Doshisha University had an approximately equal gender distribution, reflecting the distribution of the same age range in the country (Statistics Bureau, 2015). While I was unable to find information about the educational attainment of college-aged students in Japan, there are published reports detailing the attainment of the next age range, from 25-34 years old. Approximately 58% of those individuals have attained a university degree (OECD, 2011). It can be inferred that a slightly higher proportion of individuals in the 18-24 age range would be in the
process of acquiring their degree (as one would expect some attrition). Thus, the samples
are not perfectly representative of college-aged populations in their respective countries
and may better approximate the college student demographic specifically. This narrow
definition of a sample may demonstrate the increasing homogeneity of college students in
industrialized nations.

**Outcome measures.** Two distinct outcome measures were employed in this
investigation to capture the nuanced differences in the effects of advisor closeness and
culture on sleep. In some of the hypotheses reported above, the sleep quality and sleep
quantity outcomes showed slightly different patterns of results.

From a broad, social psychological perspective, research suggests that people may
not be aware of the benefit or detriment of components of their environment (Nisbett &
Wilson, 1977), thus objective measures may be able to provide a cleaner test of the
influence of certain predictive factors. This is not to suggest that people intentionally
obfuscate information, though that is of course a possibility, rather prior research
indicates that certain states or mental processes might not be accessible to the individual
(e.g., people are not always consciously aware of why they perform certain actions;
Nisbett & Wilson, 1977). Thus the objective measures might be more reflective of the
relationship between the constructs, though this of course depends on the research
questions and hypotheses under investigation.

Across domains, subjective and objective outcomes are often modestly associated,
but do not always completely overlap (Bullens et al., 2001; Buysse et al., 1991; Joffe et
al., 2009; Pilcher et al., 1997; Weaver, 2001). Within a sleep context specifically, ratings
of quality are traditionally more highly associated with health, well-being, and sleepiness
in college students (Pilcher et al., 1997) than are more objective ratings of quantity. Further, global scores on the PSQI, which includes a sleep quality subcomponent, have shown little to no correlation with objective measures including sleep latency and time spent asleep (Buysse et al., 1991). The high degree of variance in subjective ratings of quality again suggests that individuals may not be aware of particular bodily states or mental processes.

These noisy ratings may lead to differential findings between subjective and objective outcomes (Lauderdale et al., 2008). In fact, research demonstrates that in a young adult population, participants tend to over-report their sleep duration (as compared to a measure of wrist actigraphy) and are unaware of the duration of their sleep, let alone how restful or deep it might have been (Lauderdale et al., 2008). This discrepancy should be taken into consideration in future studies of sleep quality and quantity.

**Future Research**

In order to provide a cleaner test of the hypotheses as presented here, there are a few methodological changes that can be addressed. The primary alteration to more rigorously test the predictions would be a reconceptualization of the DFDC measure. Further pilot testing would more thoughtfully consider each culture of interest and leave open the possibility that different sets of constructs may be relevant for control in different cultural settings. A finding such as this would have substantial impact on the medical decision-making literature.

Although a degree of experimental control is welcome and often necessary, application of these theories to real-world medical contexts requires acknowledging that treatment decision-making can be a messy, unpredictable process. It is critical to note
that there are many characteristics that matter – both of the advisor and the decision environment. For example, some work on expert judgments would lead researchers to anticipate that an expert other might still display an empathy gap, making recommendations that are not in line with the patient’s wishes, though perhaps quantitatively better (Garcia-Retamero & Galesic, 2012). Still other work indicates that patients are more receptive to advice that is similar to their own opinions (Yaniv, 2004), suggesting that garnering information and benefitting from advice from another individual, regardless of their empathy status might depend on the processing style and openness of the decision-maker. Finally, it would be useful to investigate how differences in power or status, especially across cultures with distinct historical trajectories of paternalism/autonomy in patient care and family structure as is found across the East and West. Specifically, friends, although considered to be interpersonally close, may not provide the same type of support that a sibling would, which, in turn, may be different than that of a parent. That is, one might anticipate that finer distinctions between interpersonally close advisors might result in different conversations, treatment selection, and even outcomes.
Chapter Eight

Implications and Conclusions

Though the findings of the present set of studies did not overwhelmingly support the hypothesized relationships between advisor closeness, culture, and treatment outcomes, this work did bring to light some important considerations for the future of psychological research in the medical domain. First, there was some evidence to suggest that consultations with close others might be more beneficial than consulting with unknown others or no one at all. This improvement in outcomes may stem from the comparatively small empathy gap between advisors and decision-makers.

Further, for groups in which making treatment decisions is not a normative activity (e.g., interdependent Japanese), results indicate that it is the overall (negative) experience of the decision process that is driving the deleterious effects on treatment outcomes. This mechanistic relationship has now been demonstrated across two studies with different methodologies and manipulations, suggesting that the context of a treatment decision may be particularly unpleasant for certain groups of individuals and this discomfort may have a profound impact on treatment outcomes, warranting further investigation.

Additionally, cross-cultural researchers might want to consider how cultural distinctions are defined and measured. In these samples there was not strong evidence in support of country of origin differences on treatment outcomes. However, measures of self-construal suggested that an interdependent thinking style (regardless of country of origin) might lead to greater benefits when engaging in discussions with close others. This difference in country of origin and self-construal orientation may extend to other
contexts. Thus, the culture effect, or lack thereof, should be considered when designing future studies exploring relationships between constructs in samples across distinct countries.

Finally, these studies suggest that the selection of a treatment outcome may be critical to finding and evaluating relationships among factors in the decision-making process. Although both sleep quality and sleep quantity displayed similar effects across conditions, they were not perfectly correlated, indicating each may be accounting for different types of variance in the decision experience. Future researchers should be explicit in which outcomes they predict will be most affected or which are more associated with the question of interest. Other studies might endeavor to test many types of outcomes (e.g., satisfaction, general, condition-specific, quantitative, qualitative) to determine what set of factors within the decision process might lead to the holistically best outcome for the patient.

Researchers and practitioners alike can use the information presented here to inform their perspective on patient-made treatment decisions. With the application of theoretical models such as the PIvOT model, we can steadily and systematically investigate the interrelationships between the facets of the treatment decision-making context. While much of this work has a relatively high up front cost in terms of investigator resources, the reward of improved patient decision-making and optimal treatment outcomes is something to strive for.
Table 1. Pilot Study: Desire for Input and Information Seeking.

<table>
<thead>
<tr>
<th></th>
<th>Desire for Control</th>
<th>Physicians</th>
<th>Nurses</th>
<th>Practitioners</th>
<th>Family</th>
<th>Friends</th>
<th>Internet</th>
<th>Print</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desire for Control</strong></td>
<td></td>
<td></td>
<td></td>
<td>me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Desire for Control</strong></td>
<td>.27**</td>
<td>.03</td>
<td>-.05</td>
<td>.01</td>
<td>.01</td>
<td>.09</td>
<td>.06</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Locus of Control</strong></td>
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<td>.08</td>
<td>-.07</td>
<td>-.15</td>
<td>-.14</td>
<td>-.14</td>
<td>-.19</td>
<td>-.14</td>
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<tr>
<td><strong>Maximizing</strong></td>
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<tr>
<td><strong>Maximizing</strong></td>
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<td>-.03</td>
<td>.06</td>
<td>-.04</td>
<td>-.15</td>
<td>-.14</td>
<td>-.09</td>
<td>-.05</td>
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<tr>
<td><strong>Regret</strong></td>
<td>.27**</td>
<td>-.07</td>
<td>.13</td>
<td>-.01</td>
<td>.21</td>
<td>.24</td>
<td>.23</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Need for Cognition</strong></td>
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<td>-.02</td>
<td>.11</td>
<td>.24**</td>
<td>.06</td>
<td>.10</td>
<td>.13</td>
<td>.21**</td>
</tr>
<tr>
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<td>.05</td>
<td>.14</td>
<td>-.01</td>
<td>-.15</td>
<td>-.07</td>
<td>-.02</td>
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<tr>
<td><strong>Optimism (Life Orientation)</strong></td>
<td>.01</td>
<td>.14**</td>
<td>.21**</td>
<td>.15</td>
<td>.14</td>
<td>.20</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Self-Esteem</strong></td>
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<td>.09</td>
<td>.04</td>
<td>.13</td>
<td>.00</td>
<td>-.03</td>
<td>-.15</td>
<td>-.05</td>
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<td><strong>Belongingness</strong></td>
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<td>-.07</td>
<td>.07</td>
<td>.19</td>
<td>.15</td>
<td>-.02</td>
<td>.04</td>
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<td><strong>Social Connectedness</strong></td>
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<td>-.10</td>
<td>-.10</td>
<td>.01</td>
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<td>.05</td>
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<td><strong>Self-Construal</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Independent SC</strong></td>
<td>.02</td>
<td>-.02</td>
<td>-.08</td>
<td>-.09</td>
<td>.08</td>
<td>-.04</td>
<td>-.04</td>
<td>-.15</td>
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<tr>
<td><strong>Interdependent SC</strong></td>
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<td>-.04</td>
<td>-.06</td>
<td>-.02</td>
<td>.02</td>
<td>.09</td>
<td>-.10</td>
<td>-.07</td>
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<td><strong>Relational-Interdependent SC</strong></td>
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<td>-.06</td>
<td>-.00</td>
<td>.02</td>
<td>.01</td>
<td>.05</td>
<td>-.09</td>
<td>-.04</td>
</tr>
</tbody>
</table>

*p < .10, **p < .05, ***p < .01, ****p < .001
Table 2. *Demographic Characteristics by Culture.*

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Japan</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>(n = 130)</em></td>
<td><em>(n = 95)</em></td>
<td><em>(N = 225)</em></td>
</tr>
<tr>
<td>University Size</td>
<td>23,085</td>
<td>28,899</td>
<td>-</td>
</tr>
<tr>
<td>Age</td>
<td>18.74 (1.08)</td>
<td>19.46 (1.28)</td>
<td>19.04 (1.29)</td>
</tr>
<tr>
<td>Sex</td>
<td>24 men</td>
<td>47 men</td>
<td>71 men</td>
</tr>
<tr>
<td></td>
<td>106 women</td>
<td>48 women</td>
<td>164 women</td>
</tr>
<tr>
<td>Native Language Speaker</td>
<td>90.8%</td>
<td>100%</td>
<td>94.7%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amer. Indian/Alaska Native</td>
<td>0.8%</td>
<td>0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>African American</td>
<td>20.8%</td>
<td>0%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>65.4%</td>
<td>2.2%</td>
<td>38.7%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>9.2%</td>
<td>97.9%</td>
<td>46.7%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.6%</td>
<td>0%</td>
<td>2.7%</td>
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<tr>
<td>Other</td>
<td>2.3%</td>
<td>0%</td>
<td>1.3%</td>
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<tr>
<td>Class Standing</td>
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<td></td>
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<tr>
<td>Freshman</td>
<td>61.5%</td>
<td>63.2%</td>
<td>62.2%</td>
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<tr>
<td>Sophomore</td>
<td>26.2%</td>
<td>13.7%</td>
<td>20.9%</td>
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<tr>
<td>Junior</td>
<td>7.7%</td>
<td>18.9%</td>
<td>12.4%</td>
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<tr>
<td>Senior</td>
<td>0.8%</td>
<td>4.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other</td>
<td>3.8%</td>
<td>0%</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

*Note.* Race identification may not add to 100% as participants were permitted to select multiple affiliations.
Table 3. Descriptive Relationships between Demographic Information and Ratings of Sleep Quality and Quantity.

<table>
<thead>
<tr>
<th></th>
<th>Sleep Quality&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sleep Quantity&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>United States (n = 113)</td>
<td>Japan (n = 94)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>r</td>
<td>Mean (SD) r</td>
</tr>
<tr>
<td>Sex (Overall)</td>
<td>5.44 (1.14) -</td>
<td>5.49 (0.93) -</td>
</tr>
<tr>
<td></td>
<td>Male 5.45 (1.28)&lt;sup&gt;١&lt;/sup&gt;</td>
<td>5.38 (0.93)&lt;sup&gt;١&lt;/sup&gt; -</td>
</tr>
<tr>
<td></td>
<td>Female 5.43 (1.11)&lt;sup&gt;١&lt;/sup&gt;</td>
<td>5.59 (0.93)&lt;sup&gt;١&lt;/sup&gt; -</td>
</tr>
<tr>
<td>Age (Overall)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>- -.182&lt;sup&gt;١&lt;/sup&gt; - .112</td>
<td>-.055 - .057</td>
</tr>
<tr>
<td></td>
<td>Male - -.336 - -.002</td>
<td>-.047 - .095</td>
</tr>
<tr>
<td></td>
<td>Female - -.148 - .257&lt;sup&gt;١&lt;/sup&gt;</td>
<td>-.072 - .015</td>
</tr>
</tbody>
</table>

<sup>a</sup>Sleep quality is measured on a scale from 1 = low to 7 = high

<sup>b</sup>Sleep quantity is measured in hours slept per night.

<sup>c</sup>Culture by sex comparisons of means within each dependent measure with different superscripts indicate a significant difference at \( p < .01 \).

<sup>d</sup>Significance in correlations with age \( p < .10 \).
Table 4. *Mean Ratings of Sleep Quality and Quantity by Cultural Context and Advisor Condition.*

<table>
<thead>
<tr>
<th>Advisor Condition</th>
<th>United States $(n = 113)$</th>
<th>Japan $(n = 94)$</th>
<th>United States $(n = 123)$</th>
<th>Japan $(n = 95)$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Adj.</td>
<td>Mean (SD)</td>
<td>Adj.</td>
</tr>
<tr>
<td>Alone</td>
<td>5.29 (1.21)</td>
<td>5.24</td>
<td>5.40 (0.93)</td>
<td>5.52</td>
</tr>
<tr>
<td>Impersonal</td>
<td>5.43 (1.12)</td>
<td>5.50</td>
<td>5.36 (1.02)</td>
<td>5.21</td>
</tr>
<tr>
<td>Confederate</td>
<td>5.49 (1.10)</td>
<td>5.58</td>
<td>5.31 (0.89)</td>
<td>5.28</td>
</tr>
<tr>
<td>Close Other</td>
<td>5.58 (1.15)</td>
<td>5.59</td>
<td>5.88 (0.81)</td>
<td>5.79</td>
</tr>
<tr>
<td>Overall</td>
<td>5.44 (1.14)</td>
<td>5.49 (0.93)</td>
<td>7.33 (1.60)</td>
<td>6.19 (1.42)</td>
</tr>
</tbody>
</table>

*Sleep quality is measured on a scale from 1 = low to 7 = high*

*Sleep quantity is measured in hours slept per night.*
Table 5. *Correlations among DFDC Measures.*

<table>
<thead>
<tr>
<th></th>
<th>DFC</th>
<th>BSA</th>
<th>RISC</th>
<th>Regret</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFC</td>
<td>-</td>
<td>.247*</td>
<td>.006</td>
<td>-.046</td>
</tr>
<tr>
<td>BSA</td>
<td>.231*</td>
<td>-</td>
<td>.608***</td>
<td>-.101</td>
</tr>
<tr>
<td>RISC</td>
<td>.088</td>
<td>.297**</td>
<td>-</td>
<td>-.271**</td>
</tr>
<tr>
<td>Regret</td>
<td>.085</td>
<td>-.389***</td>
<td>-.125</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* Correlations for Japanese participants reported above the diagonal, correlations for U.S. participants reported below the diagonal. DFC = Desire for Control Scale, BSA = Belongingness Social Assurances Subscale, RISC = Relational Interdependent Self Construal Scale, Regret = Regret subscale of Maximization Scale. 

*p < .10, *p < .05, **p < .01, ***p < .001
Figure 1. Patient Involvement in Outcomes of Treatment (PIvOT) Model.
Figure 2a. Mean ratings of sleep quality by DFDC and advisor condition for the U.S. sample. DFDC was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 2b. Mean ratings of sleep quality by DFDC and advisor condition for the Japanese sample. DFDC was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 3a. Moderation by DFDC on sleep quality.

Figure 3b. Moderation by DFDC on time spent sleeping.
Figure 4a. Mean ratings of sleep quantity by DFDC and advisor condition for the U.S. sample. DFDC was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 4b. Mean ratings of sleep quantity by DFDC and advisor condition for the Japanese sample. DFDC was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 5a. Mean ratings of sleep quality (raw means) by construal level and advisor condition. Construal level was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 5b. Mean ratings of sleep quantity (raw means) by construal level and advisor condition. Construal level was assessed at mean levels, one standard deviation below the mean, and one standard deviation above the mean. Bars represent standard error of the mean.
Figure 6a. Moderation of self-construal on sleep quality.

Figure 6b. Moderation of self-construal on time spent sleeping.
Figure 7a. Mediation of the relationship between advisor condition and culture with sleep quality by evaluation of the decision process.

Figure 7b. Mediation of the relationship between advisor condition and culture with time spent sleeping by evaluation of the decision process.
Figure 8a. Mediation of the relationship between advisor condition and culture with sleep quality by effort put into the decision process.

Figure 8b. Mediation of the relationship between advisor condition and culture with time spent sleeping by effort put into the decision process.
Figure 9a. Mediation of the relationship between advisor condition and culture with sleep quality by the degree to which participants felt they could find a treatment that matched them.

Figure 9b. Mediation of the relationship between advisor condition and culture with time spent sleeping by the degree to which participants felt they could find a treatment that matched them.
References


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Redline, S., Kirchner, L., Quan, S. F., Gottlieb, D. J., Kapur, V., & Newman, A. (2004). The effects of age, sex, ethnicity, and sleep-disordered breathing on sleep architecture. *Archives of Internal Medicine, 164*, 406–418.


Appendix A

Description of Pilot Study Measures

Control and Decision-Making Constructs

Desire for Control. General desire for control was measured by the Desirability of Control Scale (DFC; Burger & Cooper, 1979). This scale contains 20 items measured on a seven-point Likert-type scale from 1 = this statement does not apply to me at all to 7 = this statement always applies to me. The DFC has demonstrated high internal consistency, $\alpha = .80$, and test-retest reliability, $r = .75$, as well as discriminant validity with locus of control and social desirability.

Health Locus of Control. To determine participants’ locus of control specifically related to health contexts, the Health Locus of Control Scale (HLC; Wallston et al., 1976) was used. This scale consists of 11 items rated on a Likert-type scale ranging from 1 = strongly disagree to 6 = strongly agree. Alpha reliabilities in college student samples are $\alpha > .40$. A correlation of $r = .33$ with another locus of control scale demonstrates concurrent validity with some overlap between the measures and discriminant validity, suggesting that the two measures may be tapping into distinct constructs as anticipated.

Maximizing/Satisficing. The degree to which participants engage in maximizing or satisficing in their decision-making was measured using the Maximization Scale (Schwartz et al., 2002). Twenty-two items (17 maximizing/satisficing, 5 regret) were measured on a seven-point Likert-type scale from 1 = completely disagree to 7 = completely agree. Maximization has been significantly associated with happiness, $r = -.25$, and depression $r = .34$, providing construct validity for the measure.
**Need for Cognition.** Participants rated their need for cognition using the validated Need for Cognition Scale (NCS; Cacioppo, Petty, & Kao, 1984). The NCS scale is an 18-item measure using a five-point Likert-type scale from 1 = extremely uncharacteristic of me to 5 = extremely characteristic of me. The items in the NCS are reliable, $\alpha > .90$.

**Beliefs about the Self and the Environment**

**Mastery.** Pearlin and Schooler’s (1978) self-mastery subscale was used to determine the degree to which individuals feel they are in control of their life. The seven items were rated on a Likert-type scale from 1 = strongly disagree to 7 = strongly agree. The items significantly loaded onto the mastery factor, item loadings $> |.47|$ and significantly contributed to coping in marriage, parenting, household, and occupational domains, $\beta s > .41$.

**Life Orientation Test.** To assess participants’ degree of optimism and pessimism, the Life Orientation Test – Revised (LOT-R; Scheier et al., 1994) was used. This scale has ten items on a five-point Likert-type scale ranging from 1 = I agree a lot to 5 = I disagree a lot, though only six of these items contribute to the optimism and pessimism scores. These six items have a high internal consistency, $\alpha = .78$, and demonstrate high convergent validity with related scales, $r s > |.36|$.  

**Rosenberg Self-Esteem Scale.** Self-esteem was assessed using the ten-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). Each item is measured on a four-point Likert-type scale from strongly agree to strongly disagree. Reliabilities for this scale range from .72 to .90 (Robins, Hendin, & Trzesniewski, 2001).

**Interpersonal Orientation**
**Belongingness.** The measure of belongingness is comprised of two scales, the Social Connectedness Scale and the Social Assurances Scale (Lee & Robbins, 1995). Each scale has 8 items rated on a Likert-type scale ranging from 1 = strongly agree to 6 = strongly disagree. Internal reliabilities were high, $\alpha > .82$, as were test-retest correlations, $r_s > .84$.

**Interpersonal closeness.** Individuals may perceive their roles as overlapping to varying degrees with the roles of their physician or a close family member. To assess this commonality, a scale was created with overlapping circles designed to represent the degree to which participants believe the roles of two individuals intersect. The circles ranged from 1 = no distinction between individuals (one circle shown) to 7 = roles completely distinct (two separate circles).

**Ladder.** As a measure of perceived social status, participants ranked themselves on a ladder where the top rung represents those who are “better off” with more education, more money, and better jobs and the bottom rung represents those who are “worse off” with less education, less money, and worse jobs. Participants placed themselves anywhere on the ladder from 1 = lowest ranking to 10 = highest ranking (Goodman et al., 2001).

**Self-Construal.** Self-construal was rated on the validated Self-Construal Scale (SCS; Singelis, 1994) and the Relational-Interdependent Self-Construal Scale (RISC; Cross, Bacon, & Morris, 2000). The SCS consists of 24 items measuring both independent self-construal and interdependent self-construal and the RISC is 11 items measuring relational-interdependent self-construal. Participants used a seven-point Likert-type scale (1 = strongly disagree; 7 = strongly agree) to indicate their extent of
agreement that various statements of independence, interdependence, or relational-interdependence described them. The interdependence subscale demonstrated predictive validity, predicting situational attributions.
Appendix B

Pilot Study Measures

Demographic Information

1. How old are you? ________ years ________ months

2. Sex (please circle one)  FEMALE  MALE

3. Is English your first language?  YES  NO

4. Please indicate which of the following race and ethnicity groups best describes you.
   - American Indian or Alaskan Native
   - Asian or Pacific Islander
   - African American
   - Hispanic
   - Caucasian/White
   - Other

5. Height ____________________  Weight __________________

6. What is your class standing? (Circle one)
   1. Freshman
   2. Sophomore
   3. Junior
   4. Senior
   5. Other

7. How many years have you lived in the United States? ________ years

8. Are you currently under a doctor’s care (other than check-ups)?  YES  NO
   8a. If so, for what?

_________________________________________________________
9. Are you currently taking any prescription medication?  YES
   
   NO

9a. If so, for what?
   
   _______________________________________________________

10. Do you smoke?  YES  NO

11. Do you drink caffeine (coffee, cola, Mt. Dew, energy drinks)?  YES

   NO

12. How many times a week do you usually do 20 minutes or more of vigorous-intensity physical activity that make you sweat or puff and pant? (e.g., heavy lifting, digging, jogging, aerobics or fast bicycling)?
   
   5 or more times a week  3-4 times a week  1 to 2 times a week  none

13. How many times a week do you usually do 30 minutes or more walking? (e.g., walking from place to place for exercise, leisure or recreation)?
   
   5 or more times a week  3-4 times a week  1 to 2 times a week  none

14. How many times a week do you usually do 30 minutes or more of moderate-intensity physical activity that increases your heart rate or make you breathe harder than normal? (e.g., carrying light loads, bicycling at a regular pace or doubles tennis)?
   
   5 or more times a week  3-4 times a week  1 to 2 times a week  none

15. Have you ever participated in athletics (e.g., high school, college, intramural)?
   
   YES  NO

15a. If so, please describe here.
   
   _______________________________________________________

132
16. Have you ever been treated for any of the following?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kidney Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizziness or Fainting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety Disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Traumatic Stress Disorder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Do you currently, or have you in the past, visited a physician on a regular basis, such as for a chronic illness or injury?   YES  NO

17a. If yes, for what and how frequently?

________________________________________

18. What is the annual household income of your PARENTS/GUARDIANS?

- Less than $15,000
- $15,000 to $24,999
- $25,000 to $34,999
- $35,000 to $49,999
- $50,000 to $64,999
- $65,000 to $79,999
- $80,000 or higher

19. What is the highest grade of school your mother has completed, or the highest degree your mother has received?

- High School Graduate (or equivalent)
- Some College
- Associate’s Degree
- Bachelor’s Degree
Some Graduate School
Master’s Degree
Doctoral Degree

20. What is the highest grade of school your father has completed, or the highest degree your father has received?

High School Graduate (or equivalent)
Some College
Associate’s Degree
Bachelor’s Degree
Some Graduate School
Master’s Degree
Doctoral Degree

Academic Assessment

1. High School GPA ______________

2. UT Cumulative GPA ______________

3. How many semesters have you been at UT? ______ terms

SAT scores

4. Math _________ Verbal _________ Writing _________

(Each SAT section is scored on a scale of 200-800)

5. Total _________ 6. How many points were possible? 1600  2400 (circle one)
ACT score

7. Total __________

(Highest possible: 36)

Desire for Control

Below you will find a series of statements. Please read each statement carefully and respond to it by expressing the extent to which you believe the statement applies to you.

For all items, a response of 1 to 7 is used. Use the number that best reflects your belief when the scale is defined as follows.

1. the statement doesn’t apply to me at all
2. the statement usually doesn’t apply to me
3. most often, the statement does not apply
4. the statement applies to me half of the time or I am unsure whether or not it applies to me
5. the statement applies more often than not
6. the statement usually applies to me
7. the statement always applies to me

1. I prefer a job where I have a lot of control over what I do and when I do it.
2. I enjoy political participation because I want to have as much of a say as possible.
3. I try to avoid situations where someone else tells me what to do.
4. I would prefer to be a leader rather than a follower.
5. I enjoy being able to influence the actions of others.
6. I am careful to check everything on an automobile before I leave for a long trip.
7. Others usually know what’s best for me.
8. I enjoy making my own decisions.
9. I enjoy having control over my own destiny.
10. I would rather someone else took over the leadership role when I’m involved in a group project.

11. I consider myself to be generally more capable of handling situations than others are.

12. I’d rather run my own business and make my own mistakes than listen to someone else’s orders.

13. I like to get a good idea of what a job is all about before I begin.

14. When I see a problem, I prefer to do something about it rather than sit by and let it continue.

15. When it comes to orders, I would rather give them than receive them.

16. I wish I could push many of life’s daily decisions off on someone else.

17. When driving, I try to avoid putting myself in a situation were I could be hurt by someone else’s mistakes.

18. I prefer to avoid situations where someone else has to tell me what it is I should be doing.

19. There are many situations in which I would prefer only one choice rather than having to make a decision.

20. I like to wait and see if someone else is going to solve a problem so that I don’t have to be bothered by it.

**Health Locus of Control Scale**

Indicate the degree to which you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. If I take care of myself I can avoid illness.

2. Whenever I get sick it is because of something I’ve done or not done.

3. Good health is largely a matter of good fortune.

4. No matter what I do, if I am going to get sick I will get sick.

5. Most people do not realize the extent to which their illnesses are controlled by accidental happenings.

6. I can only do what my doctor tells me to do.

7. There are so many strange diseases around that you can never know how or when you might pick one up.

8. When I feel ill, I know it is because I have not been getting the proper exercise or eating right.

9. People who never get sick are just plain lucky.

10. People’s ill health results from their own carelessness.

11. I am directly responsible for my health.

**Maximizing/Satisficing Scale**

Indicate the degree to which you agree or disagree with the following statements.

1. Whenever I make a choice, I’m curious about what would have happened if I had chosen differently.

2. Whenever I make a choice, I try to get information about how the other alternatives turned out.
3. If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.

4. When I think about how I’m doing in life, I often assess opportunities I have passed up.

5. Once I make a decision, I don’t look back.

6. When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.

7. When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I’m relatively satisfied with what I’m listening to.

8. I treat relationships like clothing: I expect to try a lot on before I get the perfect fit.

9. No matter how satisfied I am with my job, it’s only right for me to be on the lookout for better opportunities.

10. I often fantasize about living in ways that are quite different from my actual life.

11. I’m a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.).

12. I often find it difficult to shop for a gift for a friend.

13. When shopping, I have a hard time finding clothing that I really love.

14. Renting videos is really difficult. I’m always struggling to pick the best one.

15. I find that writing is very difficult, even if it’s just writing a letter to a friend, because it’s so hard to word things just right. I often do several drafts of even simple things
16. No matter what I do, I have the highest standards for myself.

17. I never settle for second best.

18. Whenever I’m faced with a choice, I try to imagine what all the other possibilities are, even ones that aren’t present at the moment.

**Need for Cognition Scale**

For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a “1” to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a “5” next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below.

1 = extremely uncharacteristic
2 = somewhat uncharacteristic
3 = uncertain
4 = somewhat characteristic
5 = extremely characteristic

Write in the number that best fits your view:

_____  1. I would prefer complex to simple problems.

_____  2. I like to have the responsibility of handling a situation that requires a lot of thinking.

_____  3. Thinking is not my idea of fun.
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.

6. I find satisfaction in deliberating hard and long for hours.

7. I only think as hard as I have to.

8. I prefer to think about small, daily projects to long-term ones.

9. I like the tasks that require little thought once I have learned them.

10. The idea of relying on thought to make my way to the top appeals to me.

11. I really enjoy a task that involves coming up with new solutions to problems.

12. Learning new ways to think doesn’t excite me very much.

13. I prefer my life to be filled with puzzles that I must solve.

14. The notion of thinking abstractly is appealing to me.

15. I would prefer a task that is intelligent, difficult, and important to one that is somewhat important but does not require much thought.

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.

17. It’s enough for me that something gets the job done, I don’t care how or why it works.

18. I usually end up deliberating about issues even when they do not affect me personally.
**Self-Mastery**

Please indicate how strongly you agree or disagree with the following statements

1  2  3  4  5  6  7

Strongly Disagree Strongly Agree

1. I have little control over the things that happen to me.
2. There is really no way I can solve some of the problems I have.
3. There is little I can do to change many of the important things in my life.
4. I often feel helpless in dealing with the problems of life.
5. Sometimes I feel that I’m being pushed around in life.
6. What happens to me in the future mostly depends on me.
7. I can do just about anything I really set my mind to do.

**Life Orientation Test (Optimism)**

Please indicate the extent to which you disagree with each of the following statements by circling one of the five responses on the scale below. Try to be as accurate and honest as possible when making your decisions.

Strongly disagree 0 1 2 3 4 Strongly agree

1. In uncertain times, I usually expect the best.
2. It’s easy for me to relax.
3. If something can go wrong for me, it will.
4. I’m always optimistic about my future.
5. I enjoy my friends a lot.
6. It’s important for me to keep busy.

7. I hardly ever expect things to go my way.

8. I don’t get too upset too easily.

9. I rarely count on good things happening to me.

10. Overall, I expect more good things to happen than bad.

Rosenberg Self-Esteem Scale

Please mark down the degree to which you disagree or agree with the following statements.

1 Strongly disagree 2 Disagree 3 Agree 4 Strongly agree

1. I feel that I’m a person of worth, at least on an equal plane with others.

2. I feel that I have a number of good qualities.

3. All in all, I am inclined to feel that I am a failure.

4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.

6. I take a positive attitude toward myself.

7. On the whole, I am satisfied with myself.

8. I wish I could have more respect for myself.

9. I certainly feel useless at times.

10. At times I think I am no good at all.
### Belongingness: Social Connectedness and Social Assurances Scales

Indicate the degree to which you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

1. I feel disconnected from the world around me
2. Even around people I know, I don’t feel that I really belong.
3. I feel so distant from people.
4. I have no sense of togetherness with my peers.
5. I don’t feel related to anyone
6. I catch myself losing all sense of connectedness with society.
7. Even among my friend, there is no sense of brother/sisterhood.
8. I don’t feel I participate with anyone or any group.
9. I feel more comfortable when someone is constantly with me
10. I’m more at ease doing things together with other people.
11. Working side by side with others is more comfortable than working alone.
12. My life is incomplete without a buddy beside me.
13. It’s hard for me to use my skills and talents without someone beside me.
15. I join groups more for the friendship than the activity itself.
16. I wish to find someone who can be with me at all times.
**Interpersonal Closeness**

If one of the two circles represents you and the other a close friend or family member to whom you regularly turn for advice, which of the diagrams would most closely characterize your relationship?

If one of the two circles represents the average person and the other a physician, which of the diagrams would most closely characterize the relationship?

If one of the two circles represents you and the other your physician, which of the diagrams would most closely characterize the relationship?

**Subjective Social Status**

Think of the ladder as representing where people stand in society. Some people are better off – they have more money, more education, and better jobs. Other people are worse off – they have less money, less education, and worse jobs. The higher up on the ladder you are, the closer you are to the people at the top and the lower you are, the closer you are to the people at the bottom.
Think about **yourself**. Please use an ‘X’ to indicate on which rung of the ladder you would place yourself.

![Ladder Diagram]

**Self-Construal Scale**

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I have respect for authority figures with whom I interact.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>It is important for me to maintain harmony within my group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>My happiness depends on the happiness of those around me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I would offer my seat on a bus to my professor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 I respect people who are modest about themselves.
6 I will sacrifice my self-interest for the benefit of the group I am in.
7 I often have the feeling that my relationships with others are more important than my own accomplishments.
8 I should take into consideration my parents' advice when making education/career plans.
9 It is important to me to respect decisions made by the group.
10 I will stay in a group if they need me, even when I'm not happy with the group.
11 If my brother or sister fails, I feel responsible.
12 Even when I strongly disagree with my group members, I avoid an argument.
13 I'd rather say "No" directly than risk being misunderstood.
14 Speaking up in class is not a problem for me.
15 Having a lively imagination is important to me.
16 I am comfortable being singled out for praise or awards.
17 I am the same person at home that I am at school.
18 Being able to take care of myself is a primary concern for me.
19 I act the same way no matter who I am with.
20 I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am.
21 I prefer to be direct and forthright when dealing with people I've just met.
22 I enjoy being unique and different from others in many respects.
23 My personal identity independent of others is very important to me.
24 I value being in good health above everything.
25 My close relationships are an important reflection of who I am.
26 When I feel very close to someone, it often feels to me like that person is an important part of who I am.
27 I usually feel a strong sense of pride when someone close to me has an important accomplishment.
28 I think one of the most important parts of who I am can be captured by looking at my close friends and understanding who they are.
29 When I think of myself, I often think of my close friends or family also.
30 If a person hurts someone close to me, I feel personally hurt as well.
31 In general, my close relationships are an important part of my self-image.
32 Overall, my close relationships have little to do with how I feel about myself.
33 My close relationships are unimportant to my sense of what kind of person I am.
34 My sense of pride comes from knowing I have close friends.
35 When I establish a close friendship with someone, I usually develop a strong sense of identification with that person.

**Ten Item Personality Inventory**

For the next set of items, rank where you fall on the scale.

1. not extraverted, not enthusiastic
   1 2 3 4 5 6 7 extraverted, enthusiastic
2. not critical, not quarrelsome
   1 2 3 4 5 6 7 critical, quarrelsome
3. not dependable, not self disciplined
   1 2 3 4 5 6 7 dependable, self disciplined
4. not anxious, not easily upset  
1 2 3 4 5 6 7 anxious, easily upset

5. not open to new experiences, simple  
1 2 3 4 5 6 7 open to new experiences, complex

6. not reserved, not quiet  
1 2 3 4 5 6 7 reserved, quiet

7. not sympathetic, not warm  
1 2 3 4 5 6 7 sympathetic, warm

8. disorganized, careless  
1 2 3 4 5 6 7 organized, careful

9. not calm, emotionally unstable  
1 2 3 4 5 6 7 calm, emotionally stable

10. not conventional  
1 2 3 4 5 6 7 conventional, not creative

**Miscellaneous**

1. Rate how much control over medical decisions you typically desire.

   1 2 3 4 5 6 7  

   No Control A Lot of Control

2. Rate how much information you typically want about medical decisions you are responsible for making.

   1 2 3 4 5 6 7  

   No Information A Lot of Information

3. Rate how much information you typically want about medical decisions you are not responsible for making.

   1 2 3 4 5 6 7  

   No Information A Lot of Information
4. How much do you trust your physician to make the right decision for you?

   1  2  3  4  5  6  7

   Not at All     Completely

5. Describe the characteristics of a typical physician.

________________________________________________________________________

6. Think back to the last time you were in a physician’s office. Spend five minutes typing out what you remember about this visit.

7. How involved were you in the visit?

   1  2  3  4  5  6  7

   No Control     A Lot of Control

8. Did you have to make any decisions (e.g., choosing a treatment, deciding what time to take medication)?  YES  NO

   8a. If yes, how much input did you have?

   1  2  3  4  5  6  7

   No Input     A Lot of Input

9. Would you have liked to have more involvement in the appointment?

   1  2  3  4  5  6  7

   I felt I was too involved     My involvement was ideal     I would have liked to be much more involved
Appendix C

Vignettes

Vignettes, Set I

Imagine that you visit your doctor with a serious pain in your side which you believe may be kidney stones. Kidney stones are crystals that form in the kidney and get stuck in the tubes leading to the bladder. When they get stuck it can be extremely painful and is described as a very sharp constant pain or a very tight band around your waist. Some people describe it as worse than childbirth or the worst pain you have ever had. It can be treated by either blasting them to break them up into very small pieces that can be passed out with urine or in rare occasions with surgery.* This can be either at a local or specialist hospital and can involve either a general or local anaesthetic. Sometimes there can be waiting lists.

You go to a physician for a fever, loss of appetite, and a pain in your right abdomen. These are typical signs of appendicitis. Appendicitis is the inflammation of the appendix, a specialized group of tissue the produces antibodies. When the appendix is infected it can rupture, causing the bacteria to spill into the abdominal cavity, which is not only extremely painful but can have serious health consequences. The primary treatment for appendicitis is immediate removal of the inflamed tissue. The patient is given a general anesthetic for the emergency surgery.

You visit the family practitioner with uncomfortable bumps on your feet that resemble plantar warts. Plantar warts are small growths of tissue caused by a virus. They are
found on the sole of the foot and may grow inward, under the hard, thick layer of skin (callus). Many people experience pain or tenderness when on their feet. **There are a variety of treatments for these growths, including doing nothing as plantar warts are relatively harmless.** Plantar warts may also be frozen off or subjected to a regimen of topical therapies. If the warts do not respond to these treatments, the patient may have **minor surgery or laser treatment** though the likelihood of scarring is much greater.

Imagine going to the physician with a small but relatively deep cut on your arm. The cut is associated with minor pain and some bleeding. **These types of injuries are usually treated with two to three stitches.** Many people are provided with a local anaesthetic and have the wound cleaned to prevent infection. Once the dirt and debris have been removed, the physician sews the two sides of the cut together. In some cases an antibiotic ointment is provided. Most of the time the patient will return to the physician to have the stitches removed.

**Vignettes, Set II**

You have noticed a growth on your wrist and go to your physician to have it checked out. It turns out that this growth is called a ganglion cyst. These cysts typically occur at weakened points in a joint capsule or tendon sheath and can be mildly painful. You discuss the treatment options with your physician **who has not directly dealt with ganglion cysts in the past but has knowledge on the treatment options.** Surgical excision is the most reliable treatment, with arthroscopic surgery as another alternative.
The cyst may also be aspirated (with the fluid removed with a needle) or it can even be left as-is. Cysts can be recurring and some treatments lead to scarring.

You take a trip to your doctor to discuss options for treating redness across your cheeks and forehead. The physician identifies the redness as rosacea, a relatively common skin condition that often goes untreated. When accompanied by pimples or small pustules rosacea may be uncomfortable. You discuss the different treatments with your physician who has treated this condition on previous occasions. Oral medications and topical antibiotics are often used for rosacea treatment. Additionally, behavioral treatments such as limiting sun exposure and watching dietary intake can be helpful, though many people remain untreated. Though rosacea can be a lifelong condition, in many cases it can go into full remission.

Imagine finding pearly, dome-shaped bumps clustered on your skin. You go to your practitioner and bring your closest family member along for advice. This condition is called molluscum and the bumps are often itchy. Molluscum is caused by a virus and has a few treatment options which you discuss with your close family member who has had molluscum previously. Success has been shown with treatments such as topical astringents or oils, surgery, or laser therapy. Molluscum can be fully cured but may last for years if left untreated.

Imagine a visit to your family doctor with a high degree of discomfort in your toe. You take your closest family member with you for input. The physician identifies the pain
as originating from an ingrown toenail. Ingrown toenails are often caused from too tight of footwear, predisposition due to foot and nail shape, or bacterial infection. You discuss the treatment options with your close family member who has never experienced an ingrown toenail. One option is a warm salt water bath and antibacterial ointment. Further, surgery may be a helpful option, as is nail bracing. After treatment most ingrown toenails are cured.

*Emphasis added to demonstrate differences between vignettes.*
Appendix D

Questions for Pilot Study Vignettes

1. In the above scenario, who would you seek out information from? (check all that apply)
   - Physician
   - Nurse
   - Other Medical Practitioner
   - Family member
   - Friend
   - Internet/Online Resources
   - Print Resources

2. How comfortable would you be seeking information on kidney stones from each of the following sources?

<table>
<thead>
<tr>
<th>Source</th>
<th>Not At All</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Other Medical Practitioner</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Family member</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Friend</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Internet/Online Resources</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Print Resources</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
3. How much importance would you place on the information gained about kidney stones from each of the following sources?

<table>
<thead>
<tr>
<th>Source</th>
<th>No Importance</th>
<th>A Lot of Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Other Medical Practitioner</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Family member</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Friend</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Internet/Online Resources</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Print Resources</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

4. What weight would information from each of the sources carry if you were to make a decision about treating your kidney stones? Please rank order the information sources from weighted most heavily to weighted least heavily.

- Physician
- Nurse
- Other Medical Practitioner
- Family member
- Friend
- Internet/Online Resources
- Print Resources
5. In this scenario, how much input would you like into your treatment decision?

1 2 3 4 5 6 7

No Input At All  As Much Input As Possible

6. Would you trust a physician to make the treatment decision for you?

1 2 3 4 5 6 7

I would not trust my physician  I would trust my physician

7. Are you worried about the outcome of the treatment?

1 2 3 4 5 6 7

Not At All  Very Much

8. What do you think the likelihood is that the treatment engaged in will be successful?

1 2 3 4 5 6 7

Very Unlikely  Very Likely
Appendix E

Preliminary Sleep Questions

PSQI

The following questions relate to your usual sleep habits during LAST NIGHT only. Your answers should indicate the most accurate reply for the last night. Please answer all questions.

1. Last night, when did you go to bed? ________________ bed time

2. Last night, how long (in minutes) has did it take you to fall asleep? ___________ minutes

3. This morning, when did you get out of bed? _______________ getting up time

4. Last night, how many hours of actual sleep did you get? (This may be different from the number of hours you spend in bed.) ________________ hours of sleep last night

For each of the following questions, circle the best response. Please answer ALL questions.

5. Last night, how many times did you have trouble sleeping because you…
   a. Couldn’t get to sleep within 30 minutes (circle one).
      Not at All  Yes
   b. Woke up in the middle of the night or early in the morning.
      Not at All  One Time  Two or Three Times  More than Three Times
   c. Had to get up to use the bathroom.
      Not at All  One Time  Two or Three Times  More than Three Times
   d. Couldn’t breathe comfortably.
      Not at All  One Time  Two or Three Times  More than Three Times
   e. Coughed or snored loudly.
      Not at All  One Time  Two or Three Times  More than Three Times
f. Felt too cold.
   Not at All  One Time   Two or Three Times   More than Three Times

g. Felt too hot.
   Not at All  One Time   Two or Three Times   More than Three Times

h. Had bad dreams.
   Not at All  One Time   Two or Three Times   More than Three Times

i. Had pain.
   Not at All  One Time   Two or Three Times   More than Three Times

j. Other reason/s, please describe
   ................................................................................................................
   ................................................................................................................

How often last night did you had trouble sleeping because of this?
   Not at All  One Time   Two or Three Times   More than Three Times

6. Last night, how would you rate your sleep quality overall?
   Very Good   Fairly Good   Fairly Bad   Very Bad

7. Today, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?
   Not at All  One Time   Two or Three Times   More than Three Times

8. Today, how much of a problem was it for you to keep up enough enthusiasm to get things done?
   No Problem   Only a Very Slight Problem   Somewhat of a Problem   A Very Big Problem

9. How many hours do you sleep on an average weekday night?  _____ hrs

10. How many hours do you sleep on an average weekend night?  _____ hrs
11. On average, how would you rate the quality of your sleep over the last year?

1  2  3  4  5  6  7
very bad   very good

12. How long does it usually take you to fall asleep?:      minutes

13. How long did it take you to fall asleep last night?:     minutes

14. Think back to last night. How many hours did you sleep? ___hrs ___minutes

15. Think back to last night. How would you rate the quality of your sleep?

1  2  3  4  5  6  7
very bad   very good

16. Think back to last night. How comfortable was your sleep?

1  2  3  4  5  6  7
very uncomfortable   very comfortable

17. How easy was it for you to fall asleep last night?

1  2  3  4  5  6  7
not very easy   very easy

18. How soundly did you sleep last night?

1  2  3  4  5  6  7
not very soundly   very soundly

19. How relaxed did you feel while sleeping last night?

1  2  3  4  5  6  7
not very relaxed   very relaxed

20. How restless did you feel last night when you were sleeping?

1  2  3  4  5  6  7
not very restless   very restless

21. Do you remember waking up at all during the night? (please circle one): YES/NO
   a. If so, how many times?          

22. How peaceful did you feel while sleeping last night?
23. How deeply do you think you slept last night compared to a typical weekday night?

1 2 3 4 5 6 7
not very deep very deep

24. How easy was it for you to get out of bed this morning?

1 2 3 4 5 6 7
not very easy very easy

25. How rested did you feel this morning?

1 2 3 4 5 6 7
not very rested very rested

26. How relaxed did you feel this morning?

1 2 3 4 5 6 7
not very relaxed very relaxed

27. How stressed did you feel this morning?

1 2 3 4 5 6 7
not very stressed very stressed

28. How relaxed have you felt today?

1 2 3 4 5 6 7
not very relaxed very relaxed

29. How energetic have you felt today?

1 2 3 4 5 6 7
not very energetic very energetic

30. Did you have breakfast this morning? YES NO

31. Do you normally have breakfast in the morning? YES NO

32. How many classes are you taking this semester? _____ classes
33. How many credit hours are you taking this semester? _____ credit hrs

34. How would you rate your overall workload this semester?

   1 2 3 4 5 6 7
   very hard    very easy

35. Have you ever had a long-term sleeping problem (such as insomnia)?
   YES    NO
   a. If yes, please explain: __________________________________________

36. How often do you take naps during the day?

   1 2 3 4 5 6 7
   not very often    very often

37. What time do you typically go to bed on weekday nights? _____ o’clock

38. What time do you typically go to bed on weekend nights? _____ o’clock

39. What time do you typically wake up on weekday mornings? _____ o’clock

40. What time do you typically wake up on weekend mornings? _____ o’clock

41. Did you take any medication to help you sleep last night? (please circle one):
   YES    NO

42. Do you consider yourself to be someone who has a sleeping problem?:
   YES    NO

43. How long have you lived in your current location (house, dorm, etc.):
   _____ (months, years)

44. Do you smoke cigarettes?   YES    NO
   b. If yes, how many do you typically smoke a day: _____ cigarettes
   c. If yes, how many have you smoked thus far today: _____ cigarettes

45. In general, how important is it to you to get a good night’s sleep?

   1 2 3 4 5 6 7
   not very important    very important
46. How often do you take drugs to help you fall asleep?

1 2 3 4 5 6 7
not very often very often

47. Please rate how sleepy you currently feel:

1 2 3 4 5 6 7
not very sleepy very sleepy

48. Please rate how stressed you currently feel:

1 2 3 4 5 6 7
not very stressed very stressed

49. Do you typically take medication that affects your sleep (cough, allergy, or cold medicine, etc.)?

YES NO

a. If yes, please describe what you take and how often you take it: __________

50. How many days a week do you typically engage in aerobic activity (e.g., running, biking) for over 30 minutes?

________________ Days a week

51. How many days a week do you typically engage in weight training for over 30 minutes?

________________ Days a week

52. How many hours do you typically work each week? _____ hrs.

53. On average, how many hours do you spend each weekday night on homework? ____ hrs.

54. So far, how many semesters have you attended college? _____ Semesters

55. Have you (or are you going to) exercise today? (please circle one): YES NO

If yes, for how long?:

a. aerobic exercise __________mins

b. weight training __________mins
56. Do you plan on exercising tomorrow? (please circle one): YES NO

57. Have you had any caffeine (coffee, soda, etc.) in the past hour? YES NO

58. What caffeine have you had so far today (coffee, soda, etc.)? Please list them: ____________________________

59. Do you currently have any illness or injury that might affect how you are sleeping?
   YES NO
   a. If yes, please explain: ____________________________

60. Please list your age ____________

61. Sex (please circle one of the following): FEMALE MALE

62. Please check all of the following ethnicities that describe you:
   □ American Indian or Alaskan Native □ Asian or Pacific Islander
   □ African American □ Hispanic/Latino
   □ Caucasian/White □ Other ____________

**PANAS**

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now. Use the following scale to record your answers:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>very slightly</td>
<td>2</td>
<td>a little</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>quite a bit</td>
<td>5</td>
<td>extremely or not at all</td>
<td></td>
</tr>
</tbody>
</table>
1. _____ interested
2. _____ irritable
3. _____ distressed
4. _____ alert
5. _____ excited
6. _____ ashamed
7. _____ upset
8. _____ inspired
9. _____ strong
10. _____ nervous
11. _____ guilty
12. _____ determined
13. _____ scared
14. _____ attentive
15. _____ hostile
16. _____ jittery
17. _____ enthusiastic
18. _____ active
19. _____ proud
20. _____ afraid
PSQI - Week

The following questions relate to your usual sleep habits during the past *WEEK* only. Your answers should indicate the most accurate reply for the *majority* of days and nights in the past week. Please answer all questions.

1. During the past week, when have you usually gone to bed at night?
   
   **USUAL BEDTIME**

2. During the past week, how long (in minutes) has it usually taken you to fall asleep each night?
   
   **USUAL NUMBER OF MINUTES**

3. During the past week, when have you gotten out of bed in the morning?
   
   **USUAL GETTING UP TIME**

4. During the past week, how many hours of *actual sleep* did you get at night? (NB. This may be different from the number of hours you spend in bed.)
   
   **HOURS OF SLEEP PER NIGHT**

For each of the following questions, circle the best response. Please answer *ALL* questions.

5. During the past week, how many times did you have trouble sleeping because you…
   
   a. Couldn’t get to sleep within 30 minutes.
      
      Not at All   One Time   Two or Three Times   More than Three Times
   
   b. Woke up in the middle of the night or early in the morning.
      
      Not at All   One Time   Two or Three Times   More than Three Times
   
   c. Had to get up to use the bathroom.
      
      Not at All   One Time   Two or Three Times   More than Three Times
   
   d. Couldn’t breathe comfortably.
      
      Not at All   One Time   Two or Three Times   More than Three Times
e. Coughed or snored loudly.
   Not at All   One Time   Two or Three Times   More than Three Times

f. Felt too cold.
   Not at All   One Time   Two or Three Times   More than Three Times

g. Felt too hot.
   Not at All   One Time   Two or Three Times   More than Three Times

h. Had bad dreams.
   Not at All   One Time   Two or Three Times   More than Three Times

i. Had pain.
   Not at All   One Time   Two or Three Times   More than Three Times

j. Other reason/s, please describe

________________________________________________________________________
________________________________________________________________________

How often last night did you had trouble sleeping because of this?

Not at All   One Time   Two or Three Times   More than Three Times

6. During the past week, how would you rate your sleep quality overall?

Very Good    Fairly Good    Fairly Bad    Very Bad

7. During the past week, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

Not at All   One Time   Two or Three Times   More than Three Times

8. During the past week, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

  No Problem   Only a Very Slight Problem   Somewhat of a Problem   A Very Big Problem
Evaluation Questions

1. What is your initial evaluation of the task?
   - Bad 1 2 3 4 5 6 7 Good
   - Unpleasant 1 2 3 4 5 6 7 Pleasant
   - Negative 1 2 3 4 5 6 7 Positive
   - Flawed 1 2 3 4 5 6 7 Perfect

2. How much effort did you put into your decision?
   1 2 3 4 5 6 7
   none at all very much

3. Did you feel confident that you were able to select a technique that matched you?
   1 2 3 4 5 6 7
   not at all very much

4. Please rate your degree of expertise on sleep treatments.
   1 2 3 4 5 6 7
   none at all a high degree

[Only for confederate and close other conditions]

5. Rate the warmth of the other participant.
   1 2 3 4 5 6 7
   none at all very much

6. Rate the positivity of the other participant.
   1 2 3 4 5 6 7
   none at all very much

7. Rate the ease of conversation with the other participant.
   1 2 3 4 5 6 7
   not at all very much
8. Rate the degree to which the other participant contributed to the decision.

   
   1  2  3  4  5  6  7  
   no contribution  made the entire decision

9. What is your relationship to the other participant (e.g., mother, best friend)?

   

10. Please take a minute to write down any additional thoughts you had about the interaction and/or the decision that was made.

   

   

   

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Appendix F

Sleep Task Descriptions

Thought Management

The objective of this technique is to allow our thoughts and emotions from the day to be organized, evaluated and managed in a coherent way. We can get our thoughts and emotions out in the open rather than ignoring them. All of the “small” events and thoughts of the day can be classified and integrated together to provide you with mental closure. If thoughts are organized by level of importance you may be better able to manage which thoughts need to be addressed and which do not. This organization of thoughts before bed can be beneficial for many people.

Emptying of the Mind

The objective of this technique is to leave the mind completely blank; letting go of the trivial thoughts or worries from the day to allow a feeling of clarity. This task provides a slow release from the busy day. By emptying the mind you can move past the chaos of your daily mental world and begin the next day refreshed and with a sense of peace. Imagine physically throwing away each thought after it has been addressed, clearing the clutter. Many individuals find the blank slate useful and going through this experience can lead to improvements in sleep.

Mental Grounding

The objective of this technique is to use thoughts and emotions from the day as basic building blocks to shape the days into the future. This technique can help you to look at
your thoughts as a helpful foundation and not a hindrance. At this point you can then redirect and reframe negative events and thoughts—allowing you to see the bright side of events and carry this interpretation into the future. Asking yourself questions about the events of your day will allow you to move forward. People who appreciate the continuity of sleep and waking typically find this beneficial.
Appendix G

Morning Survey Questions

Please answer the following questions as soon as you wake up in the morning. Be as honest as possible in your responses.

1. How long did it take you to fall asleep last night?: _____ minutes

2. Think back to last night. How many hours did you sleep? _____ hrs _____ minutes

3. Think back to last night. How would you rate the quality of your sleep?
   1 2 3 4 5 6 7
   very bad very good

4. Think back to last night. How comfortable was your sleep?
   1 2 3 4 5 6 7
   very uncomfortable very comfortable

5. How easy was it for you to fall asleep last night?
   1 2 3 4 5 6 7
   not very easy very easy

6. How soundly did you sleep last night?
   1 2 3 4 5 6 7
   not very soundly very soundly

7. How relaxed did you feel while sleeping last night?
   1 2 3 4 5 6 7
   not very relaxed very relaxed
8. How restless did you feel last night when you were sleeping?

   1  2  3  4  5  6  7
not very restless       very restless

9. How peaceful did you feel while sleeping last night?

   1  2  3  4  5  6  7
not very peaceful       very peaceful

10. How deeply do you think you slept last night compared to a typical weekday night?

     1  2  3  4  5  6  7
not very deep           very deep
Appendix H

Follow-Up Sleep Quality Questionnaire

1. Were there any loud noises or other distractions that disrupted your sleep last night?
   
   YES   NO

   a. If your answer was yes, approximately how many times was your sleep disrupted?
      ________ times

   b. If your sleep was disrupted, what disrupted it? ______________________

2. How stressed did you feel on your way into school today?

   1  2  3  4  5  6  7
   not at all stressed very much stressed

3. How awkward or uncomfortable did you feel last night writing down your thoughts?

   1  2  3  4  5  6  7
   not at all very much

4. How much did writing down your thoughts last night disrupt your normal sleeping routine?

   1  2  3  4  5  6  7
   not at all very much

5. On average, how stressed did you feel right before you wrote down your thoughts?

   1  2  3  4  5  6  7
   not at all stressed very much stressed

6. When you were performing the thought-listing task, how relaxing was it on average?

   1  2  3  4  5  6  7
   not very relaxing very relaxing
7. When you were performing the thought-listing task, how satisfying did you find it on average?

1 2 3 4 5 6 7
not very satisfying very satisfying

8. How likely is it that you would recommend to others that they should write down their thoughts before they go to bed?

1 2 3 4 5 6 7
not very likely very likely

9. Please list any reactions or feelings you have noticed that could be a result of writing down your thoughts:

________________________________________________________________________

________________________________________________________________________

10. How likely is it that writing down your thoughts helped you sleep better?

1 2 3 4 5 6 7
not very likely very likely

11. How confident are you that this writing task helped you sleep better last night?

1 2 3 4 5 6 7
not confident very confident

12. Did you expect that writing down your thoughts would help you sleep better?

1 2 3 4 5 6 7
not at all very much

13. Did you think that the sleep technique would make you feel more energized?

1 2 3 4 5 6 7
not at all very much

14. Did you complete the thought-listing task last night? If you respond NO, you will still receive your credit points! That is ok. We just need to be sure that, if you were unable to do it, that your responses do not hinder our research. So please be honest. (please circle one):

YES, I did the thought-listing task

No, I did not
right before I went to bed last night
15. If you did not do the entire thought-listing task, did you do some of it? (please circle one):

I did do some, but not all of it
I was unable to do any of it

16. Did you do the thought-listing task right before you went to bed, or, did you do it at another time, like earlier in the day? (please circle one):

I did the writing task right before going to sleep
I did the writing task at a time other than right before I went to sleep

17. Did you hope that the thought-listing task would improve your sleep?

1 2 3 4 5 6 7
not at all very much

18. Regarding this study, did you feel that you wanted to help out the experimenter?

1 2 3 4 5 6 7
not at all very much

19. Did you think that the experimenter might have somehow biased the answers you are giving today?

1 2 3 4 5 6 7
not at all very much

20. How would you evaluate the thought-listing task?

Bad 1 2 3 4 5 6 7 Good
Unpleasant 1 2 3 4 5 6 7 Pleasant
Negative 1 2 3 4 5 6 7 Positive
Flawed 1 2 3 4 5 6 7 Perfect

21. How much effort did you put into the task?

1 2 3 4 5 6 7
none at all very much

175
22. Was there anything that happened in the study that might have influenced your reactions over the course of the previous two weeks?

   YES    NO

   a. If yes, please explain:_________________________________________________________  
                                                                                       

23. Did you get to choose between tasks/techniques?  YES    NO

   If yes,
   a. How much effort did you put into your decision?

       1  2  3  4  5  6  7
       none at all very much

   b. Did you feel that you were able to select a technique that matched you?

       1  2  3  4  5  6  7
       not at all very much
Appendix I

Prompt Conversational and Impersonal Condition Questions

Below are some questions you might think about while determining which treatment is best for you.

1. On your best night of sleep, how often do you find yourself waking up during the night?
2. On your worst night of sleep, how often do you find yourself waking up during the night?
3. Do you find that you have a great deal of stress in your life?
4. Which position do you find yourself sleeping in most?
5. What activities do you engage in within an hour of sleeping?
6. Is your bedroom free from distractions (e.g., cell phone, tablet, TV)?
7. In a typical week, how often do you engage in moderate intensity physical activity for at least 20 minutes?
8. Do you have trouble with: falling asleep, staying asleep, waking up too early, waking up too late?
9. What temperature do you keep your bedroom?
10. If you were to sleep without interruptions or an alarm, how long would you sleep?
Appendix J

Sample Script (Confederate Condition)

Experimenter (E): Thank you both for coming to the study today. This study concerns a new relaxation technique that may help improve peoples’ sleep.

The study is composed of four main parts.

- The first will involve both of you completing some questionnaires today. This should take about 20 minutes.
- The second part of the study will involve a conversation between the two of you about choosing among a set of mental relaxation techniques for [PP]. At this point [Confed] will be done with the study.
- For the third part, [PP] will be performing the chosen technique before going to bed tonight. This will take about 10 minutes and must be done right before going to sleep.
- Finally, for the last part, [PP] will need to come back in tomorrow to complete a second packet of questionnaires that will take about 10 minutes.

To get credit for your participation you will need to complete all parts of the study – for [PP] this means completing all four parts and for [Confed] this means completing the task today. We ask that you do not begin the study today if
[PP__________________] cannot do the relaxation task tonight or if you can’t come back in at the time on SONA, as all of these parts are requirements for the study. Either I or another experimenter will be here tomorrow.

The final part of this study will be held in the same room as you are in now. So just come back to this room. You will get your experiment credit after you have completed your required sessions.

**Experimenter will pass out a consent form to the participants.**

E: Okay, the first thing we need to do is have you each read and sign an informed consent document. This is a university requirement that indicates you are ok with taking part in this study. Please ask me any questions you have about the document.

**When the participants are done collect the consent and say...**

E: At this point we will do some brief introductions. Since you will be working together later in the study it will be nice if you know a bit about the other person. If you each briefly introduce yourselves with your name, year in school, major, and what you are considering for a career, that would be great.

Confederate (C): Hi, my name is Jamie; I’m a junior here at UT. I am majoring in Business with the hopes of getting into Marketing at a firm around the area. I like to read
in my free time and have a part time job to gain some experience before facing the real world.

Participant responds.

After introductions…

E: Thanks! Now we have a series of questions for you to complete. [PP] will be doing this on the computer and [Confed_________________] will be using a paper version. We need you to carefully read the instructions over before answering any of the questions. It will take about 10 minutes or so.

Experimenter will direct the PP to a computer.

E: Go ahead and click “Continue.” Let me know if you have any questions.

When the participants are done…

E: Okay, now I will tell you both a bit more about this study. We are testing the possibility that certain forms of mental relaxation can enhance peoples’ sleep. Several prior studies suggest that mental relaxation techniques that can be beneficial. We are collecting data on these new relaxation techniques. Working together, we would like you to choose one of these techniques for [PP_________________] to try this evening. Feel
free to share whatever information you feel is necessary about sleeping habits, etcetera, to make a selection.

It is important to carefully select the treatment that fits [PP____________________] best. These techniques work differently for different individuals so you should think about how they may or may not work for you. Please carefully read through each technique and let me know when you have finished.

**Once they have finished reading say…**

E: On the reverse, you will find some questions that might be useful to discuss when selecting a technique for [PP____________________]. Take a few minutes to talk about how each technique might affect [PP____________________] using the questions as a guide for your conversation. Once you have discussed the options and found the one that suits [PP____________________] best, please place a mark next to the chosen technique. I will be on the other side of the partition when you are ready.

C: Just to make sure I’m understanding everything correctly, we are supposed to talk about the three sleep techniques and then s/he will end up choosing one to do tonight?

E: Yes, you will be discussing the sleep habits of [PP____________________] and selecting a treatment together.
Show participants the list of different relaxation techniques and then go to the other part of the room so they can discuss.

C: Okay, well, let’s see here. I guess we can start by going through a few of these questions. The first one asks “on your best night of sleep, how often do you wake up?”

[Let PP answer] C: Oh really? I usually wake up a few times even on a good night. That could be because there are other people living in my house. Do you have roommates or live with family?

[Let PP answer] C: Ah, I see. That can be rough/that’s nice. Do you have any routines before you go to bed? Like I usually watch the news, brush my teeth and such, and then finish up any reading for class the next day that I hadn’t finished earlier. What about you?

[Let PP answer] C: Gotcha. Do you think any of those things impact your sleep?

[Let PP answer] C: Yeah, it seems that when I read or do homework right before bed I tend to have dreams about that topic. Statistics dreams are not particularly restful!

Filler item. C: Ok, let’s look at these tasks again. Did the experimenter say if any of the tasks take longer than the others?
[Let PP answer] C: No? Ok, well, let’s see. Here’s a good one. What sort of sleep problems do you have? When I have a bad night I usually just wake up a lot, but my brother told me before that he gets the worst sleep when he dreams a lot.

[Let PP answer] C: So it seems like you (respond to their answer: find yourself lying awake/don’t feel rested/etc.). Which task do you think you are you leaning towards?

[Let PP answer] C: That sounds like a good one. (make some notes about the task they chose: sounds like it will help manage your thoughts/clear your head/etc.) Do you want to keep talking about it or let the experimenter know that we are done?

After two minutes have passed or when they let you know they are done, come back to the table and say…

E: Have you chosen a relaxation technique? Okay, great.

Hand the primary participant an envelope with the corresponding technique title.

E: Here is the instruction sheet for the relaxation technique that you chose. It includes a step-by-step description of your task for the evening. Please read the instructions over before we continue.

Give the participants time to read it over and then say…
E: As the sheet says you will be performing the ____[say the title of their task here]____ technique right before you go to bed tonight. It will take about 10 minutes. Do you have any questions? Okay, great.

We just have a few short questions for you both before you go.

**Hand a half sheet to the SP. Direct PP to the computer.**

**While they are filling out the last questions, take back the envelope and write their participant # in the bottom right corner on the back, and then say…**

E: We just need to keep track of the tasks, so don’t forget to bring the filled out sheet back tomorrow. Any questions before you go? Okay, great. Thanks for coming in [Confed_________________]. [PP_________________], we will see you tomorrow.