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Eva Kassel April 14th, 2015

Interpersonal Relationships, Cognitive Orientation and Medical Problem-Solving: The Effects of Empathy Priming on Medical-Problem Solving and Interpersonal Behavior

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Abstract

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The current study evaluates the literature between the effect of an empathy prime on cognition and pro-social behavior in students pursuing healthcare careers. First, participants were asked to fill out a set of questionnaires included measures of interpersonal relationships, dispositional empathy and completed a scramble-sentence task that either contained or did not contain the empathy prime. Second, participants were asked to go into the other room to solve a medical decision task; this part of the study also involved a confederate in the room who presented a minor stressful scenario to the participant. Hypothesis 1A tested whether those with secure attachment orientations were more likely to pursue primary over non-primary healthcare careers than those with insecure attachment styles. Hypothesis 1B predicted that those with low levels of anxiety and avoidance, and those with a secure categorical attachment style, would have higher scores across a measure of dispositional empathy. Hypothesis 2 predicted that those who received the empathy prime would receive higher verbal and non-verbal pro-social ratings and in the medical decision-making task scores. Hypothesis 3 evaluated whether attachment would moderate the effect of the prime, predicting that those with secure attachment orientations in the empathy prime group would receive higher verbal and non-verbal pro-social ratings and medical decision-making task scores. Sub analysis tested whether the four subscales of dispositional empathy would moderate the empathy prime. Significant differences were found showing that greater avoidance is related to lower empathic concern.

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Good medical care requires that a physician is attentive to a patient's emotional and physical state (Tan, Zimmermann, & Rodin, 2005; Ong , De Haes, Hoos, & Lammes, 1995). Effective patient-provider communication includes the ability to identify a patient's emotional distress and respond in a way that is aligned with the patient's needs (Cherry, Fletcher, & O'Sullivan, 2013). Patient-provider relationships are among the most complex interpersonal relationships as they are not voluntary and involve disclosure of intimate issues. Patients may feel highly intimidated, vulnerable, and may not explicitly express the anguish they are going through (Ong et al., 1995). However, they may hint at their distress and expect their healthcare provider to pick up on their concerns during appointments (Butow, Brown, Cogar, Tattersall & Dunn, 2002).

Healthcare providers should perceive and pick up on these cues through emotive discourse (Cherry et al., 2013). One study of doctors' responses to a cancer patient's scenario showed that only 28% of responses to emotional cues were appropriate. Lack of proper identification and response to cues can result in negative outcomes (Butow et al., 2002) including incorrect diagnoses, treatments or referrals to additional treatments, which may lead to an increase in costs for patients (Cherry et al., 2013). In addition, the interpersonal relationship between patient and doctor can be negatively affected, resulting in distrust and lack of patient satisfaction. Trust, provided through open and honest communications, is an essential component of the medical-decision making process. A study of hospitalized patients showed that 69% of patients preferred to be part of decisions regarding their treatment, showing shared decision making in the process (Ong et al., 1995).

Within the patient-provider literature, communication researchers differ in their opinions on how to define appropriate patient-provider communications. Psychotherapy researchers

argue for a 'client-centered' approach in which the efficacy of treatment consists of unconditional acceptance, warmth, respect and empathy. Within these conditions, researchers agree that empathetic doctor-patient relations are the most important (Ong et al., 1995). This involves verbal (i.e. eliciting feelings, listening, encouraging comments, etc.) and non-verbal behavior (i.e. communication of cues of emotion through the channels of facial expressions, body postures, movements,etc.); and creating an equal relationship between patient and provider in which reciprocal information is exchanged (Ong et al., 1995; DiMatteo, Taranta, Friedman & Prince, (1980).

Overall, a healthcare provider's understanding of a patient's emotional and physical needs plays an important role in forming an effective and therapeutic patient-provider relationship. Even though it is based on a reciprocal exchange of information, it is the doctor's responsibility to create a safe haven for the patient to provide the necessary information and behavioral response for proper treatment. Factors that influence the way a doctor relates to another individual in general may play a key role in his or her ability to relate to a patient (Tan et al., 2005). This may be related to a clinician's fear and sensitivity that would allow difficulties in such relationships to arise. A theoretical framework may help physicians tailor their approach and overcome these challenges. Attachment theory could aid physicians to accomplish a well- rounded relationship with their patient.

Attachment Style

Attachment is defined as the emotional bond between an infant and a primary caregiver based on the belief that the primary caregiver will provide support in times of need (Bowlby, 1969). This theory is based on the belief that a child forms a "working model" of attachment within the first year of life, through a caregiver's attunement and responsiveness to a

child's signals in stressful or anxiety provoking situations. Attachment is one of several interlocking behavioral systems, these include exploration, caregiving affiliation and sexual mating, and each of these have a different function and are activated differently in the environment (Hazan & Shaver, 1994). Attachment is the predominant system in infancy, and its activation consequently activates other systems. A child experiences secure attachment when the primary caregiver is fully available to respond to any threatening, anxiety-provoking situation, and in any of these cases, is able to reestablish proximity with the primary caregiver. The child, knowing that the primary caregiver is close, will engage in exploration and play (Bowlby, 1969).

However, if the primary caregiver does not serve as a secure base for the infant, the infant becomes emotionally unstable. Bowlby (1969/1973) points out two distinct features in these infants. First, infants experience crying, resistance to others' comfort and constant search. This is followed by sadness, passivity and ends in emotional detachment. In addition, infants experienced higher distress when experiencing loss. These children exhibited high levels of anxiety when separated and a greater need for physical comfort and assurance from a caregiver. Ainsworth, Blehar, Waters and Wall (1978) integrate these features in their classification of attachment styles. These consist of a secure attachment style and two types of insecure attachment styles: anxious/ambivalent and anxious/avoidant (Bowlby, 1980). An experimental paradigm called the "Strange Situation," was used to classify infant attachment style (Ainsworth et al., 1978). First, a mother and infant are taken into a room. Then, the parent does not engage with the child, while he/she explores. A stranger then enters the room, talks with the mother and then goes towards the infant; and the mother leaves the room. In this first

separation episode, the stranger's behavior is adjusted to that of the child. The parent then comes in, approaches the child and comforts him/her and then leaves again. In the second separation episode, the infant is alone. Then the stranger enters and adjusts behavior to that of the child. The parent enters the room once again greets the child, picks him/her up; and the stranger leaves. In this paradigm, infants with secure attachment engaged in exploration and play while the mother was in the room. When the mother left, the infant experienced distress, an expected reaction to loss. The moment the mother returned, the child was easily comforted by the mother. Anxious/ambivalent infants experienced more heightened levels of distress than secure infants and were not easily comforted upon the mother's return. Anxious/avoidant infants did not experience distress when the mother left the room and kept their attention directed towards the toys placed in front of them.

Even though the availability of the primary caregiver in this situation is short term, continuous inconsistent responsiveness by a primary caregiver, like long-term absence, results in higher levels of anxious and avoidant behaviors (Bowlby, 1973). In addition, Bowlby postulates that these repeated social interactions are the input the infant receives, what he or she learns, and what forms the infant's expectations of the relationship. These are known as "working models" of attachment, cognitive affective schemas of self and the environment (Bowlby, 1980). Within his theoretical claims, Bowlby says these "working models" of attachment that formulate early in life, transcend into adulthood (Bowlby, 1973). These internal "working models" are flexible and can change based on input from the environment, but the classifications of attachment across anxiety and avoidance remain stable and applicable in adulthood. Bowlby's theoretical claims about these working models of attachment have been integrated into research on stability of attachment orientation from infancy into

adulthood. K. Grossman, K.E. Grossman and Kindler (2005) conducted a longitudinal study on 49 people, following them from birth until they reached 22 years of age. The study assessed whether sensitive responsive experiences from parent-child interactions influenced adult attachment. In addition, they administered the adult attachment interview (AAI) when the participants reached 22 years of age. The authors of this study found that experiences with a parental figure during childhood predicted attachment behaviors in adulthood. Those with secure attachment styles had greater responsiveness with a parental figure and continued to receive these positive interactions later on in adulthood. Davila and Sargent (2003) conducted a study in which participants wrote in a diary for 8 weeks. The results showed that perceptions of greater interpersonal loss associated with life events were significantly related to greater insecurity on a day-to-day basis.

Research on adult attachment literature has focused on an individual's internal "working model" of attachment and perception of interpersonal relationships with a romantic partner, family friend, and most recently general attachment with "other" individuals (Fraley, Hudson, Heffernan, & Segal, 2015). One of the earliest studies on adult attachment by Hazan and Shaver (1987) outlines romantic relationships in adulthood. Those with secure attachment styles experience higher relationship satisfaction as they trust and receive higher overall need satisfaction from their romantic partner. Those with anxious attachment styles are fearful of losing their romantic partner, and are overly dependent. Those with avoidant attachment styles show detachment, low levels of emotional expression, caregiving and empathetic concern. A study by Feeney and Collins (2005) used self-report measures to study an individual's motivation to provide care for a romantic partner. The results showed that those with secure attachment styles were more likely to help because of altruistic reasons (i.e. reduce a partner's

suffering). Those with avoidant attachment styles reported more selfish reasons for providing help (i.e. receiving something in return). Studies that link attachment style to relationship quality with a romantic partner were found to be similar to relationship quality with a fellow peer at work. Towler and Stuhlmacher (2013) proposed that intimate relationship patterns of women with a romantic partner were similar to social interactions at work. The study assessed 209 working women across the United States. Results showed that women with avoidant attachment styles who experienced low-quality relationships at home, tended to have conflict at work and low-quality relationships with their supervisor. Women with secure attachment style showed cohesiveness with relationships at work and higher job satisfaction. The relationship between success in a working environment with fellow peers and attachment style has been evaluated among college students. Saferstein, Neimeyer and Hagans (2005) used self-report attachment style measures to assess the relationship between attachment style and friendship qualities in fellow peers among college students. They found that college students with secure attachment orientations showed a greater ability to overcome problems.

Within this body of research, the majority of psychologists use self-report measures to evaluate these attachment styles. However, the way researchers go about classifying attachment styles differs. Bartholomew and Horowitz (1991) create a four-category model across an axis of anxiety and avoidance with a positive and negative view of self and other. Those with secure attachment style show low levels of anxiety and avoidance. Individuals with preoccupied attachment styles have a negative view of self, and have high levels of anxiety and low levels of avoidance, as they cling and depend on others. Individuals with dismissing attachment styles have low levels of anxiety, holding themselves in high view but have high levels of avoidance. Those with fearful attachment styles, have high levels of anxiety and high

levels of avoidance. These individuals desire strong relationships but are wary of rejection and avoid opening up to an attachment figure. More recent research captures this spectrum of anxiety and avoidance using a continuous-variable approach that allows participants to have a score on each style or dimension on a continuous scale of these two attachment dimensions (Brenna, Clark & Shaver, 1998). Researchers argue that a continuous variable approach better encompasses an individual's degree of global attachment. However, a four-category approach continues to be used as a measure within the literature because of its effective categorization of participants into their best fitting attachment pattern (Holmes & Lyons-Ruth, 2006). For the purposes of this study both continuous and categorical measures will be used to evaluate participant attachment. Using these measures of attachment style, researchers have studied the link between attachment and interpersonal relationships between family, friend, romantic partner and other (Fraley, Heffernan, Vicary, & Brumbaugh, 2011). Within the general attachment style literature, some researchers have evaluated the link between attachment and patient-provider relationships. As stated previously, the current study is interested in attachment within the patient-provider literature; as this theoretical framework may influence a physician's fears and emotional perceptions, and may interfere with or facilitate the way they communicate with a patient.

Attachment Style, Physicians and Patient-Provider Relationships

Research has found a link between physicians' attachment and their behaviors as they relate to their healthcare practice (Ciechanowski, Russo, Katon & Walker, 2004; Berry et al., 2008). Among second year medical students, those whose close relationships were characterized by security were more likely than students who were less comfortable in close relationships to pursue primary over non-primary care in postgraduate training (Ciechanowski

et al., 2004). Students with secure attachment styles were more likely to choose primary care than those with more cautious, support-seeking or self-reliant attachment styles. Ciechanowski et al. (2004) also found that compared to those with a secure attachment style, students with a cautious and self- reliant style were more likely to choose non-primary over primary care. In addition, a physician's attachment style has been found to be associated with the quality of care with a patient. A study with twenty-two psychiatric staff members evaluated the relationship of attachment in forming proactive therapeutic relationships with their patients (Berry et al., 2008). Both psychiatric staff members and patients completed assessments that evaluated patients' interpersonal issues. In addition, psychiatrists completed a five-minute speech sample that was used to rate therapeutic relationships and a continuous self-report measure of attachment. Berry et al. (2008) found that higher avoidance ratings among psychiatrists were positively related to disparities in psychiatrist and patient ratings of patients' interpersonal problems. The study also found a link between low anxiety and avoidance in psychiatric staff and positive therapeutic relationships between provider and patient. Positive therapeutic relationships include clear communication skills and an ability to respond to a patient's cues and emotional distress. A study by Cherry et al. (2013) evaluated medical students' attachment style, using self-report attachment measures and their patient-provider communication skills, using a setting with simulated patients. The study found that medical students with high avoidance and anxiety were more likely to elicit simulated patients' cues to emotional distress than those with low avoidance and anxiety. Thus, a physician's interpersonal skills (i.e. caring, emotional intelligence and attention) contribute to the quality of relationship with a patient. The research outlined above highlights caregiving, creating a safe haven for the patient, and empathy, accurately perceiving others' emotions, playing an important role within patient-provider

relationships.

Recent research has shown associations between physician empathy and better healthcare outcomes (Ahrweiler et al., 2014). These outcomes include greater patient compliance and satisfaction, enhanced patient coping and better exchange of information between patient and healthcare provider. Because of its positive outcomes, healthcare institutions worldwide have made empathy an aim within the medical training field (Ahrweiler et al., 2014).

Attachment Style, Caregiving and Empathy

Within Bowlby's theoretical framework of attachment, the way in which close individuals' respond to others' personal distress plays a major role in emotional regulation and interpersonal relationships research (Bowlby, 1980). Even though attachment mainly deals with others' responses to one's needs, Bowlby (1969) suggests that attachment theory may have implications in research on one's reactions to others' personal distress. Furthermore, Bowlby argues that one's ability to attend to others' needs plays a role in the caregiving behavioral system, as one seeks care to attain attachment security. This caregiving behavioral system is biologically wired to supply safety and comfort, and is steered by an altruistic purpose to ease others' anguish. Mikulincer et al. (2001) argue that Bowlby's theoretical claims about the interaction of behavior systems, suggests that secure attachment could induce altruistic behaviors that push an individual to satisfy others' needs. Furthermore, they contend that Bowlby's propositions about the changes along the internal "working models" of attachment, give reason for an increase in empathy. Individuals who have enhanced positive models of self have a greater disposition towards others, as they do not engage in anxious and/or avoidant thoughts and behaviors. An enhanced positive model of others promotes other-

oriented behaviors and influences individuals to respond with greater empathetic reactions, as they act in a compassionate manner.

Empathy is the ability to place one's self in another's shoes, perceive others' emotional states and respond correctly. Empathetic concern is the stimulating impetus of pro-social behavior. External characteristics of empathetic individuals include compassionate and altruistic behaviors (Khodabash, 2012). Research has indicated the possibility that insecure attachment styles interfere in a negative manner with compassion in relationships with non-close attachment figures including members of the community and suffering strangers (Mikulincer & Shaver, 2007). Secure attachment to parents during adolescence has been positively associated with compassionate and empathetic responses to people in need (Laible, Carlo, & Rafaelli, 2000). Furthermore, studies show that avoidant people report less empathetic responses to other people's needs (Lopez, 2001). Avoidant individuals show lower communications with others, tend to be less cooperative with a distressed person and are less likely to offer help in a hypothetical scenario (Drach-Zahavy, 2004).

Individuals with anxious attachment styles show patterns of over involvement and intrusiveness in situations with people in distress. Anxiously attached behaviors are not conducive to proper responses, as they reported higher levels of distress in response to other people's distress, showing less effective help to people in vulnerable states. In addition, anxiously attached people reported higher levels of compulsive caregiving, providing assistance even when they are not asked for it (Fritz & Helgeson, 1998).

Overall, studies suggest that attachment security is related to greater compassion, willingness to help and increased involvement in altruistic activities. Avoidant attachment styles were related to low levels of compassion and altruism. Individuals with anxious

attachment styles do provide support, however due to personal distress, their helping behaviors create an uncomfortable environment. This research suggests that the ability to respond sensitively is conditioned on a person's attachment security because of how it may be linked to empathy. Attachment security provides a strong and active caregiving behavioral system that allows individuals to engage in empathic behaviors and help others in need. A person's ability to engage in altruistic behaviors involves a sense of interpersonal awareness about others' emotions and the joy that comes from helping others. A simple positive reminder might help individuals focus more on these interpersonal aspects.

Within the literature, researchers have evaluated the relationship between attachment and empathy on pro-social behaviors through experimental paradigms, including attachment activation and mood priming. Recent researchers have made use of attachment system activation tasks to evaluate the relationship between attachment orientations and pro-social behaviors (Mikulincer & Shaver, 2007; Mikulincer et al., 2001). Mikulincer et al. (2001) primed attachment security by having participants read a hypothetical scenario of a distressing story of a woman who loses her sister and then continues by asking questions about the story. The students in the priming condition expressed greater empathetic responses than those in the control group. Hertel and Fiedler (1994) examined the effects of evaluative priming in a social dilemma game in a group of undergraduate students. In this study, participants in the priming group were presented with a verbal learning task consisting of words with positive connotations of cooperation and negative connotations of competition prior to a four-person social dilemma game. Results showed that students presented with the empathy prime showed higher levels of cooperation and variability in decision-making than those in the control group. In a study by Westmaas and Silver (2001), individuals were taped while they interacted with a confederate

who thought he/she had been recently diagnosed with cancer. Avoidant and anxious attached individuals reported ineffective caregiving as expected. Avoidant individuals reported low levels of support and anxious individuals reported self-critical thoughts, signs of emotional over involvement. Thus, the research outlined above suggests that positive views of self and other enhance proactive behaviors that are conducive of empathetic behaviors.

Statement of the Problem

Based on previous literature showing the disparity in caregiving behaviors among different attachment styles, we propose that there might be differences in pro-social behaviors towards others for people with secure and insecure attachment styles. Research indicates that individuals with secure attachment orientations are able to engage in altruistic caregiving behaviors, as their low avoidant and low anxious nature allows them to be other-oriented. On the other hand, individuals who have high levels of anxiety are too concerned with what others think of them and are unable to perceive others' distress. Individuals with high avoidance disregard the positive view of other, and as a result lack trust and block interactions that require them to take an other-oriented perspective. Thus, one's interpersonal awareness allows an individual to engage in pro-social behaviors. Previous literature has shown that these interpersonal behaviors play an important role in patient-provider relationships; as patients look to their physicians for a safe haven for need satisfaction are able to engage in open and honest communications (Cherry et al., 2013). Need satisfaction to patient's distress includes the ability to perceive the patient's verbal and non-verbal cues and the ability to respond accordingly. Literature displays how insecure attachment is negatively linked to the above characteristics through disparities in perception of patient's distress (Berry et al., 2008). Pro-social behaviors include

perspective taking, perceiving one's distress and empathetic concern, being able to respond to others' needs. Recent literature has evaluated the effects of a prime on pro-social behaviors; showing greater interpersonal awareness when attending to a distressed individual (Westmaas & Silver, 2001). Inducing interpersonal awareness may have substantial positive implications for those pursuing healthcare careers; as it may overcome the challenge imposed by insecure cognitive affective schemas. The current study examines this gap in the patient-provider relationship, attachment and empathy literature by evaluating the effect of an empathy prime on cognition and pro-social behavior in students pursuing healthcare careers.

Hypotheses

Based on this literature, three hypotheses were made. In the first hypothesis we attempt to replicate the findings in the patient-provider literature by evaluating attachment and empathy in undergraduate students pursuing healthcare careers. This hypothesis consists of two parts. (A) We hypothesize that students with secure attachment styles will be more likely than students with insecure attachment styles to pursue primary over non-primary healthcare careers. (B) We hypothesize that students with low anxiety and avoidance scores will display greater scores of dispositional empathy than those with high avoidance and anxiety.

Second, we predict that those primed for empathy will show more interpersonal awareness on a cognitive medical problem-solving task and express more empathetic behavior to a peer showing distress than those assigned to a neutral control condition. Empathy is defined as the ability to perceive another person's distress and respond accordingly. In the cognitive problem-solving task interpersonal awareness is measured through pro-social ratings in a hypothetical patient-provider interaction. Empathetic behavior towards a peer will be

measured through ratings on a warmth-supportiveness dimension.

We also predict that attachment style will moderate the effect of the prime with those with secure attachment orientations who were primed for empathy exhibiting greater interpersonal awareness and concern towards a distressed peer. Since we are hypothesizing that those with secure attachment style will exhibit higher interpersonal awareness, a dominant attachment style construct is used to evaluate attachment style and its relationships to interpersonal awareness towards a distressed peer.

Methods

Participants

Fifty-two college students (6 male and 45 female) participated in the study. Participants ranged in age from 18 to 22, with a mean age of 19.69 (*SD* = 1.26). Initial count consisted of 55 students. However, three students were taken out of the study because one guessed the hypothesis, another did not finish the empathy prime and one did not follow study procedures. Inclusion criteria included being an undergraduate student at the university and wanting to pursue a career as a healthcare professional. Out of the 52 students included in the study 30.8% were freshmen, 30.8% were sophomores, 17.3% were juniors and 21.2% were seniors. When students were asked about their healthcare career track preference, 46.2% chose primary healthcare, 34.6% chose non-primary healthcare and 34.6% were undecided. Primary care included family practice, pediatrics and internal medicine. If participants cited physician or doctor in response to the health specialty question, they were coded as primary care providers. Non-primary care consisted of surgery, dermatology, geriatrics, gynecology, psychiatry anesthesiology, emergency medicine and pathology. As recruitment of participants took place mostly from science and pre-health departments, the majors of the sample were 84.6% science

degrees, 9.6% other majors and 5.8% nursing degrees. The race and ethnicity of the sample was 36.5% Asian/Pacific Islander, 13.5% Black or African American, 17.3% Hispanic or Latino, 26.9% White/Caucasian and 5.8% classified themselves as two or more races.

Procedure

Participants were recruited from the Chemistry, Biology and Pre-Health Departments at a southeastern private institution as classes within these departments are pre-requisites for many health-related fields. Face-to-face descriptions of the study were provided by the author at the beginning of class sessions and through postings on class blogs and the Pre-Health Mentoring blog. Participants were part of individual sessions in a 2-room laboratory. Prior to each participant trial, participants were randomly assigned to a control or experimental group by flipping a coin. Each participant was given a study code number and all information was de- identified. At the beginning of each session a description of the study was provided to the participant with written consent. During the study description, the co-investigator requested permission from the participants to audiotape the session. Participants were also given $10 for their participation in the study. As soon as the experimenter left the room, the participant filled out a packet of questionnaires that included a demographics survey, an attachment style questionnaire (the Experiences in Close Relationships-Relationship Structures Questionnaire (ECR-RS) and the Relationships Questionnaire (RQ)), a standardized questionnaire on dispositional empathy (the Interpersonal Reactivity Index (IRI)) and a scramble-sentence task that did or did not contain the empathy prime. After completing the packet, participants let the co-investigator, who was outside the laboratory, know they were done with that part of the study. The co-investigator then took the participant to another room and instructed him or her to read a medical vignette and answer a series of questions about the vignette. Participants

were asked by the experimenter to sit down, read the vignette, and complete the questions and then come to the other laboratory room once they were finished. The experimenter then turned on, and checked an audio recorder so that "there are no problems later on – we want to be sure to capture how you are thinking about the medical situation." A research confederate (trained research assistant) was sitting in the room with a similar audio recorder next to the desk and was completing the same medical-decision making vignette. After 2 minutes, the confederate interrupted the participant and asked for a pencil. Once the participant gave the pencil to the confederate, the confederate talked about the pencil not working and described a stressful personal situation. The stressful situation was of the confederate not passing a Graduate Record Examination (GRE) and having a fight with a parent. The interaction between the confederate and the participant lasted 5 minutes. After 5 minutes the co-investigator interrupted the confederate. If the interaction did not last more than 5 minutes, participants let the co-investigator know they were done. Participants were then debriefed. The study in its entirety took 30 to 40 minutes.

Scramble-Sentence Task. The empathy prime consists of a 12-item sentence scramble task with empathy synonyms is an adaptation of a measure used by Bargh, Chen, and Burrows (1996). The sentences varied from 7 to 12 words. The scramble-sentence task for the neutral condition includes words that are unrelated to empathy and to any other mood, and it is designed to be equivalent in length and complexity. Examples of words related to empathy included friendly, charity, warms, kindness and sympathy (see Appendix A1 and Appendix A2).

Confederate Script. The confederate stressor is a modification of a scenario of a victim facing a life crisis used to evaluate positive interpersonal actions (Westmaas & Silver, 2001).

In Westmaas & Silver (2001) the study is used to elicit attachment security. In this scenario, we were testing a person's responses to a confederate's personal crisis. The confederate presented the following scenario: "ujj… I just can't… seriously again? I can't … first flunking my GRE test, then getting a fight with my parents and now I can't even get the pencil to work so I can finish this. I just feel so dumb." Two minutes after the participant enters the room, the confederate asks for a pencil, acts as if the pencil is not working and presents this crisis. The interaction is audiotaped for five minutes. To assure consistency across the three confederates, training provided by the co-investigator was provided for all of them. Confederates were asked to memorize a script. The script also included a set of example responses that the confederate used in the conversation with the participant. After memorizing the script participants got trained in the laboratory were they where instructed to follow a set of behaviors. Prior to starting the participant trials, confederates started practicing with each other, one acting as a confederate and one as a participant so they could so how each of them acted out the scenario. Then participants were asked to sit down with the co-investigator and give each other feedback. Then pilot studies were conducted to test out the scenario. Confederates did not know the hypotheses of the study and were unaware of the participant's attachment styles, dispositional empathy scores and the assigned experimental condition.

Measures

The Experiences in Close Relationships-Relationship Structures Questionnaire (ECR-RS). The Experiences in Close Relationships-Relationship Structures (Fraley et al., 2011) is a short version of the ECR-R (Experiences in Close Relationships - Revised) used to measure dimensional attachment style. This self-report instrument is designed to assess anxious and avoidant attachment patterns in a variety of close relationships. The same 9 items are used

to assess attachment styles with respect to mother, father, romantic partner, best friend and people's general attachment styles. In the current study, only 9 items were used because we were targeting general attachment. Each item is measured on a Likert-type scale from 1 to 7. 1 being *Strongly Disagree* and 7 being *Strongly Agree.* Items that measure anxiety include "I'm afraid that other people may abandon me." Avoidance is measured by items such as "I prefer not to show this person how I feel deep down." The first 6 items on this scale tap into avoidance, 4 of these are reverse keyed, while the last 3 items tap into anxiety. The measure has a test-retest reliability (over 30 days) of approximately .65 (Fraley et al., 2011). In addition, the ECR-RS shows strong construct validity, supporting the application of the ECR-RS to assessing relationship-specific adolescent attachment structures (Feddern Donbaek & Elklit, 2014).

The Relationship Questionnaire. (RQ). Dominant attachment style was measured through Bartholomew and Horowitz's (1991) self- report categorical attachment prototype measure in which respondents are presented with 4 attachment styles (secure, fearful, preoccupied, and dismissing); and asked to rate how well the prototype describes them using a Likert-type scale from 1 being *Disagree Strongly* to 7 being *Agree Strongly.* Following these ratings, participants chose which description is most like them. For example, for secure attachment participants were presented with the following paragraph, "It is relatively easy for me to become emotionally close to others. I am comfortable depending on others and having others depend on me. I don't worry about being alone or having others not accept me." Studies have found to be consistent over an eight-month test-retest period (Scharf & Bartholomew, 1994). In addition, this dominant model of attachment has strong convergent and discriminant validity (Griffin & Bartholomew, 1994).

Interpersonal Reactivity Index (IRI). Cognitive and emotional components of empathy were measured using Davis's (1983) Interpersonal Reactivity Index (IRI) a 28-item

self-report measure. Items are evaluated on a 5-point Likert-type scale ranging from 0 being *does not describe me well* to 4 *describes me very well*. This measure yields 4 subscales, with 7 items each, that assess Perspective Taking (PT), Fantasy Scale (FS), Personal Distress (PD), and Empathic Concern (EC) respectively. Examples that measure these 4 subscales include "I daydream and fantasize, with some regularity, about things that might happen to me" FS, "I often have tender, concerned feelings for people less fortunate than me," for EC, "I believe that there are two sides to every question and try to look at them both," for PT and "I tend to lose control during emergencies" for PD. All of the subscales have satisfactory internal and test-retest reliability of .71 to .77 and .62 to .71 respectively (Brems, 1989). The measure also shows construct validity (Bartle, & Sabatelli, 1995).

Medical Decision-Making Task. The medical decision-making vignette was a modification drawn from a study by Burgess, Crowley-Matoka, Phelan, Dovidio, Kerns, Roth, Saha and van Ryn (2008). Participants are asked to rate using a 5-point Likert scale from 1 *not at all likely* to 5 *very likely* on how likely they are to take specific actions that address either medical or interpersonal aspects of the case (see Appendix B). Example actions include "Greet patient in the waiting room area" and "personally draw blood for laboratory tests". The measure yields both medical and interpersonal subscale scores. Participants initially completed 14 items. After reliability testing, items 8,9,10 and 11 were removed prior to data analysis because they did not vary across participants and were found to not account for the interpersonal and empathetic aspects of the medical decision-making vignette. The measure has a reliability of .79.

Manipulation Check: the manipulation check consists of 3 questions included in the medical decision-making task that talk about the complexity of the medical scenario,

participant's comfort level interacting with the patient, and severity of symptoms (see Appendix B). Participants are asked to rate each question on a 5 point scale. An example question includes "how complex is the medical scenario?" with a 5 point scale of 1 *not at all* to 5 *very complex*.

Pro-social Rating Scale. Confederates (rated verbal and non-verbal pro-social behavior) and coders (rated verbal pro-social behavior) were given a rating sheet and were asked to rate on a 5-point scale ranging from *not at all* (1) to *very much* (5) how warm and supportive the participant's reactions are (see Appendix C1 and Appendix C2). Example statements include "the participant attended to the upset confederate" and "the participant verbally expressed that the confederate was cared for." Coders and confederates were also given descriptions of certain behaviors to look for in each statement. For example, in the "the participant attended to the upset confederate" statement sample descriptions included "showing a look of concern" and "patted the confederate on the back." If the participant showed one of the reaction descriptions listed underneath each statement they would get a 2 rating. If participants showed 2 reactions they received a 3 rating, and so forth. Participants received a 1 if no response listed was exhibited according to the coder and confederate. An additional item that stated, "the participant judges the confederate for his/her emotional reaction" was also removed from the study as it had no variability. Coders rated the participants on 5-items as the first item consisted of non-verbal behavior. Confederates were given a 6-item rating sheet. The coders and confederates were unaware of the participant's attachment style, empathic levels and whether the participant received the empathy prime or not. As soon as the study ended, confederates rated the participant in the room by themselves to avoid influence by the co-investigator. Coders had the lab room with the audio recordings to

themselves to avoid external influence as well. Initial coding of audiotapes was done by a coder who was unaware of participant's attachment style, empathetic levels, experimental condition assignment and had not been a confederate in the study. Inter-rater reliability between the coder (who was not a confederate in the study) and confederate was of .14. Due to low inter-rater reliability, confederates coded randomly assigned audiotapes of studies they did not participate in to evaluate inter-rater reliability between them and the coder (who was not a confederate in the study). Inter-rater reliability between confederate and coder rating of audiotapes was of -.09. A review of the coder (who was not a confederate in the study) showed a reluctance to score above a 2 and over utilized the 1 rating. As a result of this, these ratings were excluded and pro-social ratings by the confederates were used to rate verbal behavior. Inter-rater reliability between coders (confederates rating audiotape of studies they had not participated in) and confederate ratings was of .42, showing moderate agreement between raters.

Data Analytic Strategy

Bootstrapping measures were used in the study. Bootstrapping is a computational intensive, non-parametric technique for making probability-based inferences about the population (Duval, 1993). This technique employs a large number of repetitive computations to estimate the shape of the statistical analysis of the sampling distribution. In the current study we use 10,000 repeated samples. These measures allowed us to make inferences where assumptions were untenable, as our sample was not normally distributed.

Results

Prior to hypothesis testing, preliminary descriptive statistics were calculated. When asked about their healthcare career choice preference, 46.2% reported wanting to be a primary

care provider, 19.2% reported non primary care and 34.6% reported being undecided on which path to take. Out of the 52 undergraduate students sampled self-reported categorical attachment styles were as follows, 53.8% secure, 26.9% fearful, 9.6% preoccupied and 9.6% dismissive. Reports of secure attachment are similar to those in the general population, rating secure attachment as the highest, 55.6% and preoccupied in the lower range, 11.8%. However, 13.2% of the general population reports fearful attachment style, which is much lower than the sample of the current study. The mean of avoidance and anxiety was 2.87 (*SD* = 1.02) and 3 .01 (*SD* = 1.69) respectively. The means of the fantasy, empathic concern, perspective-taking and personal distress scales were 2.57 (*SD* = .77), 3.46 (*SD* = .51), 2.88 (*SD* = .62) and 1.59 (*SD* = .70) respectively.

Hypothesis 1A: predicts secure attachment orientations were more likely to choose primary healthcare careers than insecure attachment orientations. A Pearson Chi-square test of independence revealed no significant association between dominant attachment and primary vs. non primary healthcare choice ($\chi^2(6, N=52) = 3.03, p > .05$) (Table 1).

Hypothesis 1B: Anxiety and avoidance are negatively associated with empathy across the 4 subscales of the IRI. In addition, hypothesis 1B predicts that students with secure attachment style would have higher scores across the 4 subscales of the IRI than the students classified as insecurely attached. Linear regression analysis revealed that level of avoidance significantly predicted empathetic concern ($\beta = -.58, p < .05$) (Table 2). Those with higher levels of avoidance reported lower levels of empathic concern. A one-way analysis of variance with planned contrasts of 3, -1, -1, -1 for secure, fearful, preoccupied and dismissive attachment styles respectively on the 4 scales of the IRI was not significant (Table 3).

Manipulation check: Prior to testing the primary hypotheses, 3 independent t-tests were

conducted to evaluate whether the empathy prime condition induced greater sensitivity to the patient portrayed in the medical vignette. No significant difference in the mean complexity scores for students randomly assigned to the empathy prime condition (M = 3.50, SD = .86, n = 26) and neutral condition (M = 3.12, SD = .91, n = 26) (t (50) = 1.567, p = .3123, 95% CI for mean difference -.11 to .88) . There was no significant difference in mean comfort scores between students assigned to the empathy prime condition (M = 4.23, SD = .514, n = 26) and the neutral condition (M = 4.15, SD = .834, n = 26) (t(50) = .400, p = .691, 95% CI for mean difference -.31 to .46). No statistically significant differences in mean severity scores were observed between students assigned to the empathy prime condition (M = 3.65, SD = .977, n = 26) and the control condition (M = 3.58, SD = 1.102, n = 26) (t(50) = .266, p = .791, 95% CI for mean difference -.50, to .66) .

Hypothesis 2: Participants primed for empathy will show more interpersonal awareness on a cognitive medical decision-making task and express more empathetic behavior to a peer showing distress than those assigned to a neutral control condition. No significant differences were found for the medical decision-making task scores between those assigned to the empathy prime condition (M = 4.55, SD = .42, n = 26) and the control condition (M = 4.35, SD = .54, n = 26) (t(50) = 1.435, p = .158, 95% CI for mean difference -.08, to .47) . No significant differences where found between the empathy prime condition (M = 2.22, SD = .70, n = 26) and the control condition (M = 2.32, SD = .59, n = 26) (t(50) = -.573, p = .57, CI for mean difference -.46 to .26) for the confederate ratings of pro-social verbal and non-verbal behavior . In addition, no differences were found between the empathy prime condition (M = 2.14, SD = .41, n = 26) and the neutral condition (M = 2.15, SD = .35, n = 26) (t(50) = -.07, p = .94, CI for mean difference -.22 to .20) for the coder ratings of interpersonal responsiveness expressed by participants when approached by the confederate .

Additional analysis were conducted to examine specific components of the medical decision-making task and the ratings of interpersonal responsiveness expressed by the participant when approached by the confederate found no significant differences. Even though no significance was found among individual items (Table 4), two items showed statistical trends. The medical decision-making item "discuss with patient reasons for dissatisfaction with prior medical care," was found to be higher among the experimental group (M = 4.69, SD = .62, n = 26) than the neutral condition (M = 4.23, SD = 1.07, n = 26) at the .05 level of significance ($t(50) = 1.91$, p = .06, CI for mean difference -.03 to .95) . The item "Review prior medical records with patient" had higher scores among the empathy prime group (M = 4.77, SD = .51, n = 26) than the neutral condition (M = 4.35, SD = 1.06, n = 26) at the .05 level of significance ($t(50) = 1.84$, p = .07, CI for mean difference -.04 to .87).

Hypothesis 3: Attachment style will moderate the effect of the prime with those with secure attachment orientations who were primed for empathy exhibiting greater interpersonal awareness and concern towards a distressed peer. A dominant attachment style construct Bartholomew and Horowitz's (1990) categorization of attachment style is used to evaluate attachment style and its relationships to interpersonal awareness towards a distressed peer. Although no statistically significant main effects were observed, it is possible that avoidance and anxiety moderated the impact of the empathy prime on interpersonal sensitivity and behavior. We also hypothesized that avoidance and anxiety on the ECR-RS would moderate the effect of the empathy prime; showing higher pro-social verbal and non-verbal ratings for those with low avoidance and anxiety in the empathy prime group. Analysis of covariance showed that anxiety and avoidance ECR-RS scores did not have significant interactions with the empathy prime or main effects on confederate ratings of interpersonal responsiveness when approached by a distressed peer, medical

decision-making task scores and the coder ratings of verbal interpersonal responsiveness from the participant to the confederate (Table 5). However, there was a statistical trend between avoidance and the empathy prime for the confederate audiotape ratings ($F(1,40) = 2.96$, $p > .05$). Participants in the empathy prime group with low avoidance scores had greater pro-social behavior scores for the coder's ratings of verbal interpersonal responsiveness from the participant to the confederate than those that did not receive the prime. Analysis of variance was used to evaluate whether categorical dimensions in Bartholomew and Horowitz (1990) moderated the effect of the prime for pro-social behavior scores on the confederate ratings, medical decision-making task and confederate audiotape recordings. Analysis of variance using contrasts between avoidance vs. non avoidance, anxious vs, not anxious and secure vs. insecure found no significant interactions or main effects on pro-social scores of confederate ratings, medical decision-making task scores and the confederate ratings of the audiotapes (Table 5).

Supplemental Analysis: Additional analysis of covariance, using the 4 subscales of the IRI as covariates, were added into the analysis for two reasons. First, previous studies have shown that therapeutic relationships between healthcare providers and patients are characterized by clear communications and an ability to perceive verbal and non-verbal cues of others' distress (Cherry et al., 2013). Perceiving verbal and non-verbal cues to others' distress are characteristics of empathy (Khodabakhsh, 2012). Second, statistical trends were found among the two items of the medical decision-making task which play into the perspective-taking component and empathic concern subscales of the IRI. Supplemental analysis predicted that the 4 subscales of the IRI will moderate the effects of empathy prime on confederate ratings of interpersonal responsiveness when approached by a distressed peer, medical decision-making

task scores and the coder ratings of verbal interpersonal responsiveness from the participant to the confederate. No significant interactions between the 4 subscales of the IRI and the empathy prime, or significant main effects of the IRI, on confederate ratings, medical decision-making task scores and coder ratings (Table 5). However, a statistical trend ($p < .10$) was found among the interactions between perspective-taking ($F(1,40) = 3.04$, $p > .05$) and the fantasy scale ($F(1,40) = 3.06$, $p > .05$) on medical decision-making task scores (see Table 5).

Discussion

Overall, the results of the study show a negative significant relationship between empathetic concern and avoidance. In addition, four statistical trends were found. First, results suggested a trend between the empathy prime and two components of the medical decision-making task. Second, a statistical trend was found in the interaction between the empathy prime and avoidance on the coder's ratings of verbal interpersonal responsiveness from the participant to the confederate. Third, a statistical trend was found among the interaction between the prime and the fantasy scale on the medical decision-making task scores. Fourth, a trend was also found between the empathy prime and the perspective-taking scale on medical decision-making task scores.

Descriptive statistics regarding healthcare career choice and attachment indicate that primary vs. non-primary healthcare career choices do not differ by attachment style in undergraduate students pursuing healthcare careers. The author of the current study wanted to determine whether undergraduates pursuing healthcare careers showed similar patterns to medical students. The results were not significant and suggest two interpretations. First, 34.6% of participants indicated being undecided on their healthcare career preference, showing that many students have not considered specialties. In addition, the majority of the sample consisted

of freshmen and sophomores who have just entered a college with a liberal arts education. At this stage in their college career, freshmen and sophomores are still exploring different areas, including their healthcare career interests. Second, many students referred to themselves as "pre- medical," defining themselves as students who are taking pre-requisites to enter medical school. Within their pre-medical education requirements, students receive education on general science subjects such as biology and chemistry, and do not go into in depth immersion of medical sub- specialties. In Ciechanowski et al.'s (2004) study participants consisted of second year medical students, who received in-depth knowledge courses and had chosen their designated area of healthcare interest. The only in depth area in undergraduate education is nursing. However, only 4% of participants were nursing students in the current study. In addition, the majority of students reported secure attachment styles, with very few reporting preoccupied or fearful attachment styles. A greater sample size of undergraduate students could provide a better distribution of attachment styles.

Hypothesis 1B partially confirmed findings in the literature. Results found that avoidance was significantly related to empathetic concern, showing that individuals with low avoidance engage in more communication and compassion with others. This is consistent with Mikulincer et al.'s (2007) argument that individuals who have positive views of self and other engage in other-oriented feelings and behaviors, such as concern and sympathy, for an individual that is feeling distress. This finding has special implications, as these undergraduate students want to pursue a career in healthcare where empathetic concern is important to be able to respond to a patient's distress in an adequate manner. The majority of the sample consists of students with secure attachment styles, indicating that many carry the ability to pursue other oriented behaviors. However, we only found significant findings for 1 subscale of the Inter

Reactivity Index, while previous literature found significance for anxiety and avoidance across the 4 subscales of the Inter Reactivity Index (Khodabash, 2012). In addition to statistical power, difference in findings may be due to using a shorter version of the ECR-RS. The current study uses a 9-item measure. Significant findings in the literature use the full item scale, which has been shown to be more robust measure.

Results from tests of the second hypothesis indicated that participants in the empathy prime condition did not have significantly higher verbal and non-verbal pro-social behavior as measured by confederate and coder, nor did they show greater interpersonal awareness on the medical decision-making task in comparison to the neutral condition. There are four interpretations that might help explain these findings. First, other studies have not attempted to prime empathy to induce pro-social behaviors. Previous studies suggest that empathy is related to a sense of security that influences an individual to be other oriented. In addition, activating one's sense of attachment security engages one's caregiving behavioral system (Bowlby, 1973). Mikulincer et al.'s (2001) study boosted attachment security by having participants read a story of a person of the same age and gender who has lost his or her keys and has a family member at home help him or her find them; and ends with the family comforting the individual with kindness and warmth. Then participants chose 14 adjectives that best related to their current mood. Second, the stressful scenario presented to the participants might not have been strong enough to elicit pro-social behavior. In Westmaas and Silver's (2001) study the confederate presented a scenario where he/she had just been diagnosed with cancer, which is a severe scenario and is very likely to induce a response from the participant. The confederate in the current study presented a scenario that might be considered minor, and not enough to distract the participant from the medical decision-

making task. During the debriefing, participants were asked about their experience in the second part of the study. The majority of participants talked about specific components of the medical decision-making task, but did not mention the confederate in the room. In addition, within the pro-social behavioral ratings by the confederates, additional notes were made on participants getting distracted by the pencil. This included having the participants try to fix the pencil for the confederate, but lose focus on the "minor" stressful scenario. Third, some participants' focus on the medical decision-making task may not have been on the interpersonal scenario. After the study, participants were asked about their experience solving the medical problem-solving task. Half of the students mentioned that they did not find the scenario difficult, but did not have enough knowledge and facts to know how to diagnose the patient, which may distract participants from the interpersonal scenario of the medical decision-making task. Even though no significant differences were found between the empathy prime and the neutral condition, high mean differences were found among two items of the medical-decision making task: "review prior medical records with patient" and "discuss with patient reasons for dissatisfaction with prior medical care." These two items fit into the perspective-taking component of empathy, as the undergraduate student pursuing a healthcare career envisions him or herself as a physician, and must adopt the psychological view point of their patients to better attend them. Furthermore, these items tap into the empathetic concern subscale as the participant, as a physician who engages in open communications with the patient, shows other-oriented feelings. Higher means were found among the empathy prime condition in both of these items. Previous studies have shown that therapeutic relationships between healthcare providers and patients are characterized by clear communications and an ability to perceive verbal and non-verbal cues of others' distress (Cherry et al., 2013). Thus, because of the significance found between avoidance and

empathic concern, the difference in means found among the two items of the medical-decision making task and the relationship between attachment, empathic concern and a greater ability to engage in proactive other-oriented behaviors, we pursued further analysis.

Results of hypothesis three found no significant interactions or main effects of anxiety, avoidance, secure vs. insecure attachment, avoidant vs, non avoidant and anxious vs. non anxious on confederate ratings on the pro-social scale, the medical decision-making task and the coder ratings of pro-social behavior. The study found statistical trends within the interactions between the empathy prime and perspective-taking, the interaction between the empathy prime and the fantasy scale, on the coder's ratings of interpersonal pro-social behavior from the participant to the confederate. These ratings are specific to verbal pro-social behavior, and may show a link between the empathy prime avoidance and pro social verbal behavior. Literature shows that avoidant individuals engage in lower communications with others, tend to be less cooperative with a distressed person and are less likely to offer help in a hypothetical scenario (Drach-Zahavy, 2004).

Overall, the findings above suggests that an individual's avoidance plays an important role in empathic other-oriented feelings and actions. In addition, the manipulation check revealed that the experiment did not work. Subsequent analyses predicting differences on confederate's ratings of interpersonal pro-social behavior from the participant to the confederate's distress, coder's ratings of interpersonal pro-social behavior from the participant to the confederate and the medical decision-making task showed no significant findings. In addition, no significant interactions and main effects were found among the empathy prime between attachment style and dispositional empathy scores empathy prime on the medical decision-making task and coder and confederate ratings of interpersonal verbal and non-verbal

pro-social behavior. Given the significant findings, the study suggests that individuals with low levels of avoidance are more likely to become other oriented and show compassion and sympathy for a distressed peer. This is in keeping with findings by Khodabakhsh (2012) study on attachment and empathy in nursing students.

Significance of findings

The current study has multiple implications for the general field of psychology and its separate studies of attachment, empathy and patient-provider communications. Although the majority of the findings did not find significant relationships among attachment and empathy, findings did provide support for the importance of studying avoidance and its relationship to empathic concern. The results of the study suggest that individuals with low levels of avoidance are more comfortable around others, and are better able to assess other oriented feelings of sympathy and concern for a distressed individual (Mikulincer, 2001). In addition, the study supports Bowlby's theoretical framework as an enhanced positive model of others promotes other-oriented behaviors and induces others to respond in a sympathetic and compassionate manner (Bowlby, 1973). Second, the study adds to the literature on attachment, empathy and patient-provider relationships as it studies undergraduate students pursuing healthcare careers. This may have substantial implications, as these students have already chosen to pursue a career as healthcare physicians. As healthcare physicians, students must be able to respond appropriately to a patient's vulnerability by perceiving their verbal and non verbal cues (Tan, 2005); which are factors that play into empathic concern. Therefore, studying attachment style and its relationship with empathy may have substantial implications as creating interpersonal awareness early on may help students engage in more pro-social behaviors. Third, no other study has attempted to prime empathy directly to induce

pro-social behaviors. Even though the empathy prime did not work in the current study, it introduces a new way to assess empathy, evaluating new ways to enhance pro social behaviors. In addition, empathy priming may play an important role in patient-provider relationships. Previous research has shown a relationship between empathy and greater and better healthcare outcomes including enhanced patient coping and better exchange of information; which is the reason why medical institutions worldwide have made empathy an aim in medical training (Ahrweiler et al., 2014). Fourth, even though the study did not find significant interactions between attachment and empathy on pro-social behaviors, it found near significant findings in the interactions between the empathy prime and perspective-taking for the medical decision making task; showing a positive interaction between the empathy prime and perspective-taking on medical decision-making task scores. Given its near statistical power, a greater sample could have shown a significant relationship; and a link between empathy and pro-social interpersonal components of patient-provider relationships.

Limitations and Suggestions for future research

There were several limitations of the study. First, the study has a low number of participants and an unequal distribution of men and women. Recruitment of participants is voluntary, many participants did not show up and we could not recruit enough given the time limit. Also, the majority of participants who volunteered to participate were women. Second, the majority of students are underclassmen, either freshmen or sophomores who have just entered college and have decided to pursue a pre medical undergraduate career track. Ciechanowski et al. (2004) chose second year medical students who are at a point in their healthcare career were they narrow down their subspecialties as healthcare physicians. Third,

the coding of verbal and non-verbal interactions was purely based on confederate ratings based on their experience with the participant and on ratings of audiotapes. In Westmaas and Silver's (2001) study the physical behavior ratings are based on watching videotape recordings of the interaction between the confederate and the participant. The current study did not use videotaping because it was decided that it would be an intrusive way to attain data. In addition, Westmaas and Silver (2001) had two different raters for the verbal component, based on audiotapes, and the non-verbal component, which was based on the video recordings, and allowed for more data on verbal and non-verbal behavior. Fourth, the length of the prime could have been a limitation in the study. In Bargh et al.'s (1996) study a 30-item scramble-sentence task was used to prime mood, which included more words related to the mood being primed. Fifth, in addition to the short length of the prime, the type of prime could have been a limitation. The type of prime used in the current study aims at creating awareness of empathy through synonyms, which could limit one's ability to engage in empathic behavior as they are not stepping into others' shows. In a study by Mikulincer et al. (2001) the participants were given a short story that talked about the personal distress a fictional same sex character that encountered a difficult situation that the participant could have encountered. Providing the participant with a situation that he or she could relate to, could have activated the person's empathy as they take into account another person's psychological view point, tap themselves imaginatively into "others' shoes" and feel sympathy and concern for others. Sixth, the stressful scenario the confederate presents to the participant could limit the participant's engagement with the confederate. In Westmaas and Silver's (2001) study, the confederate presented a scenario that involved being diagnosed with cancer, which is a scenario that is more likely to have someone become more empathic and engaged with the confederate. The

current study used a minor scenario to avoid major discomfort for the participants; which could not have been strong enough to distract the participant from solving the decision making task. Seven, the study was the first to use an empathy prime. This could have been a limitation because no other study has attempted to prime empathy, which limits how strong the measure could have been.

Given the limitations listed above, the current study proposes several suggestions for future study. First, the study did not have an equal distribution of men and women; as a vast majority of participants in the study were women. Future studies should recruit an equal amount of men and women or focus on a specific gender. Second, in attempting to replicate hypothesis one regarding attachment and its relationship between primary vs. non primary healthcare career choice, a different sample of undergraduate students should be sampled. Future studies should recruit upperclassmen, junior and seniors in college. These students are more likely to know what healthcare track they want to pursue as they are applying to medical, nursing, or graduate schools, and have had more exposure through volunteering, internship or research assistantship positions. Third, future studies should gather more data on verbal and non-verbal pro-social behavior such as videotape recordings. Fourth, future studies that attempt to replicate this study should use a more severe "personal distress" scenario on behalf of the confederate. Fifth, future studies should attempt to use another form of empathy priming. Sixth, the current study used a shortened version of the ECR-RS. The ECR-RS has shown to be a more robust measure. Future studies should use the full-item measure. Seven, future studies creating their own empathy prime should run additional pilot tests to assess the strength of the empathy prime.

Conclusion

In conclusion, the current study found few significant findings; showing that participants with low avoidance have higher empathic concern. This finding is in keeping with previous literature on attachment and empathy subscales. The manipulation check showed that the empathy prime did not induce greater interpersonal awareness on the medical decision-making task and the coder and confederate scores of verbal and non-verbal pro-social interpersonal behavior. The current study introduced the idea of priming empathy directly, which had not been introduced in the literature. Future research that attempts to replicate the study should use a different type of prime and different "personal distress" scenario.

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Table 1

Results of Chi-square Test and Descriptive Statistics for Healthcare Career Choice by Dominant Attachment Style

	Attachment			
HCC	Secure	Fearful	Preoccupied	Dismissive
Primary	13 (46.4%)	7 (50%)	2 (40%)	2 (40%)
Not-Primary	7 (25%)	2 (14.3%)	1 (20%)	0 (0%)
Undecided	8 (28.6%)	5 (35.7%)	2 (40%)	3 (60%)

Note. $\chi^2 = 3.03$, df = 6. Numbers in parentheses indicate column percentages. HCC = Healthcare Career Choice

*$p < .05$

Table 2

Summary of linear regression analysis between the four subscales of the IRI and the ECR-RS anxiety and avoidance scales and categorical attachment measures

	Perspective Taking Scale			Empathetic Concern			Personal Distress			Fantasy		
Attachment	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Anxious	-.06	.06	-.16	.06	.04	.19	.06	.07	.14	-.03	.08	-.06
Avoidant	-.07	.11	-.11	-.29	.07	-.58*	.1	.13	.14	.01	.14	.01

Note. * $p < .05$

Table 3
One-way Analysis of Variance of the four subscales of the IRI by Dominant Attachment Style

IRI Subscales	*df*	*F*	η	*p*
FS	3	.82	.05	.49
EC	3	1.43	.08	.25
PT	3	2.27	.12	.09
PD	3	.13	.01	.94

Note. FS = Fantasy Scale; EC = Empathic Concern; PT = Perspective Taking; PD = Personal Distress
*$p < .05$

Table 4
Independent T-tests of the Empathy Prime versus the Neutral Condition on Manipulation Check, Medical Decision Making Task, Confederate and Coder Ratings

	Empathy Prime								
	Empathy			Neutral					
	M	SD	n	M	SD	n	95% CI for Mean Difference	t	df
MDMT	4.55	.42	26	4.35	1.06	26	-.08 , .47	1.44	50
CR	2.22	.70	26	2.32	.59	26	-.46 , .26	-.57	50
CoR	2.14	.41	26	2.15	.35	26	-.22 , .20	-.07	50

Note. MDMT = Medical Decision Making Task; CR = Confederate Ratings; CoR = Coder Ratings.
*$p < .05$

Table 5
Analysis of Variance and Analysis of Covariance of the Empathy Prime, Attachment and Empathy measures on the Medical Decision Making Task, Confederate and Audiotape ratings

	CR				MDMT				CAR		
INT and ME	*df*	*F*	η	*p*	*df*	*F*	η	*p*	*df*	*F*	η
P X SVIS	1	2.15	.04	.15	1	.71	.02	.40	1	.04	.00
P X AVOVNAVO	1	2.30	.05	.14	1	.01	.00	.91	1	.35	.01
P X ANXVNANX	1	2.32	.05	.14	1	1.93	.04	.17	1	.24	.01
P X Anxious	1	.66	.02	.42	1	.09	.00	.77	1	.90	.02
P X Avoidant	1	2.1	.05	.15	1	.57	.01	.45	1	3.96	.08
P X FS	1	.08	.00	.78	1	3.04	.07	.09	1	.11	.00
P X EC	1	.23	.01	.63	1	.13	.00	.72	1	.7	.00
P X PT	1	1.39	.03	.25	1	3.06	.07	.09	1	.44	.01
P X PD	1	.04	.00	.85	1	2.08	.05	.16	1	2.44	.06
Attachment Style Contrast											
SVIS	1	.26	.01	.61	1	2.69	.05	.11	1	.09	.00
AVOVNAVO	1	1.32	.03	.26	1	1.82	.04	.18	1	.41	.01
ANXVNANX	1	.1	.00	.76	1	1.82	.04	.18	1	.01	.00
ECR-RS											
Anxious	1	.01	.00	.93	1	.35	.01	.56	1	.15	.00
Avoidant	1	.03	.00	.87	1	.90	.02	.35	1	.1	.00
IRI											
FS	1	.01	.00	.92	1	3.36	.08	.07	1	.18	.00
EC	1	1.40	.03	.24	1	.24	.01	.63	1	.08	.00
PT	1	1.05	.03	.31	1	2.35	.06	.13	1	.02	.00
PD	1	.01	.00	.91	1	.69	.02	.41	1	.28	.01

Note. Three-way and four-way interactions are not included in the table and were found to be non significant. INT = Interaction; ME = Main Effect; MDMT = CR = Confederate Ratings; Medical Decision Making Task; CAR = Confederate Audiotape Ratings; P = Prime; SVIS = Secure vs. Insecure; AVOVNAVO = Avoidant vs. Not Avoidant; ANXVNANX = Anxious vs. Not Anxious.

* $p < .05$

Appendix A1

Sentence-Scramble Task for Experimental Group

Cognitive Test: Linguistic Reasoning

Below are 12 scrambled sentences. Some are sayings that you may recognize and others are novel sentences. Please rearrange the words to produce a complete sentence. Write the answer in the space provided under each of the scrambled sentences.

Example: For the following scramble sentence: "better / than / receiving / giving / is"

The correct answer would be: "Giving is better than receiving."

Begin when ready.

1. people / are / friendly / great
2. disappear / makes / charity / fear
3. hearts / people's / other / warms / concern
4. talk / people / completely / when / listen
5. kindness / that / gather/ those / love / sow / who
6. look / see / what / mainly / on / depends / we / what / we / for
7. pleasure / joy / of / take / in / others / witnessing / the
8. feeling / is / much / too / feeling / better / nothing / than
9. in / shoes / people / the / walk / wisest / others'
10. life / eyes / helps / us / imagination / others' / experience / through
11. human / sympathy / everyone / truly / makes
12. who / those/ no / wings / have / imagination / have

Appendix A2

Sentence-Scramble Task for Control Group

Cognitive Test: Linguistic Reasoning

. Below are 12 scrambled sentences. Some are sayings that you may recognize and others are novel sentences. Please rearrange the words to produce a complete sentence. Write the answer in the space provided under each of the scrambled sentences.

Example: For the following scramble sentence "day / hot / a / very / is / today"

The correct answer would be: "today is a very hot day"

Begin when ready.

1. to / humans / like / walk
2. high / people / have / self-esteem / many
3. act / in / ways / mysterious / people
4. pumps / the / blood / working / heart
5. turned / in / yellow / leaves / the / a / fall / beautiful
6. like / great / meals / cooked / I / by / chefs
7. sleep / for / important / eight / soundly / to / it / hours / is / seven / or
8. like / bark / my / dogs / a / symphony / in / neighborhood
9. exercise / mind / reading / is / for / the
10. seeing / is / invisible / imagination / the / things / art / of
11. the / twice / book / read / people / some
12. way / begin / get / the / is / started / to / to / doing

Appendix B

Medical Decision-Making Vignette

A 65-year old male patient (JT) lives alone in an apartment. He receives little help from his family, with whom he has a distant relationship. JT has been suffering from coronary artery disease (CAD) for the past three years. CAD is the narrowing of small blood vessels that supply blood and oxygen to the heart. Because of this condition, JT has gradually developed a weakened heart muscle. JT has a severe cough, suffers from fatigue and faintness and has lost substantial amounts of weight as a result of low appetite. JT does not like to lie down as he experiences shortness of breath. In addition to the heart problem, JT has swollen feet, ankles and abdomen.

JT has been hospitalized under private care before for CAD. Even though some of the symptoms improved, JT's condition has recently worsened. JT reports that his decline in health is due to "poor treatment at the previous hospital." He states that even though he was given the right treatments at the hospital, he "did not receive the level of care from his primary physician" necessary for long-term resolution of his condition.

In light of this, JT has decided to change to another medical practice in order to improve the quality of care he receives from his primary healthcare provider. JT selects your practice and you, as a member of the practice, are preparing to meet with him for the first time. JT sent his medical records to the practice and has arrived for his appointment.

Here are some statements regarding the medical scenario you have just read. Using the following scale, please rate each statement using the indicated scale for each.

How complex is this medical scenario?

(1)	(2)	(3)	(4)	(5)
not at all	Not really/ somewhat complex	neither complex or not complex	complex	very complex

How comfortable do you feel treating JT?

(1)	(2)	(3)	(4)	(5)
not at all comfortable	somewhat uncomfortable	neither comfortable or uncomfortable	somewhat comfortable	very comfortable

Within JT's medical scenario, how severe are JT's non-medical problems in comparison to his medical problems?

(1)	(2)	(3)	(4)	(5)
not at all severe	somewhat severe	neither severe or not severe	somewhat severe	very severe

Now, a series of statements describing health care practices in outpatient settings are presented below. Using the following scales, please rate how likely you would be to perform each action in your patient session: (1) *not at all likely* (2) *not likely*, (3) *neither likely or unlikely* (4) *likely/somewhat likely* (5) *very likely*

Review Medical records prior to meeting with the patient.

(1) (2) (3) (4) (5)

Greet patient in the waiting room area.

(1) (2) (3) (4) (5)

Personally take a medical history of the current problem.

(1) (2) (3) (4) (5)

Review prior medical records with the patient.

(1) (2) (3) (4) (5)

Personally draw blood for laboratory tests.

(1) (2) (3) (4) (5)

Discuss with patients reasons for dissatisfaction with prior treatment/care.

(1) (2) (3) (4) (5)

Ask questions about friend and family relationships.

(1) (2) (3) (4) (5)

Prescribe medication for the patient.

(1) (2) (3) (4) (5)

Give patient information packet about CAD.

(1) (2) (3) (4) (5)

Recommend specialized physical therapy for CAD.

(1) (2) (3) (4) (5)

Recommend support group for CAD patients.

(1) (2) (3) (4) (5)

Invite patient to ask questions about diagnosis and treatment recommendations.

(1) (2) (3) (4) (5)

Telephone patient in one week to ask about symptoms and give lab results.

(1) (2) (3) (4) (5)

Schedule six-week follow-up to monitor symptoms and modify treatment, if needed.

(1) (2) (3) (4) (5)

Appendix C1

Confederate pro-social interpersonal verbal and non-verbal ratings of participant attending to confederate's personal distress

(1) (2) (3) (4) (5)
Not at All Very Much

A (2) rating shows that the confederate showed one of the actions in the this includes section listed underneath each statement.

A (3) rating showed that the participants showed 2 of the actions in the this includes section.

A (4) rating shows that the participant took 3 of the actions in the this includes section.

A (5) rating shows that the participant took 4 actions in the this includes section.

Please rate the following factors on a scale from *not at all* (1) to *very much* (5).

The participant attended to the upset confederate

(1) (2) (3) (4) (5)
Not at All Very Much

This includes:

(a) Showing look of concern
(b) Patted the confederate on the back
(c) The participant attentively looked at the participant
(d) The participant listened to the confederate intensively
(e)

The participant verbally expressed that the confederate was cared for

(2) (2) (3) (4) (5)
Not at All Very Much

This includes:

(a) "I don't want you to feel bad"
(b) "I'm so sorry"
(c) "If you need any help please let me know"
(d) "it's okay"
(e) "You will be alright, there's always a solution to everything"
(f) "This does not define who you are you can always do better next time"

The participant showed that he/she understood how the confederate was feeling

(1) (2) (3) (4) (5)

Not at All Very Much

(a) " I understand how you feel"
(b) "I know it's very stressful"
(c) " I understand where you are coming from"
(d) "It feels terrible when you put so much effort into something and it didn't work out"

The participant suggested something to cheer the confederate up

(1) (2) (3) (4) (5)
Not at All Very Much

(a) " What can I do to make you feel better?
(b) "Don't worry, there are more assignments and test which you can still do that will help you do well in the class"
(c) "Don't worry, you can always do better"
(d) "This does not define who you are, it's only an obstacle on the way"

The participant was sympathetic when the confederate was upset

(1) (2) (3) (4) (5)
Not at All Very Much

(a) " I'm sorry"
(b) "Don't worry, you'll feel better soon"
(c) "I can only imagine what you are going through"
(d) " It's very stressful and you have the right to feel this way"

The participant disregards what the confederate is saying

(1) (2) (3) (4) (5)
Not at All Very Much

(a) The participant changes the subject immediately
(b) The participant tells the confederate that she/he needs to go back to filling out the task.
(c) The participant interrupts the confederate as he or she expresses his crisis.
(d) The participant does not respond to the confederate's crisis
(e) The participant makes minimal conversation (i.e. "Ok," "Oh well," etc.)

The participant judges the confederate for his/her emotional reaction.

(1) (2) (3) (4) (5)
Not at All Very Much

(a) "It's not that big of a deal, you'll get over it"
(b) "It's not the end of the world"

(c) “It’s not worth crying over a test”
(d) “Well next time make sure to study differently”

Appendix C2

Coder pro-social interpersonal ratings of participant attending to confederate's personal distress

(3) (2) (3) (4) (5)
Not at All Very Much

A (2) rating shows that the confederate showed one of the actions in the this includes section listed underneath each statement.

A (3) rating showed that the participants showed 2 of the actions in the this includes section.

A (4) rating shows that the participant took 3 of the actions in the this includes section.

A (5) rating shows that the participant took 4 actions in the this includes section.

Please rate the following factors on a scale from *not at all* (1) to *very much* (5).

The participant verbally expressed that the confederate was cared for

(4) (2) (3) (4) (5)
Not at All Very Much

This includes:

(g) "I don't want you to feel bad"
(h) "I'm so sorry"
(i) "If you need any help please let me know"
(j) "it's okay"
(k) "You will be alright, there's always a solution to everything"
(l) "This does not define who you are you can always do better next time"

The participant showed that he/she understood how the confederate was feeling

(2) (2) (3) (4) (5)
Not at All Very Much

(e) " I understand how you feel"
(f) "I know it's very stressful"
(g) " I understand where you are coming from"
(h) "It feels terrible when you put so much effort into something and it didn't work out"

The participant suggested something to cheer the confederate up

(2) (2) (3) (4) (5)
Not at All Very Much

(e) " What can I do to make you feel better?
(f) "Don't worry, there are more assignments and test which you can still do that will help you do well in the class"
(g) "Don't worry, you can always do better"
(h) "This does not define who you are, it's only an obstacle on the way"

The participant was sympathetic when the confederate was upset

(2) (2) (3) (4) (5)
Not at All Very Much

(e) " I'm sorry"
(f) "Don't worry, you'll feel better soon"
(g) "I can only imagine what you are going through"
(h) " It's very stressful and you have the right to feel this way"

The participant disregards what the confederate is saying

(2) (2) (3) (4) (5)
Not at All Very Much

(f) The participant changes the subject immediately
(g) The participant tells the confederate that she/he needs to go back to filling out the task.
(h) The participant interrupts the confederate as he or she expresses his crisis.
(i) The participant does not respond to the confederate's crisis
(j) The participant makes minimal conversation (i.e. "Ok," "Oh well," etc.)

The participant judges the confederate for his/her emotional reaction.

(2) (2) (3) (4) (5)
Not at All Very Much

(e) "It's not that big of a deal, you'll get over it"
(f) "It's not the end of the world"
(g) "It's not worth crying over a test"
(h) "Well next time make sure to study differently"