TRUST AS A PREDICTOR OF EATING DISORDER SEVERITY AND THERAPEUTIC

ALLIANCE IN AN ADOLESCENT CLINICAL SAMPLE

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Trust is recognized as an important construct across many disciplines. Despite this recognition, trust has proven difficult to define and measure, due to its abstract nature and variety of properties. Economic exchanges have become the standard measure of behavioral trust. A recent version, the "Trust Game," provides a unique opportunity to examine behavioral trust in an interactive, interpersonal situation. The Trust Game has been useful in demonstrating patterns of trust behavior in several psychiatric populations. Currently, the Trust Game has yet to be examined with adolescents suffering from eating disorders (EDs). These individuals are at high risk for deleterious outcomes, including an increased mortality risk, and thus early intervention

and effective treatment are critical. Limited research exists on the role of trust in patients with EDs, and even less is known about the relationship of trust to factors important to treatment. The present study sought to address this gap in the literature by examining the relationship between behavioral trust and factors relevant to ED treatment, including attachment, self-reported trust, depression, ED severity, and the therapeutic alliance. This study also examined if behavioral trust predicts factors associated with treatment outcomes, including ED severity and therapeutic alliance, above and beyond depression. The sample consisted of 40 adolescents (ages 12-18) who were admitted to either inpatient or partial-hospitalization levels of care for an ED. Participants completed questionnaires and played the Trust Game with a computer simulated "healthy stranger." This pilot investigation found that behavioral trust was partially associated with attachment to parents, and only one aspect of the game related to self-reported trust. The results showed that higher overall game earnings explained unique variance in ED severity, after controlling for depression. Finally, this study found limited relationship between behavioral trust and the therapeutic alliance, although important aspects of the alliance were explored. The findings from this study increase our understanding of behavioral trust, as measured by the Trust Game, in adolescents with EDs and the relevance with factors important to the treatment of this population. Implications for clinicians, limitations of the methodology, and suggested areas for future research are discussed.

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LIST OF ABBREVIATIONS

AN	Anorexia Nervosa
BN	Bulimia Nervosa
EDNOS	Eating Disorder Not Otherwise Specified
CMC	Children's Medical Center
IBW	Ideal Body Weight
BMI	Body Mass Index
EAT-26	Eating Attitudes Test-26
QIDS-SR-16	Quick Inventory of Depressive Symptomatology (Self Report)
IPPA	Inventory of Parent and Peer Attachment
WAI-SF	Working Alliance Inventory - Short Form
GTB-LA	Generalized Trust Beliefs – Late Adolescence
OE	Overall Earnings on the Trust Game
ORR	Overall Repayment Ratio on the Trust Game
IRR	Initial Repayment Ratio on the Trust Game
HMR	Hierarchical Multiple Regression

CHAPTER ONE: INTRODUCTION

Statement of the Problem

Trust is viewed across research disciplines as a vague, yet important construct, particularly for its role in relationships (Hosmer, 1995). Given its elusive nature, investigators have made numerous and varied attempts to define and measure this construct. A behavioral method, called economic exchange, allows researchers to operationalize and evaluate trust as it manifests in actual interpersonal situations. Behavioral trust, as defined by Mayer, Davis, and Schoorman's (1995) integrative model, is when an individual actually takes a risk and depends upon the actions of another person. Presently, there is limited research on trust in interpersonal situations within psychological research (Simpson, 2007b). The Trust Game was designed to investigate social interaction, and in particular, the manifestation of behavioral trust. Differences in behavioral trust have been demonstrated with this game in various populations with psychiatric illness (King-Casas et al., 2005, 2008; Koshelev, et al. 2010). This iteration of the economic exchange provides a unique opportunity for examining the impact of behavioral trust on factors important to the treatment of mental illness. To date, the Trust Game has yet to be examined in an adolescent eating disorder population.

Individuals suffering from eating disorders have the highest mortality rate compared with all other mental illnesses (Arcelus, Mitchell, Wales, & Nielsen, 2011). Adolescent patients are in particular need for treatment due to the heightened risk for interrupted growth and development, as well as due to a poorer prognosis the longer the duration of illness (Powers & Santana, 2002; Keel et al., 2003). Attachment research has revealed that patients with eating disorders tend to have higher levels of insecure attachment (Zachrisson & Skarderud, 2010). Despite these findings, little is known about the role of trust for these patients, even though trust

is viewed as a core component to the attachment working model (Mikulincer, 1998). Initial

findings involving self-report measures implicate lower levels of trust in eating disorder

symptomatology and as a reason for premature dropout of treatment (Meyer & Gillings, 2004;

Juarez & Pritchard, 2012; Sly, Morgan, Mountford, & Lacey, 2013). A behavioral measure of

trust, such as the Trust Game, can provide robust information on trusting behaviors in this

population.

The present study will address these gaps in the literature by examining trust in an

adolescent eating disorder sample. The first part of this study will develop our understanding of

the information garnered by the Trust Game in this population, by assessing its relationship with

related constructs relevant to patients with eating disorders (i.e. attachment security, and self-

report of trust). The second and third parts of the study will examine the role that behavioral

trust has in predicting important factors in eating disorder treatment, including the severity of the

illness as well as the patient-therapist alliance, after controlling for depression. The findings

from this study will develop our understanding of the behavioral manifestations of trust in

adolescents suffering from eating disorders and could provide useful information on factors

important for the treatment of this high-risk population.

CHAPTER TWO: LITERATURE REVIEW

Trust

The construct, "trust," is recognized across business, economics, sociology, and psychology literature as an integral part of relationships and exchanges (Hosmer, 1995). Trust is difficult to define and measure, and thus, authors across disciplines have established various conceptualizations and components of trust relevant to their particular area of research. In psychology literature, trust is often viewed from either a dispositional or a dyadic perspective (Simpson, 2007b). Dispositional perspectives examine the general expectations one has for trusting others, developed from early trusting experiences, such as from one's attachment style. Dyadic perspectives examine how trust manifests in interpersonal situations, based on an interaction between qualities of both the trustor and the trustee. Literature on interpersonal trust often takes a dispositional perspective, which lacks the interactive components of dyadic views of trust. The present study will examine trust behaviors in an interpersonal context from a dyadic perspective, based on the "Integrative Model of Organizational Trust" (Mayer, Davis, & Schoorman, 1995). The following chapter will review the points above and describe how trust will be examined in the present study.

Definition and Historical Conceptualization Across Disciplines

Trust is a historically important construct across many disciplines, including business, economics, sociology, and organizational psychology research. Despite this recognition, trust is viewed as an "elusive" construct, which has proven difficult to define and measure (Yamagishi & Yamagishi, 1994). Authors from various backgrounds describe trust and components of trust differently, resulting in a vast and undulating conceptualization with little agreement over a clear definition (Hosmer, 1995).

There are many reasons for the disagreement on how authors conceptualize trust. One primary reason is that researchers vary on the aspect and type of trust they examine. McKnight & Chervany (2001) expounded on the wide-ranging approaches researchers take on trust. Trust authors focus on various related constructs when attempting to define trust, such as, trustworthiness, distrust (mistrust), and cooperation (Hardin, 2002; McKnight & Chervany, 2001). McKnight & Chervany (2001) explained that researchers view trust from the limited sight of their own lens – resulting in fragmented conceptualizations.

Another reason for the disagreement over defining trust is that researchers from different backgrounds view trust from the perspective of their own discipline. In business research, Morgan & Hunt (1994) described the importance of trust in the modern-day global market. They pointed out that companies and workers can no longer be aggressive competitors – in the current economy, they must trust and cooperate in order to compete. In their proposed commitment-trust theory, they described trust as "existing when one party has confidence in an exchange partner's reliability and integrity" and stated that trust lies at the core of all relational exchanges (Morgan & Hunt, 1994, p. 23).

In economics literature, trust has been implicated in areas across the field, such as roles in economic development and growth, and to inter-organizational transactions and investments (Sapienza, Toldra-Simats, & Zingales, 2013). Furthermore, economists are interested in the impact of "social capital," including the influence of citizens' trust in society on the economy (Glaeser, Laibson, Scheinkman, & Soutrer, 2000). Ashraf, Bohnet, and Piankov (2006) explained that trust relates to reciprocity, beliefs about trustworthiness of the other, and unconditional kindness.

Literature from a derivative of economics, game theory, focuses on models of strategic decision-making for game play (Cox, 2004). In game theory, it is assumed that reason and self-interest (not trust) guide the choices that individuals make in situations that involve the interests of another person or group (Krueger & Evans, 2013). A key concept includes the "Nash Equilibrium," which indicates that rational players will select the game playing strategy that maximizes their expected outcome in response to the other player's strategy (Camerer, 2003). This theory explains that individuals will not demonstrate trust or take into account the trustworthiness of their playing partner; rather, they will make the decision that is likely to provide the most personal benefits (Sanfey, 2007). This model's predictions, however, do not always match up with reality. Much research has demonstrated that individuals are not limited to selfish desires in game play and they generally do value social variables, such as trust and reciprocating.

Social scientists view trust as fundamental to social structures, including families, couples, parent-child relationships, managers and employees, and institutions (Khodyakov, 2007). In his widely cited sociology article, Gambetta (1988) described trust as the expectation that another person or group will follow through on a desired action. Furthermore, trust involves (perhaps unconsciously) assessing the probability that the trustee will carry out the desired action, and that the personal potential benefits outweigh the risk. Conversely, if the potential for harm is high, and/or the trustee will likely disappoint, this leads to a determination that they are untrustworthy – and, thus, not worth the risk.

As outlined above, trust has been historically conceptualized in a multitude of ways, depending on the particular background and area of interest of the author. In addition to the areas of business, economics, and sociology, trust has been investigated in psychological

research. Similar to trust research in other disciplines, psychologists have developed varying

conceptualizations when describing this construct.

Study of Trust in Psychology

Trust is implicated as a highly desirable component of relationships (Rempel, Holmes, &

Zanna, 1985). Simpson (2007b) expands this notion, stating, "[trust] may be the single most

important ingredient for the development and maintenance of happy, well-functioning

relationships" (p. 264). Despite this knowledge, limited research has examined trust in

relationships as an independent construct in the field of clinical psychology.

In psychological research, trust in relationships is often examined from two primary

approaches: *dispositional* (general views one has for trusting others) and *dyadic* (involving

characteristics of both the trustor and the trustee that lead to trust in a specific relationship)

(Simpson, 2007b). One overarching construct that psychological researchers use to understand

dispositional trust is attachment theory. This theory describes how individuals develop general

expectations to trust others in current and future relationships, based on their internal working

models.

History of attachment research. John Bowlby's attachment theory (1969,1973, 1980)

has become a primary framework for understanding the development and maintenance of

interpersonal relationships (Fraley, Vicary, Brumbaugh, & Roisman, 2011).   Attachment theory

explains the impact of an infant's bond with their caregiver on future relationships throughout

the lifespan. This theory involves a complex, instinctual attachment behavioral system displayed

by infants due to the biological need to keep their mother, or primary caregiver, close (Karen,

1998). These behaviors, such as "crying, sucking, smiling, clinging, and following" were found

to initially manifest before an attachment with a caregiver existed, and then became centered around the caregiver as the attachment developed (Ainsworth & Bowlby, 1989; Bowlby, 1958).

Mary Ainsworth furthered the work on attachment theory by establishing particular styles of attachment that can arise in children. After analyzing the reactions of infants and their mothers in the now famous "strange situation," Ainsworth and colleagues identified that infants developed either a secure style of attachment, an avoidant insecure style, or an ambivalent-resistant insecure attachment style (Ainsworth & Bell, 1970; Ainsworth & Bowlby, 1989).

Secure attachments developed when the caregiver (the mother, in the case of the strange situation) was generally responsive to the infant's cries or other signals. These infants were easily soothed if upset, and they were able to use their mother as a secure base from which to explore the strange situation.

Ambivalent-resistant attachments stemmed from primarily inconsistent responsiveness by their mothers. These infants were often clingy and upset upon their mother's absence, but were difficult to calm and often rejecting of the mother upon her arrival. They also displayed difficulty using their mothers as a secure base, and thus, struggled to explore their new surroundings.

The third category, avoidant attachment, appeared in infants whose mothers were largely insensitive and unresponsive to their needs. These infants appeared as independent of their mothers and did not seek her comfort when upset. They also did not use their mothers as a secure base for exploration.

The development of internal (or attachment) working models comprises the foundation of attachment theory. Bowlby (1973) described that individuals develop mental representations of the self, others (particularly the attachment figure), and the world, based on their repeated interpersonal interactions with attachment figures. These mental representations, or the internal

working model, lay the foundation for how individual's will think, feel, and behave in future

relationships (Bowlby, 1973; Mikulincer, 1998). In the case of individuals with insecure

attachment styles, their negative mental representations may lead to poor thoughts of the self,

such as being undesirable, and a maladaptive view of others leading to relational difficulties

(Bretherton, 1991). Bowlby's work emphasized the role of negative internal working models in

contributing to later psychopathology and interpersonal dysfunction (Bowlby, 1977; Blatt &

Levy, 2003). Trust plays a key role in developing and maintaining internal working models, and

in return, these models have implications for whether or not one will trust in future relationships.

Dispositional trust & attachment. Dispositional trust, or the general views one has

toward trusting others, is often understood from the lens of attachment theory. Bowlby (1988)

described in his theory of attachment that humans develop best when they are confident in the

responsiveness of a trusted caregiver or partner. Securely attached infants have learned to trust

that their attachment figure will respond to their needs (Simmons, Gooty, Nelson, & Little,

2009). In 1998, Mikulincer explored how a person's sense of trust relates to their attachment

style. He found that securely attached adults reported more trust toward their partners, than

insecurely attached individuals. Additionally, secure individuals differed in their appraisals of

events involving trust, such that they viewed trust-validating (rather than trust-violating)

occurrences as a stable reflection of their partner. Similarly, securely attached individuals were

better able to cope with trust violations. Mikulincer (1998) concluded that trust seems to be a

fundamental component to the attachment (or internal) working model.

Simpson (2007b) described that individuals with secure attachments will have positive

working models, which will encourage the development of trust in relationships over time.

Specifically, securely attached individuals will be more able to appreciate their partner's pro-

relationship behaviors and integrate this into their view of his/her trustworthiness. In contrast, those with insecure attachments will have negative working models, which will decrease their ability to acknowledge and integrate their partner's trustworthy behaviors.

Dyadic trust: separate from attachment style. Although trust has been found to be a key component of attachment, this dispositional view of one's relatively stable attachment style (and internal working model) does not capture the dyadic components that are inherent to trust in interpersonal contexts (Simpson, 2007a). Wieselquist, Rusbult, Foster, and Agnew (1999) conducted two longitudinal studies, which demonstrated that trust in relationships is not solely dependent on attachment style. Their findings revealed that trust can be engendered by a partner's pro-relationship behaviors, such as making sacrifices for the good of the relationship. The authors explained that trust in interpersonal situations is not merely a stable construct, but rather, manifests as an attribute that is unique to a specific relationship, with the specific partner in said relationship. This points out that trust, as it manifests in interpersonal relationships, is a unique and possibly more malleable construct than one's attachment style, as it can be encouraged or discouraged by certain interpersonal behaviors.

As already described, authors from various disciplines define trust differently and examine varying components of trust. These studies tend to capture a one-dimensional view of trust, which is based on the author's research lens and the aspects of trust pertinent to their particular field. In the field of psychology, authors tend to examine trust from either a dispositional or a dyadic perspective. Additional literature examines *multidimensional trust*, which is an attempt to integrate the various conceptualizations and components of trust identified by authors across disciplines.

Integrating Trust Findings: Multidimensional Trust

Researchers have attempted to integrate previously fragmented trust findings, such as those described above from various disciplines, into more integrated multidimensional views. For organizational conceptualizations, Hosmer (1995) explained that part of the reason for wide-reaching conceptualizations is the differing contexts in which researchers examine trust. In an attempt to consolidate conceptualizations, Hosmer reviewed the various organizational definitions of trust based on the following contexts: personal expectations, relationships, economic transactions, and social constructs. He also uniquely incorporated the more rarely studied context of ethical principles, for conceptualizing trust. After reviewing and integrating these definitions, Hosmer proposed the following:

> Trust is the expectation by one person, group, or firm of ethically justifiable behavior – that is, morally correct decisions and actions based upon ethical principles of analysis – on the part of the other person, group, or firm in a joint endeavor or economic exchange. (Hosmer, 1995, p.399)

This definition was an initial attempt at integrating traditional organizational perspectives on trust, with ethical perspectives.

Rousseau, Sitkin, Burt, and Camerer (1998) described a multidisciplinary view of trust, which continues the work on multidimensional trust to consolidate trust findings from various disciplines into an overarching conceptualization of trust. These authors explained that regardless of the discipline, a common theme amongst trust definitions includes "confident expectations and a willingness to be vulnerable" (Rousseau et al., 1998, p. 394). They proposed the following definition of trust, to link cross-discipline conceptualizations, "Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, p. 395).

These attempts at integrating trust findings highlight that trust is best conceptualized from a multidimensional perspective (rather than limiting to narrow components), which incorporates findings from across disciplines. The present study will examine trust as it manifests in an interpersonal context. Research on interpersonal trust has typically focused on one-dimensional conceptualizations of trust, rather than more multidimensional views.

Interpersonal Trust

Interpersonal trust, or trust in a relationship context, has similarly suffered from the lack of a multidimensional definition, as has the general construct of trust. An early and widely used definition, given by Rotter in 1967, describes that interpersonal trust is the "expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon" (p.651). Rotter explained that trust is crucial for the survival of communities.

In support of this view, research shows that interpersonal trust fosters closeness, faith in relationships, forgiveness, and motivation to sacrifice for the greater good of the relationship (Schneider, Konijn, Righetti, & Rusbult, 2011; Rusbult, Kumashiro, Coolsen, & Kirchner, 2004). Schneider and colleagues (2011) conducted a 5-wave longitudinal study with 187 couples examining the relationship between trust and health. Their findings showed a significant relationship between trust in one's partner and report of physical health. Similarly, associations were found between levels of trust and depressive and anxiety symptoms – such that higher trust related to decreases in psychiatric symptoms. Furthermore, the results showed that level of trust in one's partner at an earlier time-point was a significant negative predictor of mental illness and physical symptoms at a later point. These findings implicate interpersonal trust as important for both physical and mental health.

Rotter (1967) asserted that the lack of trust in relationships contributes to problems individuals have with others in society, relationships, and even in the effectiveness of therapy. Rotter's popular definition, although adding much to the field, described a one-dimensional view of interpersonal trust and glossed over the interactive nature of trust in interpersonal situations. A new multidimensional perspective, the "Integrative Model of Organizational Trust," would be proposed in 1995 to capture the interactive dyadic characteristics inherent to interpersonal trust.

Integrative Model of Organizational Trust

The present study will focus on trust as described by Mayer, Davis, and Schoorman's 1995 integrative model. Originally created for organizational research, this model focuses on how individuals must depend upon others to reach personal and professional goals. This implicates trust in interpersonal situations as an inherently dyadic construct – meaning that characteristics of both the "trustor" and the "trustee" interact to lead to trust. The integrative model (Mayer et al., 1995) incorporates four primary components: *propensity to trust*, *trustworthiness*, *trust*, and *behavioral trust*.

Propensity to trust. Propensity to trust is described as the "generalized expectation about the trustworthiness of others" (Mayer et al. 1995). This component involves a more stable, personality trait aspect of trust (Mayer et al., 1995; Colquitt, Scott, & LePine, 2007). In Russell Hardin's chapter (2002), "The Epistemology of Trust," he offers the following suggestion: "If we wish to understand trust for real people, we will have to understand the capacity for trust…a capacity that must largely be learned…" (p.113). Hardin further explained that this capacity, or propensity to trust, colors how we approach new interpersonal situations – and whether or not we are skeptical or open to trusting from the start of relationships. Webber, Payne, and Taylor (2012) applied the integrative model in their study examining trust in the relationship between

customers and service providers. They controlled for a customer personality trait – agreeableness – as an aspect of the individual's propensity to trust. Findings from this study demonstrated that more agreeable customers had greater trust in the service provider's competency, indicating that certain personality traits do elevate one's propensity to trust. Variations in environmental upbringing and early trusting experiences will shape one's propensity to trust others (Mayer et al., 1995). However, as propensity to trust is just that – a propensity - it does not comprise the entirety of trust.

Trustworthiness. Another crucial component to the integrative model is the perceived trustworthiness of the trustee (Mayer et al. 1995). Trustworthiness refers to characteristics of the trustee that engender or ward off trust. A variety of attributes are identified across the literature on trustworthiness, and thus, Mayer and colleagues (1995) combined these findings into three over-arching qualities: perceived ability, benevolence, and integrity. Ability refers to the trustee's perceived competence or skills in the area of interest. Benevolence suggests the trustee is acting for the good of the trustor, without the motivation of secondary gain. Finally, integrity indicates that the trustee's values are aligned with those of the trustor. Examining trustworthy characteristics has shed light on factors that contribute to individual's trusting others. In 2012, Byrne, Pitts, Wilson, and Steiner found that supervisory support mediated between fairness and trust in one's supervisor. These results show that both fair treatment and perceptions of support are important indicators of a trustworthy supervisor. Trustworthy attributes of the trustee are important to study (in addition to the other aspects of the integrative model) in order to identify a complete understanding of the dyadic process of trust.

Trust. These characteristics, propensity to trust and trustworthiness, lead to *trust* – defined as the willingness to be vulnerable to the actions of another individual, based on an

expectation that the trustee will perform an action favored by the trustor. A key distinction in this view, compared to historical conceptualizations, is the emphasis on vulnerability. The authors explain that an individual's willingness to take risk, or to be vulnerable to the actions of another, constitutes trust.

Behavioral trust. Trust manifests behaviorally in relationships when one actually accepts a risk, and depends upon the actions of the trusted other. Behavioral trust is a key construct that demonstrates an individual's actual trust, beyond their intentions or willingness to trust. Clegg, Unsworth, Epitropaki, Olga, and Parker (2002) examined trust and behavioral trust from this conceptualization (a willingness to be vulnerable for an expected benefit results in accepting a risk) in the work place. They found that individuals who believed they would benefit from taking a risk were more likely to take such a risk by making a suggestion. Also, individuals who believed they would be taken seriously were more apt to implement an idea. These findings demonstrate the key role of trust, a willingness to be vulnerable, in actual manifestations of behavioral trust – taking the risk.

The integrative model (Mayer et al., 1995; Colquitt et al., 1007) describes interpersonal trust as involving both dispositional – stable, trait quality (attachment-related), and dyadic – mutable situational state (impacted by relational variables) components. The model's inclusion of a "propensity to trust" reflects the dispositional, stable expectations to trust others in interpersonal situations, whereas manifestations of trust in relationships or, "behavioral trust" are influenced by characteristics of the other person, or their "trustworthiness." When one's partner demonstrates that they understand your needs and take extra steps to meet such needs, this demonstrates their trustworthiness and engenders trust (Simpson, 2007b; Reis & Shaver, 1990). As trust can be engendered in particular relationship situations, it appears to have a malleable

quality – not only a stable, dispositional characteristic such as one's attachment style. Due to this quality of malleability, trust appears as a construct suitable for clinical interventions. Despite these findings that trust in relationships has dyadic, rather than just dispositional qualities, limited research has explored such dyadic qualities of trust in interpersonal situations (Simpson, 2007b). In particular, there is a need for increased understanding of the role of trust as it manifests behaviorally in relationships among clinical populations.

Summary & Conclusions

The construct trust persists as an important area of research across many disciplines, despite its history of varied conceptualization. Researchers have pointed out the importance of establishing multidimensional definitions of trust, to prevent missing key components that are often overlooked in more narrow one-dimensional conceptualizations (Mayer et al., 1995; Simpson, 2007b). Trust is recognized across disciplines as a central component to healthy relationships. In part due to the complex history of conceptualizing and measuring trust, there exists limited research on the unique role of trust in interpersonal situations in psychology literature (Simpson, 2007b). Interpersonal trust has often been viewed from a one-dimensional perspective, which tends to focus on dispositional (one's general views to trust others) rather than dyadic (both trustor and trustee) characteristics of trust in the relationship context. Dispositional trust is frequently examined as a key part of the "attachment" construct, playing a strong role in the development and maintenance of secure attachment and lending individuals to having greater propensities to trust in future relationships. In interpersonal contexts, trust has also been found to have malleable properties, due to the dyadic nature of relationships. Importantly, trust can be engendered by pro-relationship behaviors or sacrifices, beyond the influence of dispositional traits, such as one's attachment style (Wieselquist et al., 1999).

Mayer et al.'s (1995) integrative model utilizes a multidimensional view, as it pulls together characteristics of both the trustor and the trustee (a dyadic conceptualization) that are essential to the development of trust in interpersonal situations. Propensity to trust highlights the trustor's generally stable expectations for placing their trust in others – an attribute that develops from earlier trusting experiences. As for the other person, their appearance of trustworthiness, based on their perceived ability, reliability, and integrity, contributes to whether or not they are trusted. Finally, these two components result in one's intentions to trust. These intentions then manifest in behavioral actions of trust, after taking into account perceived risk. The present study will focus on this behavioral trust, as explained in the integrative model – "one must take a risk in order to engage in trusting action" (Mayer et al., 1995). This study will seek to expand the current understanding of the relationship of behavioral trust as it manifests in interpersonal situations in a clinical population.

The Trust Game

Issues with Measurement of Trust

Mayer and colleagues' model (1995) suggests that trust is a dynamic process involving aspects of the trustor, one's propensity to trust, and assessment of the trustworthiness of the other individual (the trustee). Self-report measures of trust fail to capture this interactive process, but rather, examine one aspect of the integrative model - propensity to trust. These questionnaires tend to assess expectations or intentions to trust, rather than behaviors that reflect trust in specific situations. A widely used measure of propensity to trust is Rotter's (1967) Interpersonal Trust Scale (Colquitt et al., 2007). Largely due to disagreement over the conceptualization of trust, many authors utilize Rotter's measure as a general measure of trust, leading readers to confuse trust propensity with trust behaviors – or when one actually takes a risk and depends upon the

trustee. Even more concerning is the popular use in economics research of a few or even a single-item self-report measure, such as: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" This question is found in the National Opinion Research Center's General Social Survey (GSS), a popular measure for assessing trust and social economics for the United States (Evans & Revelle, 2008). In addition to this singular aspect of trust lacking robust information, it also limits the study of trust to individual's intentions – rather than measuring real behaviors of trust.

In 2009, Ahmed and Salas studied the relationship between survey and behavioral measures of trust across several countries. Importantly, their findings showed that "no single survey item predicts actual trust across all countries" (Ahmed & Salas, 2009, p. 460). Glaeser and colleagues (2000) examined the predictive power of attitudinal measures of trust to behavioral trust. They had 258 Harvard undergraduate students fill out survey measures, and 195 participated in a behavioral trust game. The results indicated that attitudinal surveys do not seem to measure behavioral trust, rather, they predict trustworthiness.

Self-report measures align with the "propensity to trust" and perceived "trustworthiness" from the Integrative Model. These measures frequently elicit an individual's expectations or intentions to trust or their perceptions of the trustee as having trustworthy characteristics. Although this data is important for understanding propensity and perceptions of trustworthiness, it does not capture the behavioral manifestations of trust – which are necessary for understanding trust as it manifests in real interpersonal interactions.

Economic exchange & behavioral trust

Given the importance of understanding trust as it relates to interpersonal interactions, a behavioral trust game was created to measure behavioral manifestations of trust in relationships,

which commonly used self-report measures could not fully assess (only propensity and trustworthiness). The economic exchange – now a widely popular measure of behavioral trust – was originally introduced by Berg, Dickhaut, and McCabe in 1995 for economics research. The original economic exchange, or investment game, involved two anonymous partners. Partner A decided how much of their initial $10 received to give to Partner B. This amount tripled, and then Partner B decided how much of the tripled amount to return to Partner A. The authors discussed how game theory would predict that the initial sender would keep all of the money, due to being unfamiliar with the behaviors of their partner. Despite this unfamiliarity, 30 of their 32 Partner A subjects sent money to their counterparts. To explain this behavior, the authors turn to an evolutionary perspective - describing that in order to survive we must be primed to trust others to reciprocate within our social constructs. The authors also found that participants tended to reciprocate positive, or trustworthy behaviors (repayments), and also punish negative behaviors (withhold), even at a personal cost.

Behavioral Trust

Berg et al.'s "trust game" and the numerous iterations have become the standard behavioral measure of trust (Brülhart & Usunier, 2012). These games elicit behavioral trust, which Mayer et al.'s (1995) integrative model defined as when an individual actually takes a risk and depends upon the actions of the trustee. These economic exchange games are used across disciplines, with researchers highly interested in examining variables that influence trust and trustworthiness (Evans & Revelle, 2008).

These games also assess strategies that people use to engender trust – or to appear trustworthy. For instance, Fett et al. (2012) compared behavioral trust in patients with psychosis, healthy relatives at a higher risk for the disorder, and healthy controls while playing a multi-

round economic exchange game. They found that individuals suffering from psychosis had an impaired ability to engage in trusting behaviors and to respond to signals of trustworthiness from their playing partner. The relatives had a similar difficulty in trusting, however, they showed more flexibility in responding to trustworthy cues from their partners. The game results demonstrated what is seen in reality for individuals affected by psychosis – a limited ability to trust others and to perceive and react to social signals. Trust behaviors are a critical and common experience in interpersonal situations. As demonstrated in the Fett et al. study, economic exchange games have implications for evaluating behavioral trust in clinical populations, and its relationship to real life social situations.

Trust Game

Although trust has been defined and measured in a variety of manners for a range of disciplines, it has not received the necessary attention in psychological research (Simpson, 2007b). In particular, the standard measure of interactive, behavioral trust - economic exchange games - has a limited presence in studies focused on clinical populations.

Behavioral trust in interpersonal situations has recently emerged as an important, burgeoning area of study for neuroscience research, with implications for clinical diagnosis. King-Casas and colleagues in 2005 first introduced the "Trust Game," a new version of the standard economic exchange, in order to examine behavioral and neural responses when people engage in an interactive social trust task. The game was subsequently adapted for use with several different psychiatric populations.

The Game involves a multi-round computer-based economic exchange, where pairs are instructed to play the role of the investor or trustee. The Game can also have one participant play against a "trustworthy stranger" (i.e. a computer simulated, standardized stranger). The players

take turns investing and repaying their partner. During the first round, the investor determines how much (if any) of $20 to give to the trustee. The trustee then receives three times that amount and must decide how much to repay to the investor. The players are instructed to earn as much as possible during the 10-round game, and they are informed that their actual payment will be scaled based on their game earnings ($5 - $25).

The Game operationalizes trust as "the amount of money a sender gives to a receiver without external enforcement" (King-Casas et al., 2005, p.78). The multi-round format of the game provides an opportunity to examine participant's neural responses to both their own behavior as well as their partner's actions (Tomlin et al., 2006). The measure gathers data on individuals' trusting behaviors, as well as strategies players use to engender trust in their partner. Of particular interest are the patterns of behaviors used after initially receiving a payment, including repayment behaviors, as well as overall effectiveness on the game – including overall earnings. Individuals with lower levels of trust (as operationalized above) were found to be less willing to take risks by reciprocating (King-Casas, et al., 2005, 2008). For example, individuals with Borderline Personality Disorder (BPD) reported lower levels of trust on the Interpersonal Trust Scale and they were found to repay less than healthy controls on the Trust Game. The BPD patients demonstrated a decrease in repayments from initial to later rounds of the game as compared to healthy individuals (King-Casas et al., 2008). This led to a significant decline in investments for the patients vs. healthy group across rounds of the game, resulting in decreased overall earnings. This pattern indicates a breakdown in cooperation across the game, which the authors describe as likely due to social signals delivered by the patients on their repayments. Overall, the authors concluded that the patients with Borderline PD demonstrated lower levels of trust in their game play than healthy individuals. The present study will examine behavioral trust

by the following: 1) The amount of repayment relative to the amount available on the first round, 2) The average amount of repayment relative to the amount available across all rounds, and 3) The overall earnings on the game.

King-Casas and colleagues recently demonstrated the usefulness of these games in identifying unique patterns of trust in various psychological disorders (King-Casas et al., 2005, 2008; Kosehelev, Lohrenz, & Vannucci, 2010). They explained that healthy individuals play the game by assessing what is "normal" and fair for each investment, being sensitive to the partner deviating from these normal behaviors, and responding effectively to any such deviations. For individuals with psychopathology, their ability to perceive normal social cues (i.e. behaviors that engender trust in this case) and to respond in kind is often impaired.

In all, Trust Game researchers found significant clustering of patterns of playing behaviors for individuals with BPD, Attention-Deficit/Hyperactivity Disorder (AD/HD), Autism Spectrum Disorder, and Major Depressive Disorder. For example, when playing the Trust Game, patients with Borderline Personality Disorder showed a deficient ability to trust their partners, displayed by low levels of cooperation and coaxing (King-Casas et al., 2008). Adolescents with Autism-Spectrum Disorder seemed to determine their current round investment primarily based on the exchange from one round prior – suggesting their limited capacity to be sensitive to previous reciprocal behaviors from their partner (Koshelev et al., 2010). In games that involved healthy investors and trustees with Major Depressive Disorder, the investments were very high and the repayments were also elevated as compared to other clusters. In other words, the MDD participants appeared to be more generous with their partners than other clinical groups. Finally, the playing patterns of children diagnosed with AD/HD significantly clustered

into a 4th group and demonstrated similar game play patterns to the majority of healthy

individuals.

These findings have important implications for the utility of the Trust Game in

classifying key, even overlapping diagnoses, without reliance on DSM criteria. This work

demonstrates potential for using the Trust Game to understand the interpersonal and dynamic

aspects of trust, including behavioral trust and trustworthiness, for clinical populations. To date,

the Trust Game has yet to be used with adolescent patients with eating disorders.

Summary & Conclusions

Mayer et al.'s 1995 integrative model of trust captures the dyadic, interactive components

of behavioral trust. This model goes beyond previous conceptualizations of trust, which focused

on singular aspects of trust, such as just characteristics of the trustor. Integrating characteristics

of both the trustor and the trustee develops a richer and more authentic conceptualization of what

transpires in real life trusting behaviors in relationships. Similar to Mayer et al.'s model,

economic exchanges games measure the dyadic, interactive components of behavioral trust. This

robust behavioral measure evaluates aspects of both playing partners, revealing both trustor and

trustee characteristics, whereas self-report measures fail to capture attributes of both partners and

the culmination into behavioral trust.

The present study will incorporate Mayer et al.'s integrative model into conceptualizing

trust as measured by the Trust Game. This game is a multi-round iteration of the historical

economic exchange, which has been used with patients with psychiatric disorders.   The first

component of Mayer et al.'s model (1995) *propensity to trust* (general expectations to trust) will

be assessed by self-report questionnaires. Then, the Trust Game will incorporate the

trustworthiness (characteristics that engender trust) of the partner, or trustee. For the purposes of

this study, trustworthiness will be standardized across participants, such that participants will play a computerized "healthy stranger." Healthy refers to the stranger's trustworthy behaviors – the stranger will reciprocate and coax their partner throughout the game, just as a typical healthy individual would play. Finally, the Trust Game will elicit information on the culmination of propensity to trust and trustworthiness, which is *behavioral* trust. Participants will demonstrate trusting behaviors in the amount that they repay relative to what they were given by their partner, and in their overall effectiveness on the game via total amount earned.

The robust assessment of behavioral trust with the Trust Game, involving trustworthiness strategies and trusting actions, is a large improvement over the limited information gathered from self-report measures. Researchers have demonstrated the Trust Game's usefulness in establishing unique patterns of trusting behaviors in psychiatrically ill patients (King-Casas et al., 2005, 2008; Kosehelev et al., 2010). This game has implications for understanding the role that behavioral trust plays in clinical populations. The present study will utilize the Trust Game to examine behavioral trust based on Mayer et al.'s integrative model with a clinical population of adolescents with eating disorders.

Eating Disorders

Individuals suffering from eating disorders represent some of our most at-risk patients, given that they have the highest mortality rate of any mental illness and they struggle with treatment resistance and relapse. Adolescents, in particular, are in critical need of early and effective treatment given that an eating disorder during the developmental years can stunt growth and have major medical repercussions for the remainder of the lifespan.

The literature on attachment in eating disorder populations clearly indicates that these individuals suffer from higher rates of insecure attachment, than healthy individuals. This

suggests that dispositional trust (general expectations to trust others), a key component to the attachment working model, is also lower in these individuals. However, limited research exists on examining trust as a unique construct in the eating disorder population. Furthermore, attachment research gathers information primarily on dispositional aspects of trust, but additional information is needed to expound on the role of dyadic trust in this population. Finally, a measure of behavioral trust, such as the Trust Game, has yet to be studied with adolescents with eating disorders. The present study will seek to address these gaps in the literature and to expand our understanding of behavioral manifestations of trust in interpersonal contexts for adolescents with eating disorders.

Eating Disorders & Prevalence

Eating Disorders are among the most severe of all the psychiatric disorders. Individuals with eating disorders are at an increased risk for death, with Anorexia Nervosa having the highest mortality rate of all mental illnesses (Arcelus, Mitchell, Wales, & Nielsen, 2011). Specifically, sufferers of eating disorders have a standardized mortality ratio, or a level of mortality, that is up to 5 times greater than their healthy counterparts. The present study will focus on three primary eating disorders: Anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified (American Psychiatric Association [APA], 2000, 2013). Diagnoses were based on the Diagnostic and Statistical Manual of Mental Disorders (DSM). As enrollment primarily occurred prior to the release of DSM-5, patients that did not meet criteria for AN or BN received the ED NOS diagnosis from DSM-IV-TR.

Anorexia nervosa (AN) is characterized by the restriction of necessary energy intake, resulting in a body weight that is significantly low for what is minimally normal (APA, 2013). In children and adolescents, significantly low is defined as weight below what is minimally

expected. Determining what is "minimally expected" can be challenging for this younger population. Recommendations include considering the patient's BMI-for-age percentile as well as any failure to achieve their expected growth trajectory. AN typically involves an intense fear of weight gain or becoming fat. Some sufferers, particularly children and adolescents, may not be aware of or acknowledge this fear. In light of this situation, diagnosticians must evaluate collateral, historical, and observational data to determine if there is a fear of weight gain, or identify persistent behaviors that interfere with weight gain when the individual is at a significantly low weight. Patients with AN also exhibit disturbance in the experience of the shape or size of their body, excessive influence of one's weight or shape on self-esteem, or a consistent lack of recognizing the serious nature of their significant low body weight. Subtypes of AN include the restricting subtype, consisting of patients whose weight loss occurs from limitation in food intake, and binge-purge subtype, consisting of patients whose weight loss occurs both from limitations of food intake and recurrent binge eating or purging episodes.

This disorder is prevalent among 0.4% of young females with typical onset in adolescence or early adulthood (APA, 2013). The estimated gender ratio of AN is 10:1, female to male. The course and prognosis of anorexia are variable; the majority achieves remission within 5 years of onset, while those hospitalized have a decreased chance of remission. The crude mortality rate (CMR) for these patients is about 5% per decade, with patients most often dying from medical complications of anorexia or suicide.

Bulimia nervosa (BN) involves recurrent episodes of binge eating, with the associated feature of a "lack of control" during the episode (APA, 2013). Additionally, patients with bulimia engage in unhealthy compensatory or "purging" behaviors aimed at preventing weight gain, including vomiting, laxative abuse, diuretics, fasting, or over-exercising. Bulimia is also

characterized by an excessive influence of the body's weight and shape on self-evaluation. The prevalence rate of young females with this disorder is 1-1.5%, with onset also occurring in adolescence or early adulthood. The gender ratio for bulimia nervosa is 10:1, female to male. The course of bulimia has high variability involving both chronic and intermittent presentations. Individuals with this disorder are at a heightened risk for death, with the CMR for patients with bulimia nervosa found at almost 2% per decade.

Eating disorder not otherwise specified (ED NOS) involve presentations that do not meet full criteria for the abovementioned eating disorders (APA, 2000). An example includes individuals who meet most criteria for anorexia, except their significant weight loss has not resulted in an underweight status. Another example of an ED NOS diagnosis involves individuals who chew large quantities of food without swallowing, and then spit it out.

Eating Disorders in Adolescence

Adolescents with these disorders are at a critical period for treatment, as the average onset is approximately age 12-13 and prognosis worsens with the length of illness (Swanson et al., 2011; Sullivan, 1995; Keel et al., 2003). Swanson and colleagues (2011) explored the prevalence and correlates of eating disorders in a sample of 10,123 adolescents (aged 12-18). They found 12-month prevalence rates for AN and BN were 0.2% and 0.6%, respectively. The findings showed that adolescents with BN were more likely to exhibit suicidality, than those with AN. Patients with AN demonstrated more severe impairments in their social functioning. This study found cultural differences across eating disorders, including that Hispanic participants had the highest rates of BN. Although most adolescents with eating disorders did receive mental health, school, and/or general medical services, most did not get treatment focused on their eating disorder. The authors described a possible reason for this lack

of integrating eating disorder specific services is that the adolescent clients may have denied their eating difficulties. Additional reasons include the embarrassment or stigma associated with eating disorders, or clinicians overlooking eating disorder symptoms and treating other areas of attention.

Eating disorders in the early years can be particularly detrimental due to frequent medical complications. Adolescence involves a period of significant growth, which can be interrupted by the effects of an eating disorder (Powers & Santana, 2002). In AN, severe growth retardation and delay of natural puberty onset (or interruption) may occur (Powers & Santana, 2002). Due to starvation, patients with AN develop symptoms that are in effect working to reduce metabolic expenditure (Klein & Walsh, 2004). For example, blood pressure and heart rate are typically low, and the thyroid hormone T3 (triiodothyronine) shows reduced levels. Amenorrhea (delayed or interrupted menstrual cycle) ensues from hypothalamic dysfunction, including a decline in estrogen and progesterone. Furthermore, there is evidence of osteopenia (reduction in peak bone mass), and abnormal structural changes to the brain early on in the course of anorexia (Powers & Santana, 2002). In light of these severe complications, treatment for AN must focus immediately on weight restoration to hopefully restore or mitigate the effects (Klein & Walsh, 2004).

Adolescents suffering from BN tend to experience medical complications similar to adult patients (Brewerton, 2002). Engaging in frequent vomiting places these patients at high risk for electrolyte imbalance and gastrointestinal bleeding (Bryant-Waugh & Lask, 1995). Purging can also result in severely damaged dental enamel (APA, 2013).

In addition to physical complications, individuals suffering from eating disorders often experience social problems. Adolescence marks a period of development in which the role of peer relationships becomes increasingly more important (Sullivan, 1953). In light of this salient

role of friends, researchers have found that peer pressure to be thin is a predictor of disordered

eating behavior and body esteem in adolescent girls (Lieberman, 2001). Furthermore, Buchholz

et al. (2007) found that adolescent girls with eating disorders who also suffered from social

anxiety reported higher levels of body dissatisfaction. Girls with social anxiety also reported

greater difficulties with expressing negative thoughts or affect. The authors discussed how this

tendency to internalize negative experience, or to engage in "self-silencing" behaviors, seemed

to be an attempt to meet social ideals of a "good woman" (Buchholz et al., 2007, p. 162). Self-

silencing during this critical period of development, can lead to adolescents not getting their

needs met in relationships. This has particularly detrimental implications for adolescents with

eating disorders, as they are in critical need of social support, but they may not voice their

struggles.

Not only does incurring an eating disorder early in life increase an individual's mortality

risk, but it can result in devastating physiological consequences and social impairments, as

described above. Due to the findings that adolescents with eating disorders do seek health

services across disciplines, it is imperative that clinicians use these opportunities to provide

treatment for these patients (Swanson, et al., 2011). Rome et al. (2003) warn clinicians that since

adolescents commonly will not complain of eating disorder symptoms, it is up to the provider to

recognize subtle cues, and intervene early before a full-blown eating disorder

ensues. Furthermore, early intervention is critical for this population as recovery becomes more

difficult the longer the disorder endures (Rome et al., 2003).

Eating Disorders & Attachment Research

Regarding trust, not much is known about the unique role of trust as it relates to eating

disorder severity. As described above, trust is typically considered to be synonymous with the

paradigm of attachment in psychology literature, and is often examined under this umbrella construct.

In eating disorder research, attachment is a prolific area of study. This literature overwhelmingly demonstrates that patients with eating disorders have a higher preponderance of insecure attachment than healthy individuals (Zachrisson & Skarderud, 2010). An early attachment study examined attachment and separation distress in 27 hospitalized patients with eating disorders, as compared to healthy controls (Armstrong & Roth, 1989). The findings demonstrated that patients with eating disorder had more maladaptive reactions to separation and impaired attachments. More recent work shows that insecure attachment with mothers predicted higher rates of dietary restraint, eating worries, and body shape and weight concerns a year later in a sample of 601 preadolescents (Goossens, Durme, Decaluwé, & Bosmans, 2012). Research also shows that individuals with greater levels of attachment anxiety (or insecurity) have worsened eating disorder symptoms and a poorer prognosis, regardless of the type of eating disorder (Illing, Tasca, Balfour, & Bissada, 2010). Attachment insecurity in patients with eating disorders was found to predict body dissatisfaction, a factor that works to bring about and sustain eating pathology (Abbate-Daga et al., 2010; Troisi et al., 2006).

Furthermore, categories of eating disorder diagnosis are linked with specific attachment styles. Patients with BN tend to have more preoccupied or ambivalent attachment insecurity, whereas those with AN more often demonstrate dismissive or avoidant styles (Zachrisson & Skarderud, 2010). Insecure attachment involves a disturbance in the manner in which emotions are expressed (due to past experiences of negative or limited responses to their emotions), resulting in the development of maladaptive coping strategies in response to emotions (Tasca et al., 2011). Eating disorder symptoms may be a manifestation of such coping strategies – such

that individuals with avoidant attachment styles restrict both their emotions and their food intake; those with ambivalent attachments may binge or purge in reaction to intense and unregulated emotions.

Given that insecure attachment is known to be overrepresented in patients with eating disorders, and that trust is viewed as central to attachment working models, it is likely that these patients have greater difficulties trusting others. Limited research has examined how trust specifically relates to eating disorders, including the role of trust in relation to clinically relevant constructs. The present study will address this gap in the literature by examining trust and how it relates to important constructs for treatment in adolescents with eating disorders.

Eating Disorders & Trust Research

Although trust is minimally studied in the eating disorder literature, there exists some initial findings on the potential role of trust for this population. Cunha, Relvas, and Soares (2009) examined how females (ages 13-23) with and without eating disorders view characteristics of their families differently. Utilizing the trust subscale of an attachment measure, the "Inventory of Parent and Peer Attachment," they found that patients with anorexia nervosa reported less trust in their mothers and in peers (although not fathers), than healthy controls.

In a study focused on the impact of unhealthy core beliefs, Meyer and Gillings (2004), found that mistrust beliefs mediated between parental overprotection and severity of bulimic attitudes. Rotenberg et al. (2013) examined trust beliefs, disclosure, loneliness, and the relationship to bulimic symptoms in 137 undergraduate females. They found that trust beliefs mediated the relationship between symptoms of bulimia and reports of disclosure and loneliness.

Although the importance of trust has been identified in this population, no current studies have focused primarily on examining the unique construct of trust in adolescents with eating disorders. Therefore, it is imperative to expand our understanding of trust in this high-risk population and its impact on illness severity. Additionally, a robust behavioral measure of interpersonal trust, such as the Trust Game, has yet to be utilized with this critical population.

Summary & Conclusions

Sufferers of eating disorders are at a heightened risk for physical, psychological, and interpersonal problems, as well as an increased mortality rate (Powers & Santana, 2002; Lieberman, 2001; Swanson et al., 2011; Arcelus et al., 2011). Adolescents with eating disorders are in particular need of early diagnosis and treatment due to the potential for short and long-term damage (i.e. growth/physical disturbance, relational disturbance, premature death, etc.).

It is widely known that individuals suffering from eating disorders have more insecure attachment styles than healthy individuals (Zachrisson & Skarderud, 2010). Trust is considered a key construct in developing and maintaining the attachment working model. Given this and the heightened attachment insecurity in patients with eating disorders, it seems that these individuals are likely to have difficulty trusting others. The current literature lacks an understanding of the role that trust plays in the relationships of adolescent's suffering from eating disorders. The present study will seek to clarify this role by assessing trusting behaviors in these patients.

<div align="center">

Criterion Variables

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Eating Disorder Severity

Research findings demonstrate that the more severe the eating disorder symptoms, the worse the prognosis (Fahy & Russell, 1992; Steinhausen, 2002). Limited research exists on the potential role of trust in contributing to the severity of eating disorder pathology. In Bromberg's

2001 essay, he reflected on the role that trust appears to play for patients both developing and recovering from eating disorders. He described, "Trauma compromises trust in the reparability of relationship, and for symptoms to be surrendered, trust in reparability must be…restored" (Bromberg, 2001, pp. 891-892).

As for research endeavors, Meyer and Gillings (2004) found that mistrust/abuse beliefs were a significant mediator between paternal overprotection and severity of bulimic symptoms in nonclinical women. Furthermore, trust in one's partner was found to negatively correlate with levels of body dissatisfaction (a construct important to eating disorder symptomatology) in young women (Juarez & Pritchard, 2012). Additionally, Rotenberg and colleagues (2013) found that trust beliefs in close relationships were negatively correlated with bulimic symptoms in a sample of male and female college students.

The above findings, although relatively scarce, suggest trust is associated with eating disorder symptoms. More research is needed to investigate the relationship between trust and severity of eating disorders. In addition, this construct needs to be explored in a clinical adolescent population. Finally, the Trust Game will allow for observation of actual trusting behaviors, rather than relying solely on self-report of trust as seen in previous related studies.

Therapeutic Alliance

A multitude of definitions, across theoretical disciplines, have been proposed to explain the phenomenon of the "therapeutic alliance," or the relationship between the therapist and the client. These definitions are wide-ranging and simultaneously overlapping. Despite this variety of conceptualizations, a good therapeutic alliance has been found to be associated with treatment outcomes, regardless of the therapy modality (Horvath & Luborsky, 1993).

In Edward Bordin's (1979) formative conceptualization of the therapeutic, or working, alliance, he described that it is the "strength, rather than the kind" of the therapist-client alliance that matters most. Bordin identified three key components to the strength of the working alliance: 1) Agreement on Goals – involves a general concordance between the therapist and client on the goals of therapy, 2) Tasks – refers to the collaboration and agreement of therapist and client on tasks important to achieving the goals of therapy (i.e. client engages in free association, therapist provides empathic listening, etc.), 3) Bonds – this final aspect of the working alliance captures the "human relationship" between the two, or how much they like, trust, and have confidence in one another.

The present study will assess the therapeutic alliance with the 12-item short form of the Working Alliance Inventory (WAI). The WAI was developed and validated by Horvath and Greenberg (1989) in order to measure the strength of the working alliance based on Bordin's conceptualization. As part of the validation process, the authors examined the WAI's ability to predict therapy outcome (Horvath & Greenberg, 1989). Twenty-nine therapist-client pairs engaged in brief psychotherapy (<15 sessions), and completed the WAI (both client and therapist versions) after the 3rd session, as well as the Client and Therapist Posttherapy Questionnaire (CPQ and TPQ) after the 10th session to assess outcomes. The findings indicated that the WAI adequately predicted client reported outcome variables of satisfaction and change, but not adjustment. These results further establish the importance of the therapeutic alliance in relation to the outcome of therapy.

Regarding patients with eating disorders, research indicates that not only is the therapeutic alliance important for good treatment outcomes, but a poor therapeutic alliance has been implicated in premature termination from treatment for these individuals (Sly, Morgan,

Mountford, & Lacey 2013). Clinicians often believe it is nearly impossible to form a therapeutic alliance with patients suffering from eating disorders. LoTempio and colleagues (2013) addressed this common perception and demonstrated that a successful therapeutic alliance can be developed with adolescents with anorexia nervosa.

Limited research has examined the role of trust in the development, maintenance, and diminishing of the therapeutic alliance in patients with eating disorders. Gallop, Kennedy, and Stern (1994) found that patients with eating disorders on an inpatient unit, who prematurely left treatment, perceived the therapeutic alliance with their treatment team members (as measured by the WAI within 3-4 weeks of treatment) as significantly lower than patients that remained in treatment. Vandereycken and Katrien (2010) found that the lack of trust was listed as one of the most important reasons why patients with eating disorders dropped out of treatment, suggesting the potential role of trust in maintaining the therapeutic alliance. Additionally, Waller, Evans, & Stringer (2012) found that adult patients with anorexia nervosa and dependent or avoidant personality cognitions had lower working alliance scores. Given the above-described relationship between attachment style and trust, these findings suggest that trust may play a role in dependent or avoidant patients with eating disorders struggling to form a healthy therapeutic alliance.

Summary & Conclusions. The severity of symptoms and the quality of alliance with one's therapist are two factors important to the success of eating disorder treatment. Initial findings suggest that trust may play a role in both of these factors. The present study will utilize a behavioral measure of trust to expand our knowledge of this construct as it relates to and predicts the severity of eating disorder symptoms and the therapeutic alliance.

Conclusions & Present Study

Clinically, psychologists place high value on trust. We spend numerous hours developing and maintaining rapport with our clients. However, there is limited research to date on the unique role of trust in psychopathology. Research has exposed the critical influence of trust on interpersonal relationships. Trust fosters intimacy, forgiveness, and a willingness to sacrifice for the greater good of the relationship (Reis et al., 2000). In addition, levels of trust were associated with self-perceived better health as well a predictor of greater functional health in one's future (Barefoot, et al., 1998).

For individuals with eating disorders, trust has been examined as a core component of attachment, which tends to be insecure for these patients (Zachrisson & Skarderud, 2010). Furthermore, mistrust beliefs have been linked to severity of eating disorder attitudes, and low levels of trust have been cited in reasons for treatment dropout (Meyer & Gillings, 2004; Vandereycken & Katrien, 2010).

The findings presented in the current literature review suggest the importance of further studying behavioral trust in interpersonal situations as a component of treatment in mental health settings. The Trust Game provides a unique opportunity to measure interpersonal trust behaviors in a manner in which self-report of trust falls short. Therefore, this study will explore the role of behaviorally measured trust as a predictor of eating disorder severity, and the therapeutic alliance. Positive findings could have considerable implications for factors important to the treatment of adolescent patients with eating disorders.

CHAPTER THREE: AIMS AND HYPOTHESES

Present Study: Part I

As previously described, trust has been defined and measured in various disciplines as an interactive, interpersonal construct. Economic exchange games are frequently used to assess trust and trustworthy behaviors. However, limited research to date exists in examining this behavioral measure of trust in clinical populations. This measure is particularly promising for use with patients with eating disorders as attachment research suggests the potential importance of interpersonal trust for this population. The present study will address this gap in the literature and further work to understand the relationship between behavioral trust and related constructs. Specifically, this study will examine the relationship between behavioral trust in adolescents with eating disorders and attachment security, as well as with self-report of trust. The findings will expand our understanding of the information that is gained from a behavioral measure of trust in this clinical population.

Aim I: To examine whether behavioral trust is associated with measures of relevant constructs, including attachment and self-reported trust.

> Hypothesis 1: Behaviorally measured trust will be positively correlated with attachment, and self-reported trust in others.

Present Study: Part II

To further understand the role of trust in patients with eating disorders, the present study will examine if interactive, behavioral trust predicts the severity of illness. Although the important constructs of attachment and even the propensity to trust are more stable traits,

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behavioral trust is a malleable construct, which can be engendered via coaxing (or conversely, warded off by withholding). A dynamic, interpersonal measure of behavioral trust may prove useful for clinicians in informing interventions to engender trust in these patients.

Aim II: To examine whether behavioral trust adds information beyond that explained by depression, to a construct critical in understanding and treating psychopathology, specifically eating disorder severity.

> Hypothesis 2a: Behaviorally measured trust will be negatively correlated with eating disorder and depressive symptoms.

> Hypothesis 2b: Patients' behavioral trust, as measured by the Trust Game, will explain unique variance in eating disorder severity after controlling for depression.

Present Study: Part III

To further expand our understanding of the role of trust in patients with eating disorders, the present study will examine if interactive, behavioral trust predicts the therapeutic alliance. The therapeutic alliance is associated with treatment outcomes for psychopathology. Limited research exists on the role of trust in the alliance for patients with eating disorders. A dynamic, interpersonal measure of behavioral trust may prove useful for clinicians interested in constructs that help predict the strength of alliance with their patients.

Aim III: To examine whether behavioral trust adds information beyond that explained by depression, to a construct critical in understanding and treating psychopathology, specifically the therapeutic alliance.

Hypothesis 3a: Behaviorally measured trust will be positively correlated with the

therapeutic alliance (both patient and therapist reports).

Hypothesis 3b: Patients' behavioral trust, as measured by the Trust Game, will explain

unique variance in the therapeutic alliance (both patient and therapist reports) after

controlling for depression.

CHAPTER FOUR: METHODS

Participants

Participants for this study included 40 adolescents (male and female; ages 12-18) who presented for inpatient (IP) and partial hospitalization (PHP) services at the Center for Pediatric Eating Disorders at Children's Medical Center (CMC). Eligibility criteria included that adolescents were between ages 12 and 18, admitted to either IP or PHP levels of care at CMC, were medically stable (defined as not in a wheelchair), and were able to read and write in English.

Procedure

Participants were recruited from the Center for Pediatric Eating Disorders after admission to either inpatient (IP) or partial-hospitalization program (PHP) treatment at CMC. Research assistants and unit therapists provided basic information to families regarding current research opportunities. Research assistants contacted interested parents to discuss inclusion criteria and enrollment. The parent and adolescent participants were consented together. Participants were asked to participate in the Trust Game and to complete self-report questionnaires within approximately the first four weeks of their treatment. Scales that assess generally stable characteristics (i.e. attachment, pre-treatment severity of illness, etc.) were administered upon admission, as part of routine clinical paperwork (measures were retrieved after participant was enrolled). Adolescents and their parents attended a 1.5 hour session with a trained research assistant on the Center for Pediatric Eating Disorders at CMC, in order to review the consent form and HIPAA, complete the self-report questionnaires, and to play the Trust Game.

This study was approved by the University of Texas Southwestern Medical Center Institutional Review Board. Parents provided written informed consent for the adolescent

participation, and adolescent participants provided written assent. Parent approval also allowed access to patients' medical records to obtain patient weight, BMI, ideal body weight, and additional pertinent illness and treatment information. In addition, the parent and adolescent both provided consent for the patient's individual therapist at CMC to complete one measure, the Working Alliance Inventory – Short Form.

Instruments

The following demographic and psychosocial information was gathered through self-report and chart review, while the Trust Game data was collected through participant engagement. A copy of all questionnaires used in this proposed study can be found in Appendix A. A diagram outlining the procedure of the Trust Game is located in Appendix B.

Demographics. Parents completed a demographic questionnaire that includes personal, patient, and family information (household income, family member psychiatric and medical history, parental education) as well as eating disorder information for the patient (age at diagnosis, history of treatment). Additional demographic information was gathered from medical chart review (adolescent's age and sex, ethnicity, abuse history, education, comorbid diagnoses, use of psychotropic medication).

Behavioral Trust. The Trust Game is a 10-round computer-based economic exchange, created to assess individual's trusting behaviors while engaged in an interactive 2-person game (King-Casas et al., 2005). Players are instructed that they will play either the role of the investor or trustee. For the purposes of the present study, participants played the role of the trustee against a "stranger," which is a computer simulated agent playing the role of a healthy investor. The game play of the simulated stranger was previously found indistinguishable from that of healthy individuals (Koshelev et al., 2010). The simulated "investor" receives 20 points at the

start of each round, and determines how much to give to the trustee (the "investor" gives a standardized amount of 10 points on the first round). That amount is tripled before the trustee receives it, and the trustee decides how much to repay to the investor and how much to keep. The participants were informed that their objective is to earn as much as possible during the 10-round game, and that their actual payment is scaled based on their game earnings ($5 - $25).

The Trust Game yields data on individuals' trusting behaviors. Of particular interest are the behaviors after receiving an investment, including the trustee's repayment relative to what they were given, as well as overall performance on the game. As mentioned, trust in this game is defined as, "the amount of money a sender gives to a receiver without external enforcement" (King-Casas et al., 2005, p.78). The present study examined the trustee's Overall Repayment Ratio (ORR), Initial Repayment Ratio (IRR), and the trustee's Overall Earnings (OE). The ORR is examined with the following formula: Average of Repay/(3xInvest) or Repay/Available for 10 rounds, where Repay refers to the Trustee's repayments and Invest refers to the Investor's initial investments. The repayment formula is demonstrated in Figure 1. The IRR is examined with the same formula Repay/Available, except just for the first round. OE is calculated based on the summation of [(3xInvest) – Repay] for all 10 rounds. As such, the overall earnings for the example in Figure 1 is 115.

Round	Invest	Amount Triples	Repay	Repay Ratio
1	10	x3	10	10/30 = 0.33
2	5	x3	10	0.67
3	10	x3	5	0.17
4	4	x3	2	0.17
5	8	x3	6	0.25
6	4	x3	1	0.08
7	2	x3	1	0.17
8	3	x3	0	0
9	0	x3	0	0
10	4	x3	0	0
				Average = 0.18

Figure 1. Trust Game, Repayment Ratio Sample Calculation**.** Round: round number (10 rounds total); Invest: amount the investor pays to the Trustee out of a possible 20, at the start of each round; Amount Triples: indicates that the amount the investor paid is tripled before received by the Trustee; Repay: amount the Trustee repays to the Investor, out of a possible tripled amount received from the Investor. For example, on round 1, the Investor gave 10 (out of 20), the Trustee received 30 (tripled amount of the investment) and repaid 10. Repay Ratio: amount the Trustee repaid to the Investor relative to the amount available on each round (Round 1: 10/30 or 0.33). Average: the average repayment ratio.

As described earlier in this paper, patients with Borderline Personality Disorder demonstrated lower levels of trust on the Trust Game, including lower repayments across the game, resulting in decreased earnings, compared to healthy controls (King-Casas et al., 2008). The example given in Figure 1 demonstrates a Trustee repaying about 33% on the initial round, and 18% on average across all rounds, resulting in overall earnings of 115 points. The present study examined these behaviors (i.e. overall repayment ratio, initial repayment ratio, and overall earnings) in adolescents with eating disorders.

Eating Disorder Symptoms. The Eating Attitudes Test – 26 (EAT-26) is a shortened, 26-item version of the original Eating Attitudes Test (EAT-40; Garner et al., 1982). The EAT-26 is a self-report measure of symptoms and concerns involved in eating disorders. Respondents endorse items on a 6-point Likert scale, ranging from *Always* to *Never.* Higher scores are indicative of greater eating pathology, with a cut-off score of 20 for individuals at high risk for

an ED. Three subscales are derived, including: Dieting, Bulimia and Food Preoccupation, and Oral Control. The EAT-26 was found to highly correlate with the EAT-40 ($r = 0.98$) and to have high internal consistency ($\alpha = 0.90$). Criterion validity when differentiating between individuals that meet or do not meet DSM-IV criteria for an eating disorder diagnosis was 90% accurate for the EAT-26 (Mintz & Halloran, 2000).

Depressive Symptoms. The Quick Inventory of Depressive Symptomology-Self Report-16 (QIDS-SR-16) is a 16-item measure designed to assess severity of depressive symptoms (Rush et al., 2003). The QIDS-SR-16 is a revised self-report questionnaire based on the 30 item Inventory of Depressive Symptomatology (IDS) and gathers information on the 9 symptom domains in the DSM-IV for a depressive episode: sad mood, concentration, self esteem, suicidal ideation, anhedonia, energy, sleep disturbance, appetite changes, and psychomotor disturbance. A 4-point Likert scale ranging from 0 to 3 is used for each item to rate depressive symptoms in the past seven days. The QIDS-SR-16 was found to have high internal consistency (Cronbach's $\alpha = 0.86$). High concurrent validity was detected when correlated with the IDS and the Hamilton Rating Scale for Depression-24, 0.96 and 0.84 respectively.

Attachment. The Inventory of Parent and Peer Attachment (IPPA) is a self-report measure designed to assess adolescents' perception of the quality of attachment relationship to parents and close friends, based on attachment theory (Armsden & Greenberg, 2009). The measure consists of 25 items per relationship target (i.e. mother, father, best friend), and items are answered on a 5-point Likert scale ranging from 1 (*Almost Never or Never True*) to 5 (*Almost Always or Always True*). Total attachment scores as well as three subscales are derived for each relationship target, including: mutual trust, communication, and the degree of anger and alienation. The IPPA was found to have high internal reliability, with Cronbach's alphas of 0.87

for Mother attachment, 0.89 for Father attachment, and 0.92 for Peer attachment. Regarding

convergent and divergent validity, the IPPA parent attachment scores were determined to have

moderate to high correlations with the Family and Social Self aspects of the Tennessee Self

Concept Scale (TSCS; $r = 0.78$ and 0.46, respectively), and correlations of 0.56 and 0.52 for the

Cohesion and Expressiveness scales of the Family Environment Scale. The peer attachment

scale correlated highest with the TSCS Social Self-Concept subscale ($r = 0.57$. In contrast, the

peer attachment scale overall did not correlate with aspects of the family environment. Also,

both the parent and peer attachment scales were found to have no relationship to the TSCS Self-

Criticism scale).

 Therapeutic Alliance. The Working Alliance Inventory-Short Form (WAI-SF) is a 12-

item measure developed to assess the relationship between the therapist and client in the early

phase of treatment (Tracey & Kokotovic, 1989). The short from was derived from the original

36-item Working Alliance Inventory, which was based on Bordin's framework of therapeutic

alliance, including client and therapist agreement on the goals and tasks of therapy, as well as the

strength of the therapeutic bond (Tracey & Kokotovic, 1989; Horvath & Greenberg, 1989;

Bordin, 1979). Participants and their individual therapists completed the respective client and

therapist versions of the WAI-SF. Therapists were blind to the results of the Trust Game and the

questionnaires administered on the day the game was played; however, a limitation of the present

study is that therapists were not blind to clinical measures administered on admission (i.e. EAT-

26, QIDS-SR-16, and IPPA). The WAI-SF was found to have a similar factor structure to that of

the original, and appears to measure three specific factors (task, bond, and goal), as well as an

overall alliance factor (Tracey & Kokotovic, 1989). Internal consistencies were found to be

0.90, 0.92, 0.90, and 0.98 for the client task, bond, goal, and general alliance scores, and 0.83,

0.91, 0.88, and 0.95 for the same scores on the therapist version.

Propensity to Trust. The General Trust Scale is a 6-item questionnaire designed to measure respondent's general attitudes toward the honesty and trustworthiness of others (Yamagishi & Yamagishi, 1994). Items are rated on a Likert scale from 1 (*Disagree Strongly*) to 7 (*Agree Strongly*); the average of the six items results in a continuous score of general trust. The General Trust Scale was found to have a reliability of 0.78 for respondents from the United States.

The Generalized Trust Beliefs – Late Adolescence Scale (GTB-LA) is a multidimensional self-report questionnaire, designed to assess generalized trust beliefs in late adolescence (Randall et al., 2010). The GTB-LA is based on Rotenberg and colleagues' framework of interpersonal trust (Rotenberg, 1994, 2001; Rotenberg, et al., 2005). The framework involves 3 bases of interpersonal trust: 1) reliability - the fulfillment of promises, 2) emotional - or the avoidance of causing emotional harm, and 3) honesty - which refers to truth-telling and genuine behaviors (Rotenberg et al., 2005). Additionally, the framework focuses on 2 domains: cognitive/affective and behavioral affiliations with the bases. Rotenberg et al.'s framework has 2 target dimensions: 1) specificity, which refers to general to specific forms of trust in others, and 2) familiarity, indicating trust varying from unfamiliar to the familiar. The original scale has 4 targets: mother, father, peer, and teacher. Three targets were included for the purposes of this study: mother, father, and peer. The 18 items included in this study are rated on a 5-point Likert scale from 1 (*Very Unlikely*) to 5 (*Very Likely*). Respondents read a brief description of a situation involving a main character and the target (i.e. a mother, father, or peer) such as, "Misty's father tells her that if she gets straight A's they will go on a special trip together. Misty presents a perfect report card. How likely is it that her father will take Misty on a

special trip?" Participants are instructed to imagine they are the protagonists and to indicate their belief in the trustworthiness of the target individuals. Story protagonists were matched to the same gender as the participant. Stories were adapted for use with adolescents, as the original scale was intended for both late adolescents and young adults.

The GTB-LA was found to have initial evidence for adequate psychometric properties (Randall et al., 2010). The GTB-LA displayed evidence of convergent and discriminant validity. Trust in a specific target was generally found to be most closely associated with qualities of that same relationship (i.e. trust in mother associated with qualities of maternal relationship). Trust in targets did not relate with a measure of social desirability, except for the mother target that had a significant negative relationship ($r = -0.20$). Every target score as well as the total trust score was found to correlate with positive emotional tone (range of $r = 0.17$ to $r = 0.31$). In contrast, none of the target or total trust scores correlated with deviant behavior. Substance use was found to have a negative relationship with trust in mothers, peers, and total trust. Loneliness was negatively correlated with trust in fathers and total trust.

The Interpersonal Trust Scale is a self-report measure designed to assess trust in interpersonal relationships (Rempel, Holmes, & Zanna, 1985). Three subscales are derived from the 18-item measure, including: faith, predictability, and dependability. Respondents answer items on a 7-point Likert scale from 1 (*Strongly* Disagree) to 7 (*Strongly* Agree). For the purposes of the present study, the target of the scale was adapted from trust in "my partner" to trust in three separate targets, "my mother…my father…my best friend." Participants are instructed to answer items in regards to a primary maternal/paternal relationship and a closest friend. The Trust Scale was found to have good to excellent internal consistency, with a Cronbach's alpha of 0.81 for the entire scale, 0.80 for the faith subscale, 0.72 for dependability,

and 0.70 for predictability. A measure of love was found to correlate with the faith subscale ($r =$ 0.46), and somewhat with the dependability subscale ($r = 0.25$). The faith subscale also showed a relationship with intrinsic motivation ($r = 0.52$), but not with instrumental perceptions, speaking to the discriminant validity of the scale. Also, a negative relationship was found between extrinsic motives and the predictability subscale ($r = -.24$). These correlations suggest that trust, as measured by the Trust Scale, is related to important aspects of close relationships, such as love and happiness.

Data Analyses

The data for the present study was stored in a Microsoft Excel database, which was imported into the Statistical Package for Social Sciences (SPSS) for all descriptive and planned statistical analyses. The data was initially examined for violations of statistical assumptions and for any outliers that may affect analyses. Data found to not be normally distributed was appropriately transformed. Descriptive information was derived for all variables. Correlational analyses were used to examine the relationships among the measured variables for the hypotheses in this study. Information was analyzed on 40 adolescent participants. Stevens (1996) explained that 15 subjects per predictor variable are needed to obtain reliable information from a multiple regression. Given this information, the present study had sufficient power to enter two steps into a hierarchical multiple regression. The first step included one control variables, depression. The second step included the predictor variable of particular interest to the present study: behavioral trust.

Hypotheses 1, 2a, and 3a were analyzed via Pearson product-moment correlation coefficients. Correlation coefficients examine the relationship between two variables; the Pearson product-moment correlation coefficient (symbol r) derives the mean of the cross-

products of standard scores for the two variables of interest (Hinkle, Wiersma, & Jurs, 2003). Hinkle et al. (2003) suggest that the size of correlation coefficients be interpreted as follows: 0.30-0.50 as a low correlation, 0.50-0.70 as a moderate correlation, and 0.70-0.90 as a high correlation (p.109).

Correlational analyses: The first hypothesis examined the relationships between adolescents with eating disorders' behaviorally measured trust and attachment, as well as with self-reported trust in others. We expected to find a significant positive correlation between these variables. For hypothesis 2a, we expected to find a negative correlation between behavioral trust and eating and depressive symptoms. Finally, correlational analyses were used for hypothesis 3b, which expected to find a positive relationship between behavioral trust and the therapeutic alliance.

Hierarchical multiple regression (HMR) analyses were used for hypotheses 2b and 3b. Regression analyses allow investigators to evaluate the relationship between one dependent variable and multiple independent variables (Tabachnick & Fidell, 2007). HMR (also called sequential regression) assesses this relationship while accounting for how much each independent variable adds to the prediction of the dependent variables. For this type of regression, investigators must determine the order of entry for the independent variables before conducting the analyses. This decision is based on theory and logic, with researchers often entering variables determined to have higher importance first (Cohen et al., 2013; Tabachnick & Fidell, 2007). Another approach is for the researchers to enter confounding variables first, in order to evaluate how much the IV of interest adds above and beyond that predicted by the controlled variables. The present will utilize the latter approach to determine the order of variables entered for evaluating Aims II and III.

Regression analyses: The second and thirds aims of the present study examined whether behaviorally measured trust predicts eating disorder severity and the therapeutic alliance, after controlling for depression. Depression was entered in the initial step of the regression analysis, with behavioral trust entered second. We expected to find that behavioral trust explains unique variance in eating disorder severity as well as the therapeutic alliance, beyond that explained by depression.

CHAPTER FIVE: RESULTS

Preliminary Analyses

Demographics Information

A total of 40 patients who were admitted to the Center for Pediatric Eating Disorders at Children's Medical Center in Plano, Texas, and who met inclusion criteria participated in the study. Demographic and clinical characteristics of the patients are summarized in Table 1. The study sample was 90% female and 80% Caucasian. Regarding eating disorder diagnosis, 52.5% of the participants were diagnosed with Anorexia Nervosa, 27.5% with Bulimia Nervosa, and 20.0% with Eating Disorder Not Otherwise Specified. The participants had an average percent of ideal body weight (IBW) on admission of 89.79% (SD = 14.92), ranging from 66.74% to 125.04%. Patients with Anorexia Nervosa averaged 82.86% IBW (SD = 8.77), Bulimia Nervosa 106.38% (SD = 12.25), and Eating Disorder NOS 85.21% (SD = 14.36).

Descriptive Statistics

In the following report of statistical analyses, all values of $p < .05$ will be considered significant, and values between $p > .05$ and $p < .10$ will be described as trends. Descriptive characteristics of key study variables are included in Tables 2 - 7. Overall, participants indicated significant eating disorder symptomatology as reported on the Eating Attitudes Test (EAT-26). However, only 65% demonstrated an EAT-26 score elevated above the clinically significant cut-off score of 20, despite all patients having received a diagnosis of an eating disorder by the attending psychiatric physician. It is likely that patients who were more guarded or those with less traditional eating disorders (i.e. Eating Disorder NOS) reported less symptoms. The participants reported, on average, moderate depressive symptoms on the Quick Inventory of Depressive Symptomatology. The participants Trust Game scores of Overall Earnings and

Overall Repayment Ratio were found to have a marginally lower mean score than a sample of healthy adolescents (McAdams, 2015), and a significantly lower average Initial Repayment Ratio.

Assessment of the Data

Preliminary analyses were conducted to address the assumptions for each statistical analysis by examining the distribution characteristics of the independent and dependent variables. The Working Alliance Inventory – Short Form (WAI-SF; patient version) was found to have a significant outlier. The outlying case was assigned a score one unit smaller than the next most extreme score, effectively reducing the impact of the outlier (Tabachnick & Fidell, 2007, p.77). Appropriate log transformations were conducted for main variables that were found to have skewed distributions. The transformations did not change the results for the statistical analyses, thus original scores were used.

Primary Analyses

Hypothesis Testing

The current study examined the relationship between behavioral trust, as measured by the Trust Game (scores include Overall Earnings, Overall Repayment Ratio, and Initial Repayment Ratio) and other relevant constructs, including self-report of trust and attachment (as measured by the GTB-LA, Rempel Interpersonal Trust Scale, Yamagishi General Trust Scale, and IPPA) in adolescents with eating disorders. In addition, this study examined the utility of the Trust Game measure in explaining unique variance in eating disorder severity (EAT-26) and the strength of therapeutic alliance (WAI-SF, patient and therapist versions), after controlling for depression (QIDS-SR-16).

Aim I

<u>Hypothesis 1</u>: *Behaviorally measured trust will be positively correlated with attachment and self-reported trust in others.*

Pearson correlation coefficients were used to examine the relationship between Trust Game scores (Overall Earnings, Overall Repayment Ratio, and Initial Repayment Ratio) and self-reports of attachment, and trust in others. Report of all Trust Game correlation analyses with attachment and self-report of trust can be found in Tables 8 - 9. Overall Earnings were positively correlated with IPPA Mother Attachment and IPPA Parent Composite. No significant or trending relationships were found between Overall Repayment Ratio or Initial Repayment Ratio and the attachment scores. These findings partially support the hypothesis, in that Overall Earnings demonstrated a positive correlation with Mother and Parent composite attachment scores, although the remaining Trust Game scores did not demonstrate a correlation with the attachment measure. These results indicate that as patients earn more on the Trust Game, they also perceive a stronger quality of attachment to their mothers and parents overall.

Initial Repayment Ratio significantly positively correlated with GTB-LA Mother. No relationships were found between Overall Earnings or Overall Repayment Ratio and self-report measures of trust. These findings generally do not support the present hypothesis, as they indicate that the Trust Game Scores do not relate with most of the measures of self-reported trust. However, the positive relationship between the IRR and the GTB-LA Mother target was aligned with the hypothesis, and suggests that patients who initially are more generous on the game also report greater general trust beliefs in mothers.

Aim II

Hypothesis 2a: _Behaviorally measured trust will be negatively correlated with eating disorder_
and depressive symptoms.

Pearson correlation coefficients were used to examine the relationship between Trust

Game scores (Overall Earnings, Overall Repayment Ratio, and Initial Repayment Ratio) and

eating disorder and depressive symptoms. Report of all Trust Game correlational analyses with

ED and depressive symptomatology can be found in Table 10. Overall Earnings and Initial

Repayment Ratio on the Trust Game were significantly and positively correlated with self-

reported eating disorder symptoms on admission. Overall Repayment Ratio was not correlated

with EAT-26 scores.

Initial Repayment Ratio was significantly and positively correlated with depressive

symptoms as reported on the QIDS-SR-16. No other relationships were found between the Trust

Game scores and the QIDS-SR-16. These findings are in the opposite direction of the

hypothesis, indicating a positive relationship between some of the Trust Game scores and

measures of symptom severity. The results suggest that individuals who are initially more

generous on the game report higher ED and depressive symptoms upon admission to treatment.

Also, the findings indicate that patients who earn more overall on the game also report higher ED

symptoms on admission.

Hypothesis 2b: _Patients' behavioral trust, as measured by the Trust Game, will explain unique_
variance in eating disorder severity after controlling for depression.

Hierarchical multiple regressions were run to examine whether behavioral trust predicts

variance in eating disorder severity, after controlling for the variance explained by depression.

Report of all Aim II regression analyses can be found in Table 11. EAT-26 was entered into the

regression analyses as the dependent variable. The control variable, QIDS-SR-16, was entered into Step 1, which accounted for 58% of the variance in eating disorder severity ($p < 0.001$). In order to examine the unique role of each trust game score in predicting the dependent variable, Overall Earnings, Overall Repayment Ratio, and the Initial Repayment Ratio scores were entered into Step 2 in separate regression analyses. Of the Trust Game scores, only Overall Earnings significantly contributed to explaining additional variance in eating disorder severity, after controlling for depressive symptoms. The overall model explained 65.0% of the variance, $F(2, 37) = 37.14$, $p < 0.001$. The Overall Earnings on the Trust Game significantly contributed an additional 6.5% variance after controlling for depression ($p < 0.01$). Both QIDS-SR-16 and Overall Earnings demonstrated statistically significant individual contributions to the variance in eating disorder severity, with the QIDS-SR-16 demonstrating a beta value of 0.75 ($p < 0.001$) and the Overall Earnings with a beta of 0.27 ($p = 0.007$). These results partially support the hypothesis, in that Overall Earnings on the Trust Game did explain unique variance in eating disorder severity, after controlling for depression. This suggests that Overall Earnings may be useful in explaining unique variance in ED severity, beyond what is already explained by depressive symptoms. However, Overall Repayment Ratio and Initial Repayment Ratio did not explain unique variance in ED severity, contrary to expectations.

Aim III

Hypothesis 3a: Behaviorally measured trust will be positively correlated with therapeutic alliance from both patient and therapist perspectives.

Pearson correlation coefficients were used to examine the relationship between Trust Game scores (Overall Earnings, Overall Repayment Ratio, and Initial Repayment Ratio) and the patient and therapist reports of the therapeutic alliance (WAI-SF). Report of all Trust Game and

WAI-SF correlation analyses can be found in Table 12. Overall Repayment Ratio demonstrated

a negative trend in relating with the patient's report of the Working Alliance Inventory (WAI-

SF). No relationships were found between Overall Earnings or Initial Repayment Ratio and the

WAI-SF scores, from neither patient nor therapist perspectives. These findings do not support

the hypothesis, as the Trust Game scores do not relate to therapist report of the therapeutic

alliance. As for the patient report of the therapeutic alliance, a trending negative relationship

was found with the ORR. This finding is in the opposite direction of the hypothesis and suggests

that patients who are more generous overall on the Trust Game also view the therapeutic alliance

as weaker.

Hypothesis 3b: Patients' behavioral trust, as measured by the Trust Game, will explain unique

variance in the therapeutic alliance after controlling for depression.

     Hierarchical multiple regression analyses were run to examine whether behavioral trust

predicts variance in the therapeutic alliance, after controlling for depression. Report of all Aim

III regression analyses can be found in Tables 13 - 14. The patient and therapist reports of the

therapeutic alliance were used as the dependent variables in separate regression analyses. QIDS-

SR-16 was used as the control variable and entered into Step 1 for all analyses. Trust Game

scores of Overall Earnings, Overall Repayment Ratio, and Initial Repayment Ratio were entered

in Step 2, in separate regression analyses.

     Depressive symptoms explained 9.8% of the variance in the patient report of the

therapeutic alliance, $F(1, 38) = 5.24$, $p = 0.03$. After entering each Trust Game score in Step 2 in

separate analyses, only Overall Repayment Ratio significantly explained additional variance in

the therapeutic alliance when added to the model. This overall model explained 11.4% of the

variance in alliance, $F(2, 37) = 3.50$, $p = 0.04$, although the ORR did not demonstrate a

significant individual contribution in explaining variance in the alliance. In the overall model, no

Trust Game scores demonstrated significant individual contributions to the variance in patient

reported therapeutic alliance. Upon predicting the therapist report of the therapeutic alliance,

depressive symptoms did not significantly explain variance in the alliance. After entering each

Trust Game score in Step 2 in separate analyses, none of the game variables explained variance

in the therapeutic alliance.

These findings suggest that the Trust Game scores of Overall Earnings, Overall

Repayment Ratio, and Initial Repayment Ratio may not be useful in explaining unique variance

in the therapeutic alliance, from either patient or therapist perspective.

Exploratory Post-Hoc Analyses

Overall Earnings on the Trust Game and depressive symptoms as measured by the

QIDS-SR-16 were found to significantly contribute to predicting the severity of eating disorder

symptoms. Post-hoc analyses were conducted in order to examine additional relevant variables

that may contribute to this relationship, including diagnostic status, household income level, and

level of parental education.

Exploratory Aim 1: *Examine the effect of diagnostic status on relationship between significant*

predictors and eating disorder severity.

Depressive symptoms and Overall Earnings were found to be significant unique

contributors in predicting eating disorder severity (as reported on the EAT-26). Patients with

different eating disorder subtypes not only present with varying symptoms, they also tend to

demonstrate some differing attributes, such as personality features (Vitousek & Manke, 1994).

As the present study included a heterogeneous sample of eating disorders (Anorexia Nervosa,

Bulimia Nervosa, and Eating Disorder NOS) it is important to determine if the different subtypes

of EDs impacted the relationship found between the predictor variables and eating disorder severity.

As diagnostic status is a categorical variable, the variable was transformed into two different dichotomous variables. First, a dichotomous variable "Traditional vs. Nontraditional" was created, comprising AN and BN combined, as well as ED NOS. This variable was designed to capture the difference between patients that exhibited full criteria for the traditional eating disorder subtypes (AN and BN) as compared to those that did not meet criteria for the full eating disorder or had an atypical presentation (ED NOS). The second dichotomous variable, "AN+EDNOS/BN" included AN and ED NOS combined, as well as BN. Vitousek and Watson (1998) described that individuals with bulimia tend to be more distressed by their symptoms than those with anorexia, and seemingly more motivated to change their ED behaviors, particularly as they are not obtaining their goal to lose weight. This indicates that those with BN may be more likely to report their symptoms, whereas those with AN may be more likely to conceal symptoms (Vitousek & Watson, 1998; Pryor et al., 1995). This second dichotomous variable was created to hone in on the potential impact of patients diagnosed with bulimia, vs. other eating disorders. Both of the above-described strategies for designating diagnosis were used as possible moderators.

Hierarchical regression analyses were conducted to examine moderation of two sets of relationships. Report of all exploratory Aim 1 analyses can be found in Tables 15 – 16. The first was depressive symptoms predicting ED severity. The second relationship was Overall Earnings predicting ED severity. This resulted in four equations, including two moderators and two predictor-to-outcome relationships. The equations consisted of the following independent variables: depressive symptoms (QIDS-SR-16), Overall Earnings on the Trust Game, diagnosis

(Traditional vs. Nontraditional and AN+ED NOS vs. BN), and the interaction term of diagnosis by predictor variable. This analysis was repeated four times to examine the two moderators on the two predictor-outcome relationships.

The findings showed that the interaction between diagnostic status and depressive symptoms were not significant. This suggests that the relationship between QIDS-SR-16 score and EAT-26 score does not change based on diagnostic status. A trend was found for the interaction between "AN+EDNOS/BN" with Overall Earnings, suggesting that the relationship between OE and EAT-26 is modified by "AN+EDNOS/BN" diagnostic status. The regression analyses were ran again: first, with just AN and EDNOS which rendered an unstandardized beta value of 0.07 for Overall Earnings, and second, with just BN which resulted in a beta of 0.30. These results suggest that the relationship between OE and EAT-26 strengthens more with a diagnosis of Bulimia Nervosa, compared to AN and EDNOS.

Exploratory Aim 2: *Examine the effect of household income level and parental education on relationship between significant predictor variables and eating disorder severity.*

A popular belief about eating disorders is that these illnesses primarily occur in high socioeconomic status (SES) groups; however, there is evidence to suggest that this is not the case (Gard & Freeman, 1996). This common belief (or myth) about the correlation between SES and EDs led to examination of the impact of socioeconomic variables on the relationship between the predictor variables and eating disorder severity in the present study. Socioeconomic status variables included household income and parental level of education. As the SES variables are categorical, dichotomous variables were created to be suitable for the analyses. Household income level was split into two groups: below $90,000 and above $90,000. Parental education

level was divided into those with some college and below, and those with completed college and above.

Hierarchical multiple regression analyses were conducted to examine moderation of two sets of relationships. Report of all exploratory Aim 2 analyses can be found in Tables 17 -18. The first was depressive symptoms predicting ED severity. The second relationship was Overall Earnings predicting ED severity. This resulted in four equations, including two moderators and two predictor-to-outcome relationships. The equations consisted of the following independent variables: depressive symptoms (QIDS-SR-16), Overall Earnings on the Trust Game, SES (household income and parental education level), and the interaction term of SES by predictor variable. This analysis was repeated four times to examine the two moderators on the two predictor-outcome relationships.

The regression analyses demonstrated that household income level did not have a significant interaction effect on the predictor to eating disorder severity relationships. A marginal interaction effect was found for parental education on both predictors (depression and overall earnings) to ED severity relationships. The regression analyses were ran again: First, with just lower parental education, which rendered unstandardized beta values of 0.04 for Overall Earnings and 2.03 for depressive symptoms. Second, the regressions were run with higher parental education, rendering a beta value of 0.15 for Overall Earnings and 3.04 for depressive symptoms. These findings indicate that the relationship between depressive symptoms and EAT-26, as well as the relationship between OE and EAT-26 strengthens for patients with higher parental education.

Exploratory Aim 3: *Explore relationships between patient and therapist report of the therapeutic alliance and additional study variables*

Limited associations were detected between the Trust Game and the therapeutic alliance in the present study. The therapeutic alliance has been shown to relate to treatment outcomes, although little is known about the alliance-outcome relationship in eating disorder populations (Horvath & Luborsky, 1993; Zaitsoff, Pullmer, Cyr, & Aime, 2015). This led to examination of the relationship between the therapeutic alliance and the key variables from the present study, beyond just the Trust Game. First, the relationship between the patient and therapist report of the alliance was examined. Second, the present study explored the relationship between the alliance and study variables including attachment, self-report of trust, and severity of eating and depressive symptoms.

Pearson correlation coefficients were run to examine the relationship between the patient and therapist reports of the therapeutic alliance (WAI-SF). Also, Pearson correlation coefficients were used to examine the relationship between therapeutic alliance (both patient and therapist reports) and primary study variables of attachment (IPPA), self-report of trust (Rempel Interpersonal Trust Scale, GTB-LA, Yamagishi General Trust Scale), eating disorder severity (EAT-26) and depressive symptoms (QIDS-SR-16). Report of all Exploratory Aim 3 analyses can be found in Table 19.

No relationship was found between the patient and therapist reports of the therapeutic alliance. This suggests that the patient and therapist do not perceive the same strength/weakness in the therapeutic relationship in terms of agreement on the goals and tasks of therapy, as well as the bond.

Additional correlational analyses revealed that the patient report of the therapeutic alliance was positively related to the report of attachment to Mother and Best Friend, Rempel Interpersonal Trust Scale composite, GTB-LA total, and trending with Yamagishi General Trust

Scale. Also, the patient's WAI-SF was negatively correlated with both the EAT-26 and QIDS-SR-16 scores. These finding indicate that patients who view a strong alliance with therapist, also report greater attachment to mother and peer, as well as greater trust in others. These results indicate that as patients perceive a stronger alliance with their therapist, they also report lower ED and depressive symptoms.

In contrast, the analyses demonstrated that the therapist's report of the therapeutic alliance was positively related to the patient's report of ED symptoms, but was not related to measures of attachment or trust. This suggests that therapists view a stronger alliance with patients that report greater ED symptomatology.

CHAPTER SIX: DISCUSSION

Overview of Study

The research on the role of trust in patients with eating disorders is limited, and is focused primarily on attachment research. Attachment literature demonstrates that individuals with eating disorders have a greater preponderance of insecure attachment. As trust is postulated as a central component to attachment, it is likely that trust also plays a key role in these patients' illness and relationships. However, trust has a history of being an elusive construct, which has made it challenging to measure. Self-report measures of trust for adolescents are rare, and are susceptible to problems such as high face validity. In contrast to self-report measures of trust, the Trust Game is a computerized interactive economic exchange, which provides an opportunity to examine the behavioral manifestations of trust in a social interaction. The present study was the first to evaluate the role of behavioral trust, as measured by the Trust Game, in relation to relevant constructs including attachment and self-report of trust. In addition, this study was designed to examine the utility of the Trust Game in predicting the severity of illness and strength of alliance with the patients' individual therapists, after controlling for depression.

Hypothesis Testing

Aim I. Relationship between behavioral trust and relevant constructs, including attachment and self-reported trust

The first aim of the present study sought to explore the construct assessed by the Trust Game, by examining the relation between the game scores and relevant other constructs, for adolescents with eating disorders. The results suggest that the construct assessed by the Overall Earnings (OE) on the Trust Game is related to attachment with parents, particularly with

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mothers. The additional game scores of Overall Repayment Ratio (ORR) and Initial Repayment Ratio (IRR) were not related to attachment. OE and ORR on the game were not correlated with self-report measures of trust. Only the Initial Repayment Ratio (IRR) demonstrated a significant relationship to a self-report measure of trust. These findings add to our understanding of the constructs assessed by the Trust Game for the present population, and it also leads to additional questions for future research to explore.

Relationship with attachment. The first hypothesis posited that adolescent patients with eating disorders would demonstrate a positive relationship between their behaviors on the Trust Game, and their report of attachment and self-report of trust. The findings showed that Overall Earnings (OE) on the Trust Game was significantly and positively related to IPPA Mother Attachment and the Parent Composite, but not with Father or Best Friend attachment. However, the correlation between OE and Father Attachment had a $r = 0.23$ ($p = 0.15$), thus it is possible that with a larger sample size and greater power, a significant relationship might be detected. The additional Trust Game scores of Overall Repayment Ratio (ORR) and Initial Repayment Ratio (IRR) did not demonstrate any significant relationships with the attachment measures. These findings partially support the hypothesis and suggest that adolescents with eating disorders who perceive greater attachments with their mothers and parents overall, are also more likely to successfully interact in the Trust Game and garner higher earnings.

It is evident in the literature that individuals with eating disorders tend to have more insecure attachments (Zachrisson & Skarderud, 2010). Research indicates that patients with eating disorders who demonstrate higher attachment anxiety also have worse treatment outcomes, regardless of ED diagnosis (Illling et al., 2010). The findings from the present study suggest that patients who perceive a greater quality of attachment to mothers and parents overall

are also more likely to successfully engage and receive higher earnings overall in the Trust Game.

Attachment security is thought to provide a secure base from which individuals can explore and engage with new people and pursue new experiences (Ainsworth & Bell, 1970; Bowlby, 1973; Ainsworth & Bowlby, 1989; Mikulincer, 1998). For instance, the hallmark attachment experiments, including the "Strange Situation," showed the importance of infants' ability to use their mothers as a secure base in order to explore the unfamiliar. (Ainsworth & Bell, 1970; Ainsworth & Bowlby, 1989). Additional research has gone on to link eating pathology to insecure attachments with mothers and fathers (Goossens et al., 2012). Furthermore, qualities of emotional closeness and support from parents, as well as parents encouraging autonomy, have been inversely linked with ED pathology (Kenny & Hart, 1992). Therefore, it may be that adolescents with eating disorders who perceive having a secure base through their mother, and perhaps their father, are more able to explore or engage with a "stranger" on the Trust Game in a successful manner (i.e. garner higher earnings). Future research will need to explore whether patients who perform poorly on the Trust Game, also demonstrate worse outcomes as seen in patients with higher attachment anxiety, given the present finding of a positive relationship between attachment and OE.

Relationship with self-report of trust. The game scores generally were not found to significantly relate to trust reported by the patients, contrary to expectations. The only exception is that IRR positively correlated with the Generalized Trust Beliefs – Late Adolescents (GTB-LA) Mother score. This self-report questionnaire instructs respondents to imagine they are the main character in brief scenarios and are asked to indicate their trust in the "target" individual in each scenario. As compared to the other two self-report measures of trust included in this study,

this is the only one that involves hypothetical social situations, rendering it seemingly more similar to the social setting of the Trust Game than the other questionnaires. Perhaps this similarity between the GTB-LA and a social interaction helps to explain why the IRR related to the GTB-LA, rather than the other two self-report measures of trust (Rempel Interpersonal Trust Scale and Yamagishi General Trust Scale).

As IRR was found to relate with self-reported trust, perhaps these findings suggest that the IRR is more similar to one's *propensity to trust*, or how one generally approaches a new interpersonal situation, from Mayer and colleagues' "Integrative Model of Organizational Trust" (1995; See Figure 2).
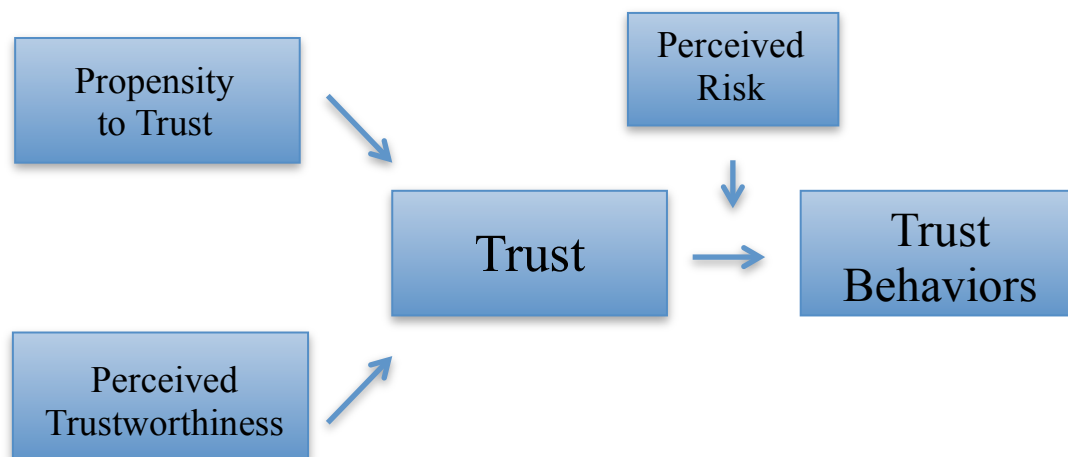
Figure 2. Adapted from the Integrative Model of Organizational Trust (Mayer et al., 1995). The model suggests that an individual's propensity to trust others (a more stable trait) combines with the perceived trustworthiness of the other person. These two components lead to "trust," a willingness to be vulnerable to the actions of another person, which manifests in trust behaviors once risk is assumed and one depends on the actions of the other person.

The other two Trust Game scores, OE and ORR did not demonstrate any significant relationships with the self-report measures of trust. These two scores (OE and ORR) refer more to the participants' behaviors across time and through multiple social exchanges (10 rounds on the

Trust Game). OE and ORR seem to gather information about trust behaviors that is not captured in the self-report methods, whereas the IRR captures information from one moment in time (repayment behavior on the first round).

The Integrative Model (Mayer et al., 1995) suggests that trust behaviors come about after one's propensity to trust and perceptions of the trustworthiness of the other person are taken into account. The OE and ORR did not correlate with self-reported trust and these scores gather information across rounds of an interactive social exchange. Therefore, the OE and ORR of the Trust Game may refer to such *trust behaviors* as explained by the Integrative Model, beyond one's propensity to trust and their perceptions of the trustworthiness of their game partner.

Overall, the current study findings appear to be consistent with the literature review in this area, as previous studies comparing survey measures of trust to behavioral measures also demonstrated mixed findings. In one such study, Glaeser and colleagues (2000) found that standard surveys of trust did not seem to assess trust, but rather a person's own trustworthiness. This study also found that reports of previous trust behaviors were more predictive of current trust behaviors, than self-report measures of trust. Ahmed & Salas (2009) examined behavioral and survey measures of trust across countries, and found the two methods were associated only in some countries. Furthermore, Holm and Nystedt (2008) found a correlation between survey and a behavioral measure of trust (a version of the trust game) when the game rewards were hypothetical, whereas there was no association between methods when the game financial rewards were real. The authors explained that survey measures and hypothetical trust games seem to assess a similar type of "trust." In contrast, their findings demonstrated that a trust game with real rewards captured behaviors that differed from self-reported trust. Other studies have found some correlations between surveys of trust and experiential trust games, and they

emphasize that the specific construct assessed by the survey and the context/social distance of their game partner may matter in these correlations (Evans & Revelle, 2008; Etang et al., 2012). Overall, these findings suggest that associations between behavioral measures of trust and self-report of trust attitudes are unclear and are often, but not always, unrelated. These findings correspond with the current results that aspects of the Trust Game, OE and ORR, do not relate to self-reported trust, whereas one aspect, IRR, does correspond with a particular survey measure of trust. Therefore, the mixed findings in this area indicate the need to continue to conduct research that helps decipher the underlying constructs that the trust game is explaining.

Summary and conclusions. The present findings regarding behavioral trust in relation to attachment and self-reported trust add to our understanding of constructs assessed by the Trust Game in adolescents with eating disorders. It appears that OE on the game captures information similar to one's perceived attachment quality to parents. Of the game scores, IRR seems most similar to self-reported trust. It is possible that ORR and OE, which refer to information gathered across all rounds of the game, provide information about *trust behaviors* that occur in a social situation. In contrast, the IRR, which occurs immediately on the initial round of the game, seems to relate more to an individual's *propensity to trust*. Future research is needed to continue to expand our understanding of the constructs assessed by the Trust Game. It will be important for studies to compare the Trust Game to situations that involve trust in more real-life social settings.

Aim II. *Usefulness of behavioral trust in predicting variance in eating disorder severity*

The second aim of this study was designed to explore the usefulness of the Trust Game in explaining variance in the severity of eating disorder for adolescent patients, after controlling for depression, a known marker of illness (Fairburn et al., 1997; Fairburn et al., 1999; Fairburn &

Harrison, 2003). First, the results indicate that OE and IRR on the Trust Game positively correlated with ED symptoms, as reported by the patients on the EAT-26 at admission to treatment. The ORR did not demonstrate a relationship with ED symptoms. Secondly, OE was found to significantly contribute in explaining unique variance in eating disorder severity, after controlling for depression.

It was surprising to find that as adolescents with eating disorders reported greater symptoms, they were also initially more generous on the Trust Game and earned more overall. In addition, the results showed that higher OE accounted for variance in reported ED symptoms, even after controlling for depressive symptoms, such that reported ED symptoms increased as OE increased. Possible explanations for these findings are discussed.

Possibility 1: Negative view of the self, the world, and the future. The present findings showed that participants were initially more generous and earned more on the Trust Game as they reported greater ED symptoms. These findings were unexpected and in the opposite direction of the hypothesis. A popular conceptualization of depression includes the "cognitive triad," which could help to explain the present findings. The cognitive triad characterizes individuals with depression as involving a negative view of one's self, the world, and the future (Beck, Rush, Shaw, & Emery, 1979). One potential explanation for the present unexpected findings may be that teens who report greater ED symptoms have a negative view of the self, the world (i.e. others), and the future. This negative perspective may involve valuing the self less, and therefore, giving away more of their Trust Game earnings to the other person. In addition, a negative view of others and the future may lead to the patients working hard to garner trust (i.e. increasing generosity) as they have negative expectations for the "stranger" and outcomes on the Trust Game.

As our present study sample reported greater levels of depression along with ED symptoms, it is possible that they have a more negative view of the self, the world, and the future, as explained by the cognitive triad. It may be that this negative view contributed to higher generosity initially on the game (which increased along with reports of ED and depressive symptoms). As initial generosity increased, this may have encouraged the investor to provide higher investments, leading to greater overall earnings. Interestingly, when reviewing patterns of Trust Game play in clinical populations, Kosehelev and colleagues (2010) found that the pattern of play for individuals with MDD showed more generosity in comparison to other clinical populations (e.g., BPD, Autism, and ADHD). Specifically, as compared to other clinical groups, MDD patients showed higher repayments (especially initial repayments) and received higher investments (which contributes to overall earnings outcome). It is plausible that the greater generosity from the MDD individuals leads to higher investments in return by the investor. This led to consideration if the current study sample is demonstrating characteristics of depression, specifically negative views described by the cognitive triad.

Overall, as adolescents with EDs in the present study showed greater initial game generosity, they also reported greater ED and depressive symptoms. It is known from the literature that high comorbidity exists between eating disorders and depression (Brewerton et al., 1995; Ivarsson et al., 2000; Powers & Santana, 2002; Blinder, Cumella, & Sanathar, 2006). The current study sample replicated this finding in the literature of comorbid depression and eating disorders, as the sample showed a significant positive relationship between their eating disorder and depressive symptoms ($r = 0.77$, $p < .001$). As noted above, it is possible that the present study participants possess a quality of depression, namely negative view of the self, the world, and the future, which may contribute to greater generosity as seen in the game. This may aid in

the understanding of the current findings of higher initial generosity correlating with greater report of ED/depressive symptoms, which is consistent with the cognitive triad of depression. Future research is needed to explicate the qualities among patients with EDs that are captured via the Trust Game and to further explain the patterns of play seen in different diagnoses. Additional studies should measure negative view of the self, the world, and the future, in this population and how it impacts Trust Game play.

Possibility 2: Openness and concealment. Another possibility for these unique findings is that patients who are more open, are more willing to report their symptoms in treatment and are more willing to engage with others. Conversely, it may be that patients who are more guarded, may conceal symptoms and be less willing to engage with others. One way the qualities of openness/concealment may be seen in the current study is that patients with greater report of symptoms demonstrated higher IRR and higher OE on the trust game. In contrast, patients with lower reported ED symptoms had lower IRR and OE. The literature shows that individuals with eating disorders often conceal symptoms. Swanson and colleagues (2011) found that although a majority (72.6% - 88.2%) of adolescents with eating disorders had contact with a mental health service, only 3.4% – 27.5% reported actually discussing their eating/weight difficulties with any providers. Furthermore, the literature shows that those with anorexia nervosa in particular, struggle to report symptoms or may even deny them (Vandereycken & Vanderlinden, 1983; Vandereycken, 2006a). Although not revealing symptoms could be due to numerous reasons (e.g. stigma, shame, denial, low insight, cognitive effects of starvation, provider failure to inquire, etc.), it seems that patients with eating disorders generally struggle to report their symptoms.

In addition, it is important to consider that the current study defined eating disorder severity by scores on the EAT-26, which is a self-report measure. Face valid self-report measures, such as the EAT-26, are susceptible to respondents answering in a "socially desirable" or "faking good" manner. Given that patients with eating disorders may conceal their symptoms, this could affect their results on the EAT-26. The current authors recognized the limitation of the self-report measure and opted to see if the EAT-26 scores aligned with a more objective measure of ED severity (particularly for anorexia nervosa), namely measures of body weight.

Bivariate Pearson correlation coefficients revealed that all patients showed a positive relationship between their % Ideal Body Weight (IBW) and Body Mass Index (BMI) on admission with their report of EAT-26 scores. Of note, this relationship remains true even for the subset of patients with anorexia nervosa (See Table 20 for report of correlations between weight and ED symptoms). These findings reveal that patients with higher weights on admission to treatment are also reporting higher ED symptoms. Importantly, this also indicates that those patients at a lower weight – even those with AN – are reporting less ED symptoms.

It is arguable that patients with AN on the lower end of the underweight spectrum are presenting with greater severity of illness, at least in this one respect. Due to this, it is surprising to find that these patients are reporting lower ED symptoms than their higher-weight counterparts. These patients may conceal symptoms for numerous reasons: purposeful denial, low insight, or cognitive impairment from starvation (Vandereycken, 2006b; Swanson et al., 2011). Regardless of the reason, this suggests that some severely ill patients (those at a lower weight) may be more guarded around ED symptoms, whereas the higher-weight patients may be more *open* with their symptoms. Therefore, it is possible that this quality of openness/concealment could explain why patients that are reporting higher ED symptoms are

also more initially generous and more effective overall on the Trust Game. Interestingly, additional regression analyses for AN patients show that self-reported depressive symptoms and overall earnings on the game do not significantly explain variance when weight is included as the DV (See Tables 21 – 22). This further suggests the role of openness/concealment when self-report of symptoms is included as the DV. Future studies should be prepared to include measures of openness/concealment to treatment as a way to assess the effect of this quality on the present findings.

      Summary and conclusions. The present study found a positive relationship between Trust Game performance and reported ED symptomatology. These unexpected findings could be due to multiple reasons. First, it appears that adolescents with EDs may have a negative view of the self, the world, and the future, as described by the "cognitive triad" theory of depression, which may contribute to greater initial generosity and receiving higher investments. Secondly, it is possible that the Trust Game is capturing a quality of openness/concealment. Patients with EDs often conceal symptoms, and it seems that those willing to report symptoms are also willing to engage on the game. The finding that higher body weight on admission is also positively related to reported ED symptoms may support the notion that these patients are more "open." However, it is also possible that the finding of a positive relationship between weight and ED symptoms is a function of who gets admitted into treatment – adolescents at a higher weight may need to make their symptoms known before treatment is considered, whereas it may be a more obvious recommendation for underweight individuals. Future research is needed to examine qualities of the cognitive triad, openness and conversely, self-concealment, and the impact of these characteristics on the relationship between Trust Game play and ED symptoms. Also,

future studies should examine if OE on the Trust Game and greater disclosure of ED symptoms on admission, are predictive of treatment outcomes.

Exploratory Analyses Related to Aim II

The present study included a heterogeneous sample. This led to the question of the impact of diagnosis subtype and socioeconomic status (SES) on the present findings of a relationship between the significant predictor variables (depressive symptoms and OE on the Trust Game) and ED severity.

ED subtype. The present study examined whether the various subtypes of ED diagnosis impacted the Aim II findings. Overall, adolescents with eating disorders appear to have personality styles that are more inhibited than healthy individuals (Liley, Watson, Seah, Priddis, & Kane, 2013). In addition, the literature also shows differences among subtypes of disorders. For instance, It seems that patients with AN tend to be more restricted and inhibited, whereas individuals with BN appear to be more erratic and may vacillate between being restrained and disinhibited (Vitousek, & Manke, 1994). Furthermore, individuals with BN tend to be more distressed than patients with AN over their disorder, and have shown a greater motivation for change than those with AN or ED NOS (Vitousek & Watson, 1998; Casasnovas et al., 2007). Due to these subtypes differences, the present authors questioned whether individuals with BN may be more likely to report their symptoms, as well as engage more effectively overall on the Trust Game.

Exploratory analyses revealed that patients with BN reported marginally higher EAT-26 scores (M = 43.27, SD = 15.91) than patients with AN (M = 32.62, SD = 16.72), t(30) = -1.74, p = 0.09. BN patients reported significantly higher EAT-26 scores than patients with AN and EDNOS combined (M = 26.72, SD = 18.04), t(38) = -2.67, p = 0.01. In addition, a trending

interaction was found for AN and EDNOS versus BN on the relationship between OE and eating disorder severity, such that a diagnosis of BN strengthened this relationship. These results indicate that adolescents with eating disorders who earn more on the Trust Game, also report higher ED symptoms, and that this relationship is greater for patients with BN. Therefore, these findings appear to be consistent with the previous literature, showing that patients with BN are more distressed by their symptoms and, therefore, are more willing to report symptoms, whereas patients with AN may tend to conceal symptoms more. Future research should examine personality traits of inhibition/disinhibition and the role of these characteristics on Trust Game behaviors and reporting of symptoms. It is possible that patients who are less inhibited, such as those with BN, are more likely to engage with a new person on the Trust Game and be more forthcoming with their symptoms. In addition, subtypes may not fully capture the particular ED symptoms experienced by individuals. For example, individuals with AN may or may not experience purging behaviors (APA, 2013). Therefore, it will be important for future studies to examine the impact of specific ED symptomatology rather than just ED diagnosis, on Trust Game play. For example, future research could specifically investigate the role of binge/purge behaviors, restricting behavior, and other pathological eating behaviors on the present study findings.

Culture and socioeconomic status. It has long been thought that eating disorders occur primarily in Caucasian individuals with high socioeconomic status (SES), however, recent literature demonstrates these disorders do exist across a range of race/ethnicities and SES levels (Miller & Pumariega, 2001; Gentile, Raghavan, Rajah, & Gates, 2007; Gard & Freeman, 1996). Rather than high SES variables having the primary impact on ED outcomes, researchers have found that it is actually exposure to Westernized values of beauty, namely the "thin ideal," that

negatively influences eating pathology (Becker, Burwell, Gilman, Herzog, & Hamburg, 2002).

Evidence for these findings are supported by Anne Becker's groundbreaking work which shows

an increase in eating pathology in young Fijian girls following exposure to Westernized media.

Additional models of research, such as Stice's "sociocultural model of eating disorders,"

provides further support for the impact of societal/cultural influences on eating pathology.

Specifically, Stice shows a well-established pathway of exposure to Westernized beauty values

leading to internalization of the thin ideal, which then contributes to body dissatisfaction, and

eventually subsequent eating disorder pathology (Stice, 1994, 2001; Twamley & Davis, 1999).

Due to the essential role that internalized cultural ideals of beauty appear to play in

developing eating disorders, the present authors recognized the importance of examining cultural

variables on the present study findings. Unfortunately, due to an inability to recruit Spanish-

speaking families, the present study sample did not accurately represent the racial/ethnic

breakdown of the treatment unit's multicultural demographics. Therefore, the present study was

unable to examine the multicultural impact on Trust Game play, which future studies will need to

investigate. Despite this limitation, this study was able to explore the impact of SES on the

current findings of depression and OE explaining unique variance in eating disorder severity.

Exploratory analyses did not find a significant interaction of estimated household income on

these relationships. However, a trend was found for the interaction of parental education on both

depression and OE explaining unique variance in ED severity.

The trending interactions indicated that higher parental education strengthened the

relationship between depression and EAT-26 scores, and between OE and EAT-26 scores (See

Figures 3 - 4). Specifically, patients who reported low levels of EAT-26 scores, also reported

lower depressive symptoms and earned less on the game when they had higher parental

education. Conversely, the patients who reported the greatest ED symptoms also reported higher depressive symptoms and earned more on the game when parental education was high. Literature shows some associations between parental education and use of health services for their children (Zahner & Daskalakis, 1997; Padgett, Patrick, Burns, Schlesinger, & Cohen, 1993; Langner et al., 1974). As described, patients with eating disorders often struggle to disclose their symptoms. The present marginal interaction effects may indicate that patients are more open in reporting both ED and depressive symptoms, as well as in engaging with a new person on the Trust Game, when their parents have higher education. Additional research is needed to explicate the role of parental education on patient openness in reporting symptoms and engaging in new social situations, such as in the Trust Game.

Given the limited sample size of the present study, the findings need to be interpreted with caution. Future studies should incorporate larger sample sizes to further understand the role of SES. In particular, a larger sample size may detect an effect of household income on the significant predictors of ED severity. It is important to note that the present sample may not fully represent the general SES characteristics of the adolescent clinical ED population, as we were unable to recruit Spanish-speaking patients due to resource limitations. It is possible that with a more representative sample of SES characteristics, additional differences may be detected. However, it is also possible that certain SES variables, such as household income, do not affect indicators of ED severity, including depression and OE on the Trust Game. Furthermore, future studies should examine the effect of race/ethnicity on Trust Game play for adolescents with eating disorders.

Aim III. *Usefulness of behavioral trust in predicting variance in the therapeutic alliance*

The third aim of the present study sought to examine the usefulness of the Trust Game in predicting the therapeutic alliance, from both patient and therapist reports, after controlling for depression. Generally, the Trust Game scores were not found to relate to the therapeutic alliance, with exception of the ORR, which indicated a negative trend in relating to the patient's report of the alliance. Furthermore, none of the Trust Game scores demonstrated usefulness in explaining variance in the therapeutic alliance from either patient or therapist perspectives, when examined in regression analyses and while controlling for depression.

The present study examined the therapeutic alliance with the Working Alliance Inventory – Short form, which is based on Edward Bordin's (1979) framework. Bordin described that the strength of the therapeutic alliance is comprised of agreement on the goals and tasks of therapy, as well as the bond or relationship between therapist and client. Our findings suggest that trust behaviors, as measured by the Trust Game, may not relate to the therapeutic alliance as described by Bordin. However, one exception was found as the ORR demonstrated a trending negative relationship with the patient's report of the alliance. It is possible that with a larger sample size and great power, a significant relationship may be detected. It was surprising to find that patients who are overall more generous across all rounds of the Trust Game seem to view a weaker alliance with their therapist. It is well documented in the literature that patients with eating disorders, particularly those with AN (the majority of our present sample) tend to have perfectionistic traits and are concerned with being viewed positively by others (Bardone-Cone, Sturm, Lawson, Robinson, & Smith, 2010; Bastiania, Rao, Wletzin, & Kaye, 1995; Tyrka, Waldron, Graber, & Brooks-Gunn, 2002; McGee, Hewitt, Sherry, Parkin, & Flett, 2005). Perhaps as patients reported stronger alliances with their therapists, they were responding to the questionnaire in a manner they believed was expected. However, when they were tasked to

interact on a behavioral measure (Trust Game), they may have struggled to successfully engage and, therefore, demonstrated less generosity across rounds of the game. Future research will need to further examine qualities of perfectionism and positive impression management to determine the impact on Trust Game performance and perspectives on the therapeutic alliance.

Exploratory Analyses Related to Aim III

Upon finding limited relationships between the Trust Game and the therapeutic alliance, this brought into question the relationship of the therapeutic alliance and other key study variables that are relevant to ED treatment. First, the relationship between patient and therapist report of the alliance was examined. Second, the relationships between the alliance and study variables including attachment, self-report of trust, and severity of eating and depressive symptoms were explored.

These exploratory analyses revealed no relationship between the patient and therapist reports of the alliance. Not surprisingly, the patient report of the alliance demonstrated a positive relationship with attachment, although only with attachment to mother and best friend, and not to father. The patient view of the therapeutic alliance also was found to significantly positively correlate with most measures of self-reported trust, including general trust in others, and trust in mother/father/peers. In addition, the patient view of the alliance showed a negative relationship with ED and depressive symptoms.

Patient perception of the therapeutic alliance. The findings involving the patient view of the therapeutic alliance indicate that the patient's perception of the strength of alliance with their individual therapist is related to their perception of attachment and reported trust in others. As one's early life attachments are thought to lay the groundwork for developing future relationships with friends and other adults (Brown & Wright, 2001), it makes sense that the

present findings demonstrate a relationship between attachment and the patient's view of the therapeutic alliance. The findings that one's self-report of trust in others generally align with their view of the therapeutic alliance would be expected, as trust is considered a central component of attachment. Of note, method variance, or variance that can be accounted for by method of measurement, can also affect relationships that are found among study constructs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). It is possible that the use of questionnaires in a cross-sectional design contributed to the present study findings of general concordance amongst the patients' self-report of main study constructs. For example, it is possible our participants responded in a socially desirable manner, as these patients often conceal symptoms (Basile, 2004; Vitousek & Stumpf, 2005; Vandereycken & Humbeeck, 2008; Vandereycken, 2006a; Vandereyckecn, 2006b). If our participants were "faking good," this would likely have an impact across their report of all study constructs. This speaks to the importance of accounting for levels of social desirability in future studies.

Therapist perception of the therapeutic alliance. In contrast, the therapist report of the therapeutic alliance was not found to relate with attachment or self-report of trust measures. Instead, the therapist view of the alliance was found to have a positive relationship with ED symptomatology, but not with depressive symptoms. As the WAI-SF assesses not only the bond between the patient and therapist, but also agreement on the tasks and goals of therapy, it is possible that therapists perceive a stronger alliance with patients who are willing to report their symptoms. As mentioned, patients with eating disorders often conceal symptoms, for a variety of reasons (Basile, 2004; Vitousek & Stumpf, 2005; Vandereycken & Humbeeck, 2008; Vandereycken, 2006a; Vandereyckecn, 2006b). Patients that are open/forthcoming with their

eating disorder symptoms may appear more in agreement with the goals of therapy, therefore strengthening the therapist view of the alliance.

Discrepancy between alliance reports. The discrepant finding between patient and therapist report of the therapeutic alliance is of great importance, particularly for clinicians working with this population. As patients reported a stronger view of the therapeutic alliance, they also indicated concordance across most attachment relationships and self-reported trust, as well as indicating lower symptomatology. It is possible that these patients were reporting in a socially desirable manner, which may help explain why the patient and therapist view of the alliance is discrepant. Perhaps therapists do not view a strong alliance with patients that are more guarded in their treatment. Instead, therapists may perceive a closer alliance with patients that are open and forthcoming with their difficulties.

Another possibility is that patients and therapists have different perspectives on what makes the therapeutic alliance strong. In a recent review, Zaitsoff and colleagues (2015) emphasized that despite the wide recognition of the importance of the therapeutic alliance in relationship to outcomes for other psychiatric illnesses, there is limited research on this topic for eating disorders. These authors identified 19 papers on this topic, with five sampling adolescents with AN, one on adolescents with BN, and none with mixed EDs (including ED NOS). Among the limited studies on the alliance-outcome relationship, it seemed that the patients' view of the alliance was more strongly associated with improvements in ED symptoms than the therapists' report, and that patient (rather than staff) report of the alliance predicted premature dropout from treatment (Treasure, 1999; Gallop et al., 1994). These initial findings suggest that the patient report may be more important in predicting critical treatment outcomes, than the therapist report.

Summary and conclusions. The present findings demonstrated no relationship between patient and therapist report of the therapeutic alliance. As expected, patient report of the alliance was positively associated with patient reported attachment and trust in others, and negatively associated with symptoms. It could be that the patients reported in a socially desirable manner, as individuals with EDs are known to have high concern for how they are viewed by others. In addition, the therapist report of the alliance was stronger with patients who reported higher ED symptoms. This suggests that therapists perceive a greater alliance with patients that are open in reporting their symptoms. It will be important for future research to examine the present study findings longitudinally, to determine if a discrepant view of the alliance continues throughout treatment and post-treatment, and to elucidate which view of the alliance is more important. Does the patient view of the alliance predict outcomes of treatment better? Or is the therapist's perception of the alliance more indicative of outcomes? Even more specifically, it will be important to determine if the patient vs. therapist report of the alliance are related to different aspects of treatment outcomes.

Clinical Implications

The findings from the present study provide valuable information to inform treatment of adolescents suffering from eating disorders. Behavioral trust, as measured by Overall Earnings on the Trust Game, explains unique variance in eating disorder severity, above and beyond a relevant construct (depression), which suggests that behavioral trust is significantly related to an important aspect of treatment. Given this, clinicians could utilize the Trust Game as a tool to identify patients that may be at a heightened risk for greater illness severity. The ability to identify those at higher risk could facilitate both clinicians and families in pursuing early intervention.

It is also possible the present study findings may be tapping into a quality of *openness* in these patients. Simply put, perhaps patients that are more open may be more willing to report their symptoms and also engage with a new "person" on the Trust Game. Patients may demonstrate a quality of openness for a variety of reasons: inherent characteristic, more trusting of others, distress over symptoms, insightful, sociable, agreeable, etc. If the Trust Game is able to identify patients that are open versus more guarded, this will be a valuable resource to treatment providers as current self-report methods to assess self-concealment are inherently limited as they rely on the honesty and openness of the respondent (Vandereycken & Humbeeck, 2008). Clinicians could utilize the game to identify those patients who may be more likely to be open in treatment – and also those who may be more guarded and struggle to engage. Clinicians should use their knowledge of which patients may be less open to be creative with their approach to engaging these individuals in treatment.

Additionally, the present study shows the Trust Game is useful in explaining illness severity beyond depression, and it shows that the information gathered from the Trust Game is quite different from that of self-reported trust. This offers clinicians a robust objective measure for assessing behavioral trust. As previously described, information gathered from self-report measures is limited due to potential for impression management bias. Given this, a behavioral measure can enhance the clinician's ability to gather more accurate information regarding behavioral manifestations of trust.

The present study also found that patient and therapist reports of the strength of the therapeutic alliance do not match. They were found to differentially relate to other relevant constructs. The patient's view of the alliance was positively associated with measures of attachment, self-report trust, and negative with ED and depressive symptoms. The therapist's

report positively related to ED symptoms (as reported by the patients). These findings should inform clinicians, those who design treatment programs and those who deliver interventions, to not be surprised when adolescents with eating disorders have different views on what factors are important in treatment. The limited research on the alliance-outcome relationship in patients with eating disorders suggests that different perspectives on the alliance may relate differently to outcomes, and that the patient's view may be the most important (Zaitsoff et al., 2015; Gallop et al., 1994; Treasure et al., 1999). Our findings are consistent with this literature and should help to remind clinicians of the great importance of the patient's perspective on the alliance. This should also encourage clinicians to ensure they assess patient's opinions on treatment, solicit their feedback and suggestions for treatment goals, as well as to work creatively to engage patients collaboratively in the treatment process.

Limitations

The present study has several limitations that will need to be considered when interpreting the results and implications for future research. First, since the design of this study is cross-sectional, this limits the information gathered to a one-time view of the participants. Given this, the long-term implications of this study's findings that would be ascertained in a longitudinal design are not known, including the development of behavioral trust over time (pre-treatment, during, post-treatment, etc.).

Another possible limitation is the use of self-report measures for several of the variables. This type of measurement allows for participants to provide biased responses, as they are subjective first-person responses. However, this study mitigates the impact of self-report by the addition of a behavioral measure, the Trust Game, which provides objective behavioral data. In

addition, the researchers included both a patient-report and therapist-report assessment of the therapeutic alliance, to reduce measurement error by incorporating multiple perspectives.

Although the proposed sample size satisfies requirements for the planned analyses, future studies would benefit from a larger sample size. In particular, with a large sample, the investigators could enter additional control variables into the HMR, allowing for examination of additional factors such as social desirability and relevant personality characteristics (e.g. openness). In addition, larger sample sizes would further reduce sampling and measurement error. Finally, a larger sample size may ensure that the analyses can detect actual effects that exist, particularly if they have small effect sizes, such as possibly detecting a relationship between the Trust Game and the therapeutic alliance.

It is possible that other factors contributed to the participant performance on the Trust Game, such as social desirability and executive functioning skills. Due to the length of time required to participate in this study (1.5 hours for consent forms, questionnaires, and the Trust Game), the researchers decided not to include additional measures in effort to reduce participant fatigue. Future studies should assess for social desirability and executive functioning to determine their role in Trust Game performance. Another potential factor affecting Trust Game performance is the length of time in treatment. However, the researchers made an effort to reduce the impact of treatment on performance by recruiting patients within 2-6 weeks of admission, and only those admitted to the inpatient or partial hospitalization levels of care (not intensive outpatient or regular outpatient).

Although the researchers attempted to reduce participant fatigue by limiting the length of assessments, it is still possible that fatigue impacted participant performance. In an effort to further limit the impact of fatigue, the researchers had participants complete questionnaires that

assessed stable characteristics upon admission, while the rest were administered along with the Trust Game.

Another limitation is few male participants in the current study. This is likely due to the low treatment-seeking behavior of males with eating disorders. Also, we did not have the capability to enroll Spanish-speaking patients. This limits the ability to generalize our findings to male and Spanish-speaking patients with eating disorders.

Another consideration is that the present study involved one examiner enrolling the participants. The researchers did include a separate research assistant to recruit and schedule participants, but it is still important to consider the potential for experimenter bias given only one examiner conducted the study. A potential benefit to using one examiner, however, is that the administration of the measures was likely standardized across all participants, as there was no inter-examiner discrepancy.

Future Directions of Research

The present study findings provide valuable information to guide future research endeavors on this topic. The current study is an initial step in understanding behavioral trust as it manifests in adolescents with eating disorders in an interpersonal situation, and how it relates to important components of their treatment. These findings set the stage for future research to examine trust in this population with other critical relationships, including between the adolescent and their parent, as well as with their individual therapist. The Trust Game allows for researchers to examine behavioral trust in these important relationships, which may reveal information that could be obscured by self-report measures of trust.

In addition, future studies should examine the Trust Game in an adolescent clinical sample with a longitudinal design. This design will allow the examiners to assess the role of

trust at multiple time points, such as pre-treatment, during treatment, post-treatment, and at follow-up. Wieselquist and colleagues (1999) demonstrated that trust in interpersonal situations is not entirely dependent on one's attachment style, and can be engendered by the other person's behaviors. This suggests that trust, in interpersonal situations, is a malleable construct. This is in contrast to a related construct, attachment style, which is viewed as more stable. If trust can be engendered (whereas one's attachment style may be more fixed), this could instill hope in clinicians that efforts to establish trust with these patients can be fruitful. LoTempio and colleagues (2013) demonstrated that a strong therapeutic alliance can form with clients with anorexia nervosa. Importantly, providing clinicians with an area to focus on in developing the therapeutic alliance – building trust – may further dissuade the common misperception that an alliance cannot be achieved with patients suffering from eating disorders. The Trust Game provides an opportunity to assess changes in trust behaviors over time and through the course of treatment. Given that behavioral trust appears as a malleable construct, this suggests that future studies should examine the impact of interventions focused on enhancing behavioral trust both with treatment providers and with family members (as they are often an important part of the treatment).

Future studies should examine the impact of individual characteristics, such as qualities of openness, on Trust Game performance. These studies should also examine if a trust intervention is more helpful for patients that are initially less generous and less effective overall on the Trust Game at admission to treatment, as these patients reported less symptoms in our study, and perhaps were being less open and more guarded. In addition, future studies could also garner an understanding of trust across the span of illness. Our initial findings (including an unpublished sample of healthy adolescents) suggest that these patients may be less generous and

less effective overall on the Trust Game than healthy individuals. Future studies should compare

adolescents with eating disorders to healthy individuals, to further determine differences.   Then

studies could examine if trust is impaired prior to or after developing clinical symptoms, and if

the impairment remains after the illness resolves. Also, studies could examine if trust improves

along with illness reduction, and if these gains are maintained.

As mentioned, limited research exists on the alliance-outcome relationship for individuals

with eating disorders (Zaitsoff et al., 2015). The present study found no relationship between

patient/therapist reports of the alliance, and that their views corresponded to different constructs

relevant to treatment. Additional research should continue to examine the therapeutic alliance in

adolescents with eating disorders, and in particular, should measure the alliance at multiple time

points to assess for changes and how that relates to treatment outcomes. The initial findings on

the alliance-outcome relationship for this population suggest that the patient's perspective of the

alliance may be more important in terms of overall improvements (Treasure, 1999; Gallop et al.,

1994). Future studies should continue to elucidate which perspective of the alliance is more

important for this population. If it appears that the patient report is indeed more related to

outcomes, additional studies could assess interventions geared at enhancing patient view of the

strength of the therapeutic alliance.

Finally, while the present study findings will generalize to the demographics of the

adolescent clinical population that most commonly pursue treatment, future studies should

incorporate more male and Spanish-speaking patients in order to evaluate how behavioral trust

manifests with these individuals.

Table 1

Demographic Characteristics of Study Participants (n = 40)

	Mean	SD	Range
Age (years)	14.60	1.80	12.0 - 18.0
Admission BMI	18.15	3.41	13.0 - 26.0
Anorexia Nervosa	16.57	1.91	13 – 21
Bulimia Nervosa	22.18	2.36	18 – 26
Eating Disorder NOS	16.75	3.33	13 - 21
	Frequency	Percent	
Sex			
Female	36	90.0	
Male	4	10.0	
Eating Disorder Diagnosis, DSM-IV Criteria			
Anorexia Nervosa (AN)	21	52.5	
Bulimia Nervosa (BN)	11	27.5	
Eating Disorder NOS (ED NOS)	8	20.0	
Ethnicity			
Caucasian	32	80.0	
African American	3	7.5	
Hispanic	2	5.0	
Asian	2	5.0	
More than one	1	2.5	
Household Income			
Below $30,000	5	12.5	
$30,000 - $60,000	7	17.5	
$60,000 - $90,000	6	15.0	
$90,000 - $120,000	7	17.5	
Above $120,000	15	37.5	
Parent Education			
Below High School	3	7.5	
High School	4	10.0	
Some College	13	32.5	
College	12	30.0	
Above College	8	20.0	

Note: BMI = Body Mass Index calculated based on weight divided by height squared; Underweight = Less than the 5th percentile, Healthy weight = 5th - <85th percentile, Overweight = 86th to <95th percentile; NOS = Not Otherwise Specified

Table 2

Descriptive Information of Clinical Variables (n=40)

	Mean	SD	Range
EAT-26 on Admission	31.28	18.83	0 – 62
Dieting	16.68	13.05	0 – 38
Bulimia and Food Preoccupation	6.35	4.88	0 – 17
Oral Control	8.25	4.33	0 - 16
QIDS-SR-16 on Admission	12.50	6.74	3 – 26
	Frequency	Percent	
No Symptoms (0 -5)	8	20.0	
Mild (6 – 10)	12	30.0	
Moderate (11 – 15)	5	12.5	
Severe (16 – 20)	8	20.0	
Very Severe (21 – 27)	7	17.5	

Note: EAT-26 = Eating Attitudes Test-26; higher scores on EAT-26 indicate greater eating disorder symptomatology and scores above 20 indicate clinical significance
QIDS-SR-16 = Quick Inventory of Depressive Symptomatology; higher scores denote greater depressive symptoms.

Table 3

Descriptive Information of Inventory of Parent and Peer Attachment (IPPA) (n=40)

	Mean	SD	Range
IPPA – Parent Composite	93.40	20.47	53 – 125
IPPA – Mother	99.83	19.62	51 – 125
Communication	34.93	8.35	15 – 45
Trust	42.35	7.52	22 – 50
Anger and Alienation	13.10	5.57	5 – 23
IPPA - Father	86.98	25.67	36 – 125
Communication	28.30	10.62	12 – 45
Trust	38.30	10.60	12 – 50
Anger and Alienation	15.65	6.40	6 - 27
IPPA – Best Friend	91.35	22.95	30 – 120
Communication	29.10	8.21	9 – 40
Trust	40.45	8.85	11 – 50
Anger and Alienation	19.05	6.06	7 – 33

Note: Higher scores on IPPA Composite and Targets (Mother, Father, and Best Friend) indicate perception of greater quality of attachment. Composite and Target scores can range from 25 – 125.

Table 4

Descriptive Information of Self-Report of Trust Variables (n=40)

	Mean	SD	Range
Rempel Interpersonal Trust Scale	95.51	16.63	58 – 124
Mother	100.10	18.67	44 – 126
Father	93.25	23.35	44 – 126
Best Friend	93.18	21.72	53 – 126
Generalized Trust Beliefs – Late Adolescents	59.60	9.51	38 – 77
Mothers	24.03	3.57	18 – 30
Fathers	17.88	4.85	7 – 26
Peers	17.70	3.96	10 - 27
Yamgishi General Trust Scale	26.30	6.68	13.0 - 39.0

Note: Higher scores on all measures indicate greater reports of trust. Total scores can range from 18 – 126 for the Rempel Interpersonal Trust Scale, 18 – 90 for the Generalized Trust Beliefs – Late Adolescents, and 6 – 42 for the Yamagishi General Trust Scale.

Table 5

Descriptive Information of Working Alliance Inventory – Short Form (WAI-SF) (n=40)

	Mean	SD	Range
WAI-SF – Patient Report	69.48	11.62	46 - 84
Task	23.05	4.85	6 – 28
Bond	23.12	5.16	4 – 28
Goal	22.75	4.16	12 - 28
WAI-SF – Therapist Report	62.17	9.62	42 – 78
Task	19.75	3.77	12 – 27
Bond	21.88	3.13	15 – 26
Goal	20.55	3.46	14 - 27

Note: Higher scores indicate stronger perception of the therapeutic alliance. Task refers to agreement on the tasks needed to reach therapy goals. Bond refers to the relationship between therapist and patient. Goal refers to agreement on the goals for therapy. Total scores can range from 12 – 84.

Table 6:

Descriptive Information of Trust Game Variables for Study Participants (n=40)

	Mean	SD	Range
Overall Earnings	197.78	59.51	75 - 316
Overall Repayment Ratio	0.28	0.14	0.06 - 0.53
Initial Repayment Ratio	0.34	0.14	0.00 – 0.57

Descriptive Information of Trust Game Variables for Sample of Healthy Adolescents[1]

	Mean	SD	Range
Overall Earnings (n = 19)	226.89	61.60	137 - 350
Overall Repayment Ratio (n = 19)	0.35	0.11	0.16 – 0.56
Initial Repayment Ratio (n = 18)	0.42	0.15	0.25 – 0.89

Note: Higher scores on Overall Earnings indicate greater amount earned in game by patient. Higher amount on Overall Repayment Ratio indicates greater average amount returned by patient, relative to amount given, across all rounds of the game. Higher amount on Initial Repayment Ratio denotes greater amount returned by patient, relative to amount given on first round.

[1] McAdams, C. (April 21st, 2015) Unpublished raw data, personal communication.

Table 7:

Results of t-tests of Trust Game Variables for Study Participants and a Sample of Healthy Adolecents[1]

	Group						
	Patient Sample		Healthy Sample				
	Mean (SD)	n	Mean (SD)	n	95% CI	t	df
OE	197.78 (59.51)	40	226.89 (61.60)	19	-4.46, 62.70	1.73[†]	57
ORR	0.28 (0.14)	40	0.35 (0.11)	19	0.00, 0.14	1.91[†]	57
IRR	0.34 (0.14)	40	0.42 (0.15)	18	0.00, 0.16	2.05*	56

Note: OE = Overall Earnings on Trust Game; ORR = Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game
[1] McAdams, C. (April 21st, 2015) Unpublished raw data, personal communication.
[†]$p < .10$, * $p < .05$

Table 8

Hypothesis 1: Bivariate Pearson Correlations Between Behavioral Trust and Attachment
(N= 40)

	Overall Earnings	Overall Repayment Ratio	Initial Repayment Ratio
IPPA – Parent Composite	0.32*	0.02	0.06
IPPA - Mother	0.36*	0.02	0.08
Communication	0.38*	0.09	0.08
Trust	0.36*	-0.04	0.14
Anger and Alienation	-0.19	0.04	0.10
IPPA- Father	0.23	0.01	0.04
Communication	0.22	0.06	0.01
Trust[1]	0.34*	0.04	0.10
Anger and Alienation	-0.12	0.06	0.07
IPPA - Best Friend	-0.04	-0.21	-0.10
Communication	0.01	-0.20	-0.14
Trust	-0.04	-0.20	-0.09
Anger and Alienation	0.13	0.13	0.08

Note: [1]Appropriate log transformation was used. IPPA = Inventory of Parent and Peer Attachment
*p < .05

Table 9

Hypothesis 1(continued): Bivariate Pearson Correlations Between Behavioral Trust and Self-Reported Trust (N = 40)

	Overall Earnings	Overall Repayment Ratio	Initial Repayment Ratio
Rempel Interpersonal Trust Scale	0.11	-0.10	0.18
Mother	0.20	-0.05	0.16
Father	0.08	-0.07	0.10
Best Friend	-0.02	-0.12	0.17
GTB-LA	-.06	-0.01	0.24
Mothers	0.08	0.01	0.35*
Fathers	0.01	0.06	0.24
Peers	-0.22	-0.10	-0.03
Yamgishi General Trust Scale	0.06	0.02	0.08

Note: GTB-LA = Generalized Trust Beliefs – Late Adolescents
*p < .05

Table 10

Hypothesis 2a: Bivariate Pearson Correlations Between Behavioral Trust and Eating

Disorder and Depressive Symptoms (N = 40)

	Overall Earnings	Overall Repayment Ratio	Initial Repayment Ratio
EAT-26	0.34*	0.11	0.35*
Dieting	0.29*	0.07	0.34*
Bulimia & Food Preoccupation	0.40*	0.16	0.35*
Oral Control	0.18	0.08	0.09
QIDS-SR-16	0.14	0.21	0.37*

Note: EAT-26 = Eating Attitudes Test-26; QIDS-SR-16 = Quick Inventory of Depressive
Symptomatology
* $p < .05$

Table 11

Hypothesis 2b: Hierarchical Regression Analyses for Trust Game Scores Predicting Eating Disorder Severity (EAT-26), After Controlling for Depressive Symptoms (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	55.64***	0.58	1, 38			
QIDS-SR-16[1]				2.34	0.31	0.77***
Model 2	8.16**	0.65	1, 37			
QIDS-SR-16[1]				2.27	0.29	0.75***
OE				0.09	0.03	0.27**
Regression 2						
Model 1	55.64***	0.58	1, 38			
QIDS-SR-16[1]				2.34	0.31	0.77***
Model 2	0.11	0.57	1, 37			
QIDS-SR-16[1]				2.36	0.32	0.78***
ORR				-4.93	14.62	-0.04
Regression 3						
Model 1	55.64***	0.58	1, 38			
QIDS-SR-16[1]				2.34	0.31	0.77***
Model 2	0.34	0.58				
QIDS-SR-16[1]				2.27	0.34	0.75***
IRR				8.90	15.24	0.07

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; ORR = Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game; R^2 = Adjusted R^2 used for all regressions due to sample size.
* p < .05, ** p < .01, *** p < .001

Table 12

Hypothesis 3a: Bivariate Pearson Correlations Between Behavioral Trust and the Therapeutic Alliance (N = 40)

	Overall Earnings	Overall Repayment Ratio	Initial Repayment Ratio
WAI – SF – Patient Report	-0.16	-0.26†	-0.07
Task[1]	-0.12	-0.30†	-0.15
Bond	-0.18	-0.25	-0.08
Goal[1]	-0.07	-0.15	0.08
WAI – SF – Therapist Report	0.19	-0.02	0.03
Task	0.18	-0.03	0.07
Bond	0.15	-0.03	-0.03
Goal	0.19	0.01	0.03

Note: [1]Appropriate log transformations used; WAI - SF = Working Alliance Inventory – Short Form
†p < .10

Table 13

Hypothesis 3b: Hierarchical Regression Analyses for Trust Game Scores Predicting Patient-Reported Therapeutic Alliance (WAI-SF), After Controlling for Depression (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	5.24*	0.10	1, 38			
QIDS-SR-16				-0.60	0.26	-0.35*
Model 2	0.51	0.09	1, 37			
QIDS-SR-16				-0.57	0.27	-0.33*
OE				-0.02	0.03	-0.11
Regression 2						
Model 1	5.24*	0.10	1, 38			
QIDS-SR-16				-0.60	0.26	-0.35*
Model 2	1.67	0.11	1, 37			
QIDS-SR-16				-0.53	0.27	-0.31†
ORR				-16.91	13.09	-0.20
Regression 3						
Model 1	5.24*	0.10	1, 38			
QIDS-SR-16				-0.60	0.26	-0.35*
Model 2	0.19	0.08	1, 37			
QIDS-SR-16				-0.65	0.29	-0.38*
IRR				6.09	13.82	0.07

Note: QIDS-SR-16 = Quick Inventory of Depressive Symptomatology; WAI-SF = Working Alliance Inventory - Short Form; OE = Overall Earnings on Trust Game; ORR = Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game; R^2 = Adjusted R^2 used for all regressions due to sample size. †p < .10, * p < .05

Table 14

Hypothesis 3b(continued): Hierarchical Regression Analyses for Trust Game Scores
Predicting Therapist-Reported Therapeutic Alliance (WAI-SF), After Controlling for
Depression (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	1.81	0.02	1, 38			
QIDS-SR-16				0.30	0.23	0.21
Model 2	0.03	0.02	1, 37			
QIDS-SR-16				0.27	0.23	0.19
OE				0.03	0.03	0.16
Regression 2						
Model 1	1.81	0.02	1, 38			
QIDS-SR-16				0.30	0.23	0.21
Model 2	0.16	-0.00	1, 37			
QIDS-SR-16				0.32	0.23	0.23
ORR				-4.60	11.52	-0.07
Regression 3						
Model 1	1.81	0.02	1, 38			
QIDS-SR-16				0.30	0.23	0.21
Model 2	0.12	-0.00	1, 37			
QIDS-SR-16				0.34	0.25	0.24
IRR				-4.08	11.95	-0.06

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology; WAI-SF =
Working Alliance Inventory - Short Form; OE = Overall Earnings on Trust Game; ORR =
Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game; R^2
= Adjusted R^2 used for all regressions due to sample size.
* p < .05

Table 15

Exploratory Aim 1: Hierarchical Regression Analyses for Interaction of Diagnosis on Depression Predicting Eating Disorder Severity (EAT-26) (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	35.55***	0.73	3, 36			
QIDS-SR-16[1]				1.95	0.27	0.64***
OE				0.09	0.03	0.27**
Traditional/Nontraditional				-14.05	4.15	-0.30**
Model 2	0.07	0.72	1, 35			
QIDS-SR-16[1]				1.60	1.37	0.53
OE				0.08	0.03	0.26**
Traditional/Nontraditional				-16.90	9.07	-0.35[†]
Traditional/NontaditionalxQIDS-SR-16[1]				0.33	1.28	0.11
Regression 2						
Model 1	25.90	0.66	3, 36			
QIDS-SR-16[1]				2.13	0.31	0.70***
OE				0.08	0.03	0.27**
AN+EDNOS/BN				5.60	4.17	0.13
Model 2	0.18	0.65	1, 35			
QIDS-SR-16[1]				2.51	0.96	0.83*
OE				0.08	0.03	0.26**
AN+EDNOS/BN				9.54	10.26	0.23
AN+EDNOS/BNxQIDS-SR-16[1]				-0.31	0.74	-0.19

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; Traditional/Nontraditional = Dichotomous variable of Anorexia + Bulimia Nervosa versus Eating Disorder NOS; AN+EDNOS/BN = Dichotomous variable of Anorexia Nervosa + Eating Disorder NOS versus Bulima Nervosa; R^2 = Adjusted R^2 used for all regressions due to sample size.
[†]p < .10,* p < .05, ** p < .01, *** p < .001

Table 16

Exploratory Aim 1(continued): Hierarchical Regression Analyses for Interaction of Diagnosis on Overall Earnings Predicting Eating Disorder Severity (EAT-26) (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 3						
Model 1	35.55***	0.73	3, 36			
QIDS-SR-16[1]				1.95	0.27	0.64***
OE				0.09	0.03	0.27**
Traditional/Nontraditional				-14.05	4.15	-0.30**
Model 2	0.70	0.72	1, 35			
QIDS-SR-16[1]				1.96	0.27	0.64***
OE				0.15	0.08	0.47[†]
Traditional/Nontraditional				-4.20	12.51	-0.09
Traditional/NontraditionalxOE				-0.05	0.06	-0.29
Regression 4						
Model 1	25.90***	0.66	3, 36			
QIDS-SR-16[1]				2.13	0.31	0.70***
OE				0.08	0.03	0.27**
AN+EDNOS/BN				5.60	4.17	0.13
Model 2	2.94[†]	0.67	1, 35			
QIDS-SR-16[1]				2.17	0.30	0.71***
OE				-0.15	0.14	-0.49
AN+EDNOS/BN				-40.92	27.45	-0.98
AN+EDNOS/BNxOE				0.23	0.13	1.40[†]

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; Traditional/Nontraditional = Dichotomous variable of Anorexia + Bulimia Nervosa versus Eating Disorder NOS; AN+EDNOS/BN = Dichotomous variable of Anorexia Nervosa + Eating Disorder NOS versus Bulima Nervosa; R^2 = Adjusted R^2 used for all regressions due to sample size.
[†]$p < .10$,* $p < .05$, ** $p < .01$, *** $p < .001$

Table 17

Exploratory Aim 2: Hierarchical Regression Analyses for Interaction of SES variables on Depression predicting Eating Disorder Severity (EAT-26) (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	24.11***	0.64	3, 36			
QIDS-SR-16[1]				2.26	0.30	0.74***
OE				0.09	0.03	0.28**
INCOME				-0.55	3.69	-0.02
Model 2	0.67	0.64	1, 35			
QIDS-SR-16[1]				1.57	0.89	0.52†
OE				0.08	0.03	0.26*
INCOME				-5.77	7.37	-0.15
INCOMEx QIDS-SR-16[1]				0.53	0.64	0.27
Regression 2						
Model 1	24.83***	0.65	3, 36			
QIDS-SR-16[1]				2.29	0.29	0.75***
OE				0.08	0.03	0.25*
EDUCATION				3.19	3.71	0.09
Model 2	2.93†	0.67	1, 35			
QIDS-SR-16[1]				0.88	0.87	0.29
OE				0.09	0.03	0.28**
EDUCATION				-7.72	7.32	-0.21
EDUCATIONx QIDS-SR-16[1]				1.04	0.61	0.55†

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; INCOME = estimated household income; EDUCATION = parental education; R^2 = Adjusted R^2 used for all regressions due to sample size.
†p < .10,* p < .05, ** p < .01, *** p < .001

Table 18

Exploratory Aim 2(continued): Hierarchical Regression Analyses for Interaction of SES variables on Overall Earnings predicting Eating Disorder Severity (EAT-26) (N = 40)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 3						
Model 1	24.11***	0.64	3, 36			
QIDS-SR-16[1]				2.26	0.30	0.74***
OE				0.09	0.03	0.28**
INCOME				-0.55	3.69	-0.02
Model 2	0.04	0.63	1, 35			
QIDS-SR-16[1]				2.27	0.30	0.75***
OE				0.12	0.10	0.34
INCOME				1.99	13.05	0.05
INCOMExOE				-0.01	0.06	-0.10
Regression 4						
Model 1	24.83***	0.65	3, 36			
QIDS-SR-16[1]				2.29	0.29	0.75***
OE				0.08	0.03	0.25*
EDUCATION				3.19	3.71	0.09
Model 2	2.88[†]	0.67	1, 35			
QIDS-SR-16[1]				2.40	0.30	0.79***
OE				-0.08	0.10	-0.25
EDUCATION				-18.13	13.07	-0.49
EDUCATIONxOE				0.11	0.06	0.87[†]

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; INCOME = estimated household income; EDUCATION = parental education; R^2 = Adjusted R^2 used for all regressions due to sample size.
[†]p < .10,* p < .05, ** p < .01, *** p < .001

Table 19

Exploratory Aim 3: Bivariate Pearson Correlations between Patient and Therapist Reports of the Therapeutic Alliance and Additional Study Variables (N = 40)

	WAI –SF Patient Report	WAI – SF Therapist Report
WAI – SF – Patient Report	–	–
WAI – SF – Therapist Report	0.07	–
IPPA – Parent composite	0.24	-0.19
IPPA – Mother	037*	-0.22
IPPA – Father	0.10	-0.13
IPPA – Best Friend	0.46**	-0.04
Rempel Interpersonal Trust Scale -Composite	0.44**	-0.26
GTB-LA	0.41**	-0.12
Yamagishi General Trust Scale	0.27†	-0.17
EAT-26	-0.34*	0.41**
QIDS-SR-16	-0.35*	0.21

Note: WAI - SF = Working Alliance Inventory – Short Form; IPPA = Inventory of Parent and Peer Attachment; GTB-LA = Generalized Trust Beliefs – Late Adolescents; EAT-26 = Eating Attitudes Test – 26; QIDS-SR-16 = Quick Inventory of Depressive Symptomatology
†p < .10,* p < .05, ** p < .01

Table 20

Bivariate Pearson Correlations between Weight Variables and Eating Disorder Symptoms

	EAT-26 (ALL EDs; N = 40)	EAT-26 (AN; N = 21)
%IBW	0.29[†]	0.32
BMI	0.37*	0.42[†]

Note: EAT-26 = Eating Attitudes Test-26; ED = Eating Disorders; AN = Anorexia Nervosa; % Ideal Body Weight (IBW) calculated based on 50th percentile for weight compared to CDC same sex and age plots; BMI = Body Mass Index calculated based on weight divided by height squared.
[†]p < .10, * p < .05

Table 21

Hierarchical Regression Analyses for Trust Game Scores Predicting AN Eating Disorder Severity (%IBW), After Controlling for Depressive Symptoms (N = 21)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	0.21	-0.04	1, 19			
QIDS-SR-16[1]				0.14	0.31	0.10
Model 2	0.21	-0.09	1, 18			
QIDS-SR-16[1]				0.13	0.31	0.10
OE				0.01	0.03	0.11
Regression 2						
Model 1	0.21	-0.04	1, 19			
QIDS-SR-16[1]				0.14	0.31	0.10
Model 2	0.42	-0.07	1, 18			
QIDS-SR-16[1]				0.09	0.32	0.07
ORR				8.94	13.76	0.16
Regression 3						
Model 1	0.21	-0.04	1, 19			
QIDS-SR-16[1]				0.14	0.31	0.10
Model 2	1.05	-0.04	1, 18			
QIDS-SR-16[1]				0.26	0.33	0.20
IRR				-13.37	13.07	-0.25

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; %IBW = % Ideal Body Weight calculated based on 50th percentile for weight compared to CDC same sex and age plots; AN = Anorexia Nervosa; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; ORR = Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game; R^2 = Adjusted R^2 used for all regressions due to sample size.

Table 22

Hierarchical Regression Analyses for Trust Game Scores Predicting AN Eating Disorder Severity (BMI), After Controlling for Depressive Symptoms (N = 21)

	F for Δ in R^2	R^2	*df*	*B*	S.E. *B*	β
Regression 1						
Model 1	1.11	0.01	1, 19			
QIDS-SR-16[1]				0.07	0.07	0.24
Model 2	0.15	-0.04	1, 18			
QIDS-SR-16[1]				0.07	0.07	0.23
OE				0.002	0.01	0.09
Regression 2						
Model 1	1.11	0.01	1, 19			
QIDS-SR-16[1]				0.07	0.07	0.24
Model 2	0.25	-0.04	1, 18			
QIDS-SR-16[1]				0.06	0.07	0.21
ORR				1.47	2.95	0.12
Regression 3						
Model 1	1.11	0.01	1, 19			
QIDS-SR-16[1]				0.07	0.07	0.24
Model 2	0.79	-0.01	1, 18			
QIDS-SR-16[1]				0.09	0.07	0.31
IRR				-2.49	2.80	-0.21

Note: [1]QIDS-SR-16 = Quick Inventory of Depressive Symptomatology calculated without appetite items; BMI = Body Mass Index calculated based on weight divided by height squared; Underweight = Less than the 5th percentile, Healthy weight = 5th - <85th percentile, Overweight = 86th to <95th percentile; AN = Anorexia Nervosa; EAT-26 = Eating Attitudes Test-26; OE = Overall Earnings on Trust Game; ORR = Overall Repayment Ratio on Trust Game; IRR = Initial Repayment Ratio on Trust Game; R^2 = Adjusted R^2 used for all regressions due to sample size.

APPENDIX A: SELF-REPORT MEASURES

Eating Attitudes Test – 26

Eating Attitudes Test (EAT-26)©

Instructions: This is a screening measure to help you determine whether you might have an eating disorder that needs professional attention. This screening measure is not designed to make a diagnosis of an eating disorder or take the place of a professional consultation. Please fill out the below form as accurately, honestly and completely as possible. There are no right or wrong answers. All of your responses are confidential.

Part A: Complete the following questions:

1) Birth Date   Month: Day: Year: 2) Gender: Male   Female

3) Height   Feet :   Inches: ☐   ☐

4) Current Weight (lbs.):   5) Highest Weight (excluding pregnancy):

6) Lowest Adult Weight: 7: Ideal Weight:

Part B: Check a response for each of the following statements:	Always	Usually	Often	Some times	Rarely	Never
1. Am terrified about being overweight.	☐	☐	☐	☐	☐	☐
2. Avoid eating when I am hungry.	☐	☐	☐	☐	☐	☐
3. Find myself preoccupied with food.	☐	☐	☐	☐	☐	☐
4. Have gone on eating binges where I feel that I may not be able to stop.	☐	☐	☐	☐	☐	☐
5. Cut my food into small pieces.	☐	☐	☐	☐	☐	☐
6. Aware of the calorie content of foods that I eat.	☐	☐	☐	☐	☐	☐
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	☐	☐	☐	☐	☐	☐
8. Feel that others would prefer if I ate more.	☐	☐	☐	☐	☐	☐
9. Vomit after I have eaten.	☐	☐	☐	☐	☐	☐
10. Feel extremely guilty after eating.	☐	☐	☐	☐	☐	☐
11. Am preoccupied with a desire to be thinner.	☐	☐	☐	☐	☐	☐
12. Think about burning up calories when I exercise.	☐	☐	☐	☐	☐	☐
13. Other people think that I am too thin.	☐	☐	☐	☐	☐	☐
14. Am preoccupied with the thought of having fat on my body.	☐	☐	☐	☐	☐	☐
15. Take longer than others to eat my meals.	☐	☐	☐	☐	☐	☐
16. Avoid foods with sugar in them.	☐	☐	☐	☐	☐	☐
17. Eat diet foods.	☐	☐	☐	☐	☐	☐
18. Feel that food controls my life.	☐	☐	☐	☐	☐	☐
19. Display self-control around food.	☐	☐	☐	☐	☐	☐
20. Feel that others pressure me to eat.	☐	☐	☐	☐	☐	☐
21. Give too much time and thought to food.	☐	☐	☐	☐	☐	☐
22. Feel uncomfortable after eating sweets.	☐	☐	☐	☐	☐	☐
23. Engage in dieting behavior.	☐	☐	☐	☐	☐	☐
24. Like my stomach to be empty.	☐	☐	☐	☐	☐	☐
25. Have the impulse to vomit after meals.	☐	☐	☐	☐	☐	☐
26. Enjoy trying new rich foods.	☐	☐	☐	☐	☐	☐

Part C: Behavioral Questions: In the past 6 months have you:	Never	Once a month or less	2-3 times a month	Once a week	2-6 times a week	Once a day or more
A Gone on eating binges where you feel that you may not be able to stop? *	☐	☐	☐	☐	☐	☐
B Ever made yourself sick (vomited) to control your weight or shape?	☐	☐	☐	☐	☐	☐
C Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?	☐	☐	☐	☐	☐	☐
D Exercised more than 60 minutes a day to lose or to control your weight?	☐	☐	☐	☐	☐	☐
E Lost 20 pounds or more in the past 6 months	Yes ☐		No ☐			

* Defined as eating much more than most people would under the same circumstances and feeling that eating is out of control

© Copyright: EAT-26: (Garner et al. 1982, *Psychological Medicine*, *12*, 871-878); adapted by D. Garner with permission.

The EAT-26 has been reproduced with permission. Garner et al. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878.

Quick Inventory of Depressive Symptomology

QUICK INVENTORY OF DEPRESSIVE SYMPTOMATOLOGY (SELFREPORT)
(QIDS-SR 16)

*Please circle the **one response** to each item that best describes you for the **past seven days.***

1. Falling asleep:
    0 I never take longer than 30 minutes to fall asleep.
    1 I take at least 30 minutes to fall asleep, less than half the time.
    2 I take at least 30 minutes to fall asleep, more than half the time.
    3 I take more than 60 minutes to fall asleep, more than half the time.

2. Sleep during the night:
    0 I do not wake up at night.
    1 I have a restless, light sleep with a few brief awakenings each night.
    2 I wake up at least once a night, but I go back to sleep easily.
    3 I awaken more than once a night and stay awake for 20 minutes or more, more than half the time

3. Waking up too early:
    0 Most of the time, I awaken no more than 30 minutes before I need to get up.
    1 More than half the time, I awaken more than 30 minutes before I need to get up.
    2 I almost always awaken at least one hour or so before I need to, but I go back to sleep eventually.
    3 I awaken at least one hour before I need to, and can't go back to sleep.

4. Sleeping too much:
    0 I sleep no longer than 7–8 hours/night, without napping during the day.
    1 I sleep no longer than 10 hours in a 24-hour period including naps.
    2 I sleep no longer than 12 hours in a 24-hour period including naps.
    3 I sleep longer than 12 hours in a 24-hour period including naps.

5. Feeling sad:
    0 I do not feel sad.
    1 I feel sad less than half the time.
    2 I feel sad more than half the time.
    3 I feel sad nearly all of the time.

6. Decreased appetite:
    0 There is no change in my usual appetite.
    1 I eat somewhat less often or lesser amounts of food than usual.
    2 I eat much less than usual and only with personal effort.
    3 I rarely eat within a 24-hour period, and only with extreme personal effort or when others persuade me to eat.

QUICK INVENTORY OF DEPRESSIVE SYMPTOMATOLOGY (SELFREPORT)
(QIDS-SR 16)

*Please circle the **one response** to each item that best describes you for the **past seven days**.*

7. Increased appetite:
>   0 There is no change from my usual appetite.
>   1 I feel a need to eat more frequently than usual.
>   2 I regularly eat more often and/or greater amounts of food than usual.
>   3 I feel driven to overeat both at mealtime and between meals.

8. Decreased weight (within the last two weeks):
>   0 I have not had a change in my weight.
>   1 I feel as if I've had a slight weight loss.
>   2 I have lost 2 pounds or more.
>   3 I have lost 5 pounds or more.

9. Increased weight (within the last two weeks):
>   0 I have not had a change in my weight.
>   1 I feel as if I've had a slight weight gain.
>   2 I have gained 2 pounds or more.
>   3 I have gained 5 pounds or more.

10. Concentration/Decision making:
>   0 There is no change in my usual capacity to concentrate or make decisions.
>   1 I occasionally feel indecisive or find that my attention wanders.
>   2 Most of the time, I struggle to focus my attention or to make decisions.
>   3 I cannot concentrate well enough to read or cannot make even minor decisions.

11. View of myself:
>   0 I see myself as equally worthwhile and deserving as other people.
>   1 I am more self-blaming than usual.
>   2 I largely believe that I cause problems for others.
>   3 I think almost constantly about major and minor defects in myself.

12. Thoughts of death or suicide:
>   0 I do not think of suicide or death.
>   1 I feel that life is empty or wonder if it's worth living.
>   2 I think of suicide or death several times a week for several minutes.
>   3 I think of suicide or death several times a day in some detail, or I have made specific plans for suicide or have actually tried to take my life.

QUICK INVENTORY OF DEPRESSIVE SYMPTOMATOLOGY (SELFREPORT) (QIDS-SR 16)

*Please circle the **one response** to each item that best describes you for the **past seven days.***

13. General interest:
    0 There is no change from usual in how interested I am in other people or activities.
    1 I notice that I am less interested in people or activities.
    2 I find I have interest in only one or two of my formerly pursued activities.
    3 I have virtually no interest in formerly pursued activities.

14. Energy level:
    0 There is no change in my usual level of energy.
    1 I get tired more easily than usual.
    2 I have to make a big effort to start or finish my usual daily activities (for example, shopping, homework, cooking or going to work).
    3 I really cannot carry out most of my usual daily activities because I just don't have the energy.

15. Feeling slowed down:
    0 I think, speak, and move at my usual rate of speed.
    1 I find that my thinking is slowed down or my voice sounds dull or flat.
    2 It takes me several seconds to respond to most questions and I'm sure my thinking is slowed.
    3 I am often unable to respond to questions without extreme effort.

16. Feeling restless:
    0 I do not feel restless.
    1 I'm often fidgety, wringing my hands, or need to shift how I am sitting.
    2 I have impulses to move about and am quite restless.
    3 At times, I am unable to stay seated and need to pace around.

Inventory of Parent and Peer Attachment

INVENTORY OF PARENT AND PEER ATTACHMENT (IPPA)

Authors:

© Gay Armsden, Ph.D. and Mark T. Greenberg, Ph.D. [1]

This questionnaire asks about your relationships with important people in your life: your mother, your father, and your close friends. Please read the directions to each part carefully.

Part I

Some of the following statements asks about your feelings about your mother or the person who has acted as your mother. If you have more than one person acting as your mother (e.g. a natural mother and a step-mother) answer the questions for the one you feel has most influenced you.

Please read each statement and circle the <u>ONE</u> number that tells how true the statement is for you now.

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
1. My mother respects my feeling.	1	2	3	4	5
2. I feel my mother does a good job as my mother.	1	2	3	4	5
3. I wish I had a different mother.	1	2	3	4	5
4. My mother accepts me as I am.	1	2	3	4	5
5. I like to get my mother's point of view on things I'm concerned about.	1	2	3	4	5
6. I feel it's no use letting my feelings show around my mother.	1	2	3	4	5
7. My mother can tell when I'm upset about something.	1	2	3	4	5

[1] Address for Dr. Greenberg: Dept. of Human Development, Penn State University, State College, PA 16802.

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
8. Talking over my problems with my mother makes me feel ashamed or foolish.	1	2	3	4	5
9. My mother expects too much from me.	1	2	3	4	5
10. I get upset easily around my mother.	1	2	3	4	5
11. I get upset a lot more than my mother knows about.	1	2	3	4	5
12. When we discuss things, my mother cares about my point of view.	1	2	3	4	5
13. My mother trusts my judgment.	1	2	3	4	5
14. My mother has her own problems, so I don't bother her with mine.	1	2	3	4	5
15. My mother helps me to understand myself better.	1	2	3	4	5
16. I tell my mother about my problems and troubles.	1	2	3	4	5
17. I feel angry with my mother.	1	2	3	4	5
18. I don't get much attention from my mother.	1	2	3	4	5
19. My mother helps me to talk about my difficulties.	1	2	3	4	5
20. My mother understands me.	1	2	3	4	5
21. When I am angry about something, my mother tries to be understanding.	1	2	3	4	5
22. I trust my mother.	1	2	3	4	5
23. My mother doesn't understand what I'm going through these days.	1	2	3	4	5
24. I can count on my mother when I need to get something off my chest.	1	2	3	4	5
25. If my mother knows something is bothering me, she asks me about it.	1	2	3	4	5

This part asks about your feelings bout your father, or the man who has acted as your father. If you have more than one person acting as your father (e.g. natural and step-father) answer the question for the one you feel has most influenced you.

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
1. My father respects my feelings.	1	2	3	4	5
2. I feel my father does a good job as my father.	1	2	3	4	5
3. I wish I had a different father.	1	2	3	4	5
4. My father accepts me as I am.	1	2	3	4	5
5. I like to get my father's point of view on things I'm concerned about.	1	2	3	4	5
6. I feel it's no use letting my feelings show around my father.	1	2	3	4	5
7. My father can tell when I'm upset about something.	1	2	3	4	5
8. Talking over my problems with my father makes me feel ashamed or foolish.	1	2	3	4	5
9. My father expects too much from me.	1	2	3	4	5
10. I get upset easily around my father.	1	2	3	4	5
11. I get upset a lot more than my father knows about.	1	2	3	4	5
12. When we discuss things, my father cares about my point of view.	1	2	3	4	5
13. My father trusts my judgment.	1	2	3	4	5
14. My father has his own problems, so I don't bother him with mine.	1	2	3	4	5
15. My father helps me to understand myself better.	1	2	3	4	5

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
16. I tell my father about my problems and troubles	1	2	3	4	5
17. I feel angry with my father	1	2	3	4	5
18. I don't get much attention from my father.	1	2	3	4	5
19. My father helps me to talk about my difficulties.	1	2	3	4	5
20. My father understands me.	1	2	3	4	5
21. When I am angry about something, my father tries to be understanding.	1	2	3	4	5
22. I trust my father.	1	2	3	4	5
23. My father doesn't understand what I'm going through these days.	1	2	3	4	5
24. I can count on my father when I need to get something off my chest.	1	2	3	4	5
25. If my father knows something is bothering me, he asks me about it.	1	2	3	4	5

Part III

This part asks about your feelings about your relationships with your close friends.
Please read each statement and circle the ONE number that tells how true the statement is for you now.

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
1. I like to get my friend's point of view on things I'm concerned about.	1	2	3	4	5
2. My friends can tell when I'm upset about something.	1	2	3	4	5
3. When we discuss things, my friends care about my point of view.	1	2	3	4	5
4. Talking over my problems with friends makes me feel ashamed or foolish.	1	2	3	4	5
5. I wish I had different friends.	1	2	3	4	5
6. My friends understand me.	1	2	3	4	5
7. My friends encourage me to talk about my difficulties.	1	2	3	4	5
8. My friends accept me as I am.	1	2	3	4	5
9. I feel the need to be in touch with my friends more often.	1	2	3	4	5
10. My friends don't understand what I'm going through these days.	1	2	3	4	5
11. I feel alone or apart when I am with my friends.	1	2	3	4	5
12. My friends listen to what I have to say.	1	2	3	4	5
13. I feel my friends are good friends.	1	2	3	4	5
14. My friends are fairly easy to talk to.	1	2	3	4	5
15. When I am angry about something, my friends try to be understanding.	1	2	3	4	5
16. My friends help me to understand myself better.	1	2	3	4	5
17. My friends care about how I am feeling.	1	2	3	4	5

	Almost Never or Never True	Not Very Often True	Some-times True	Often True	Almost Always or Always True
18. I feel angry with my friends.	1	2	3	4	5
19. I can count on my friends when I need to get something off my chest.	1	2	3	4	5
20. I trust my friends.	1	2	3	4	5
21. My friends respect my feelings.	1	2	3	4	5
22. I get upset a lot more than my friends know about.	1	2	3	4	5
23. It seems as if my friends are irritated with me for no reason.	1	2	3	4	5
24. I can tell my friends about my problems and troubles.	1	2	3	4	5
25. If my friends know something is bothering me, they ask me about it.	1	2	3	4	5

Working Alliance Inventory-Short Form, Client Version

Working Alliance Inventory

Short Form (C)

Instructions

On the following pages there are sentences that describe some of the different ways a person might think or feel about his or her therapist (counsellor). As you read the sentences mentally insert the name of your individual therapist (counselor) in place of _____ in the text.

Below each statement inside there is a seven point scale:

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always

If the statement describes the way you always feel (or think) circle the number 7; if it never applies to you circle the number 1. Use the numbers in between to describe the variations between these extremes.

Work fast, your first impressions are the ones we would like to see. (PLEASE DON'T FORGET TO RESPOND TO EVERY ITEM.)

This questionnaire is CONFIDENTIAL; neither your therapist nor the agency will see your answers.

Thank you for your cooperation.

1. _____ and I agree about the things I will need to do in therapy to help improve my situation.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

2. What I am doing in therapy gives me new ways of looking at my problem.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

3. I believe _____ likes me.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

4. _____ does not understand what I am trying to accomplish in therapy.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

5. I am confident in _____'s ability to help me.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

6. _____ and I are working towards mutually agreed upon goals.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

7. I feel that _____ appreciates me.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

8. We agree on what is important for me to work on.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

9. _____ and I trust one another.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

10. _____ and I have different ideas on what my problems are.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

11. We have established a good understanding of the kind of changes that would be good for me.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

12. I believe the way we are working with my problem is correct.

| 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

General Trust Scale

Please read the following statements carefully and circle one of the numbers to indicate your response. There are no right or wrong answers, only opinions, so please answer openly and honestly. All answers shall be anonymous.

1. **Most people are basically honest.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

2. **Most people are trustworthy.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

3. **Most people are basically good and kind.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

4. **Most people are trustful of others.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

5. **I am trustful.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

6. **Most people will respond in kind when they are trusted by others.**

Disagree Strongly   1   2   3   4   5   6   7   Agree Strongly

Generalized Trust Beliefs Scale

For each question below, imagine that you are the person whose name is underlined. Mark the number that shows what you would believe if you were the underlined person.

1. <u>Misty's</u> father tells her that if she gets straight A's they will go on a special trip together. <u>Misty</u> presents a perfect report card. How likely is it that her father will take <u>Misty</u> on a special trip?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

2. <u>Stephanie</u> asks Janice to help her with her homework after class. Janice said she does not have time. How likely is it that Janice does not have time?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

3. <u>Laura's</u> mother told <u>Laura</u> she would give her shopping money if she helped clean out their garage for the winter. <u>Laura</u> helped her mom clean out their garage. How likely is it that <u>Laura's</u> mother will give her shopping money?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

4. <u>Elsie</u> won two tickets to a concert. She really wants to take a friend, but knows that if her brother finds out she will have to take her brother instead. <u>Elsie</u> discusses this dilemma with her mother and asks her not to mention the tickets to her brother. How likely is it that <u>Elsie's</u> mother won't tell her brother about the concert tickets?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

5. <u>Stacey</u> asks her dad if she can borrow $300 for school uniforms. She admits that she spent her uniform money shopping and doesn't want her mom to find out. How likely is it that <u>Stacey's</u> dad won't tell her mom about the school uniform money?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

6. <u>Courtney</u> tells her mother that she has a crush on a boy at school. She asks her mom not to tell her father. How likely is it that her mother won't tell her father about her crush?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

7. Nancy shows up 15 minutes late to pick up <u>Dara</u>. When <u>Dara</u> asks why she was late, Nancy says she had car trouble. How likely is it that Nancy had car trouble?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

8. <u>Natalie's</u> father tells her that he is going to help <u>Natalie</u> with her homework when he gets home from the gym. When <u>Natalie's</u> father comes home, he starts reading the newspaper. How likely is it that <u>Natalie's</u> father is still going to help her do homework?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

9. <u>Glenda</u> talks to her dad about not wanting to apply for college anymore. She feels that going to college is not the right choice for her right now. She asks her father to not tell her mother about her desire to not attend college. How likely is it that <u>Glenda's</u> father will not tell <u>Glenda's</u> mother about her dislike of college?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

10. <u>Bridget's</u> mom decided she did not want to cook for supper. She ordered take-out and decided to put the food onto her own dishes. <u>Bridget</u> loves the meal and tells her mom how much she likes her cooking. How likely is it that she will tell <u>Bridget</u> that she did not actually cook the food?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

11. <u>Lucy</u> tells Catina that she backed into someone's car in the parking lot last night. When they see signs asking for information about the hit and run, <u>Lucy</u> asks Catina not to tell anyone that she caused the accident. How likely is it that Catina won't tell anyone that <u>Lucy</u> did it?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

12. <u>Beverly</u> asks Alyssa if she has an extra ticket to the concert this weekend. Alyssa says that she does and that <u>Beverly</u> can have it. It is the day of the concert, and <u>Beverly</u> has not heard from Alyssa. How likely is it that Alyssa is going to give <u>Beverly</u> the concert ticket?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

13. <u>Katie</u> left some pictures out in her bedroom. While she is at work, her dad goes into her room and looks at the pictures that were sitting out. When she gets home, she notices that her pictures were moved around. She asks her dad if he went into her room. How likely is it that <u>Katie's</u> dad will tell her that he looked at her pictures?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

14. <u>Danielle's</u> mom ran over some of <u>Danielle's</u> vegetables in her vegetable garden while she was mowing lawn. <u>Danielle</u> got home and started complaining to her mom about the animals that keep eating her vegetables. How likely is it that <u>Danielle's</u> mom will tell her she is the one who destroyed her vegetables?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

15. <u>Marnie</u> tells Cameron that she needs to stay home over the weekend to be alone. <u>Marnie</u> asks Cameron not to tell anyone where she is. How likely is it that Cameron won't tell anyone where <u>Marnie</u> is?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

16. <u>Brenda</u> left a candy bar on the kitchen counter and it is nowhere to be found. Her dad ate the candy the night before when <u>Brenda</u> was not home. <u>Brenda</u> asks her dad if he knows where her candy bar is. How likely is it that <u>Brenda's</u> dad will admit to eating the candy?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

17. Shauna tells <u>Rosa</u> that she is going to bring cookies and punch to the club meeting. Shauna later complains about her lack of money. How likely is it that Shauna will come to the club meeting with cookies and punch?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

18. <u>Kendra's</u> mother said that she would buy a new CD for <u>Kendra</u> if she cleaned the bathrooms. <u>Kendra</u> did clean the bathrooms. How likely is it that <u>Kendra's</u> mother will buy the CD for her?

Very Unlikely	Unlikely	Neither	Likely	Very Likely
1	2	3	4	5

Interpersonal Trust Scale

Read each of the following statements and decide whether it is true of your relationship with your best friend. Indicate how strongly you agree or disagree by choosing the appropriate number from the scale below and placing it in the box to the right of the statement.

1 = strongly disagree
2 = moderately disagree
3 = mildly disagree
4 = neutral
5 = mildly agree
6 = moderately agree
7 = strongly agree

1. I know how my best friend is going to act. My best friend can always be counted on to act as I expect. ☐

2. I have found that my best friend is a thoroughly dependable person, especially when it comes to things that are important. ☐

3. My best friend's behavior often changes. I can't always be sure what my best friend will surprise me with next. ☐

4. Though times may change and the future is uncertain, I have faith that my best friend will always be ready and willing to offer me strength, come what may. ☐

5. Based on past experience I cannot, with complete confidence, rely on my best friend to keep promises made to me. ☐

6. It is sometimes difficult for me to be absolutely certain that my best friend will always continue to care for me; the future holds too many uncertainties and too many things can change in our relationship as time goes on. ☐

7. My best friend is a very honest person and, even if my best friend were to make unbelievable statements, people should feel confident that what they are hearing is the truth. ☐

8. My best friend is not very predictable. People can't always be certain how my best friend is going to act from one day to another. ☐

9. My best friend has proven to be a faithful person. No matter how difficult things get, he/she would never abandon our family. ☐

10. I am never concerned that unpredictable conflicts and serious tensions may damage our relationship because I know we can get through anything. ☐

11. I am very familiar with the way my best friend usually acts, and I expect that he will behave in certain ways. ☐

12. Before facing a new issue with my best friend, I occasionally worry that he won't take my feelings into account. ☐

13. Even in familiar circumstances, I am not totally certain my best friend will act in the same way twice. ☐

14. I feel completely secure in facing unknown, new situations because I know my best friend will never let me down. ☐

15. My best friend is not necessarily someone others always consider reliable. I can think of some times when my best friend could not be counted on. ☐

16. I occasionally find myself feeling uncomfortable with the emotional investment I have made in our relationship because I find it hard to completely set aside my doubts about what lies ahead. ☐

17. My best friend has not always proven to be trustworthy in the past, and there are times when I am hesitant to let my best friend engage in activities that make me feel vulnerable. ☐

18. My best friend behaves in a consistent manner. ☐

Read each of the following statements and decide whether it is true of your relationship with your mother. Indicate how strongly you agree or disagree by choosing the appropriate number from the scale below and placing it in the box to the right of the statement.

1 = strongly disagree
2 = moderately disagree
3 = mildly disagree
4 = neutral
5 = mildly agree
6 = moderately agree
7 = strongly agree

1. I know how my mother is going to act. My mother can always be counted on to act as I expect. ☐
2. I have found that my mother is a thoroughly dependable person, especially when it comes to things that are important. ☐
3. My mother's behavior often changes. I can't always be sure what my mother will surprise me with next. ☐
4. Though times may change and the future is uncertain, I have faith that my mother will always be ready and willing to offer me strength, come what may. ☐
5. Based on past experience I cannot, with complete confidence, rely on my mother to keep promises made to me. ☐
6. It is sometimes difficult for me to be absolutely certain that my mother will always continue to care for me; the future holds too many uncertainties and too many things can change in our relationship as time goes on. ☐
7. My mother is a very honest person and, even if my mother were to make unbelievable statements, people should feel confident that what they are hearing is the truth. ☐
8. My mother is not very predictable. People can't always be certain how my mother is going to act from one day to another. ☐
9. My mother has proven to be a faithful person. No matter how difficult things get, she would never abandon our family. ☐
10. I am never concerned that unpredictable conflicts and serious tensions may damage our relationship because I know we can get through anything. ☐
11. I am very familiar with the way my mother usually acts, and I expect that she will behave in certain ways. ☐
12. Before facing a new issue with my mother, I occasionally worry that she won't take my feelings into account. ☐
13. Even in familiar circumstances, I am not totally certain my mother will act in the same way twice. ☐
14. I feel completely secure in facing unknown, new situations because I know my mother will never let me down. ☐
15. My mother is not necessarily someone others always consider reliable. I can think of some times when my mother could not be counted on. ☐
16. I occasionally find myself feeling uncomfortable with the emotional investment I have made in our relationship because I find it hard to completely set aside my doubts about what lies ahead. ☐
17. My mother has not always proven to be trustworthy in the past, and there are times when I am hesitant to let my mother engage in activities that make me feel vulnerable. ☐
18. My mother behaves in a consistent manner. ☐

Read each of the following statements and decide whether it is true of your relationship with your father. Indicate how strongly you agree or disagree by choosing the appropriate number from the scale below and placing it in the box to the right of the statement.

1 = strongly disagree
2 = moderately disagree
3 = mildly disagree
4 = neutral
5 = mildly agree
6 = moderately agree
7 = strongly agree

1. I know how my father is going to act. My father can always be counted on to act as I expect. ☐
2. I have found that my father is a thoroughly dependable person, especially when it comes to things that are important. ☐
3. My father's behavior often changes. I can't always be sure what my father will surprise me with next. ☐
4. Though times may change and the future is uncertain, I have faith that my father will always be ready and willing to offer me strength, come what may. ☐
5. Based on past experience I cannot, with complete confidence, rely on my father to keep promises made to me. ☐
6. It is sometimes difficult for me to be absolutely certain that my father will always continue to care for me; the future holds too many uncertainties and too many things can change in our relationship as time goes on. ☐
7. My father is a very honest person and, even if my father were to make unbelievable statements, people should feel confident that what they are hearing is the truth. ☐
8. My father is not very predictable. People can't always be certain how my father is going to act from one day to another. ☐
9. My father has proven to be a faithful person. No matter how difficult things get, he would never abandon our family. ☐
10. I am never concerned that unpredictable conflicts and serious tensions may damage our relationship because I know we can get through anything. ☐
11. I am very familiar with the way my father usually acts, and I expect that he will behave in certain ways. ☐
12. Before facing a new issue with my father, I occasionally worry that he won't take my feelings into account. ☐
13. Even in familiar circumstances, I am not totally certain my father will act in the same way twice. ☐
14. I feel completely secure in facing unknown, new situations because I know my father will never let me down. ☐
15. My father is not necessarily someone others always consider reliable. I can think of some times when my father could not be counted on. ☐
16. I occasionally find myself feeling uncomfortable with the emotional investment I have made in our relationship because I find it hard to completely set aside my doubts about what lies ahead. ☐
17. My father has not always proven to be trustworthy in the past, and there are times when I am hesitant to let my father engage in activities that make me feel vulnerable. ☐
18. My father behaves in a consistent manner. ☐

Working Alliance Inventory- Short Form, Therapist Version

Working Alliance Inventory

Short Form T

Instructions

On the following pages there are sentences that describe some of the different ways a person might think or feel about his or her client. As you read the sentences mentally insert the name of your client in place of _____ in the text.

Below each statement inside there is a seven point scale:

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always

If the statement describes the way you *always* feel (or think) circle the number 7; if it *never* applies to you circle the number 1. Use the numbers in between to describe the variations between these extremes.

This questionnaire is CONFIDENTIAL: neither your client nor the agency will see your answers.

Work fast, your first impressions are the ones we would like to see. (PLEASE DON'T FORGET TO RESPOND TO *EVERY ITEM*.)
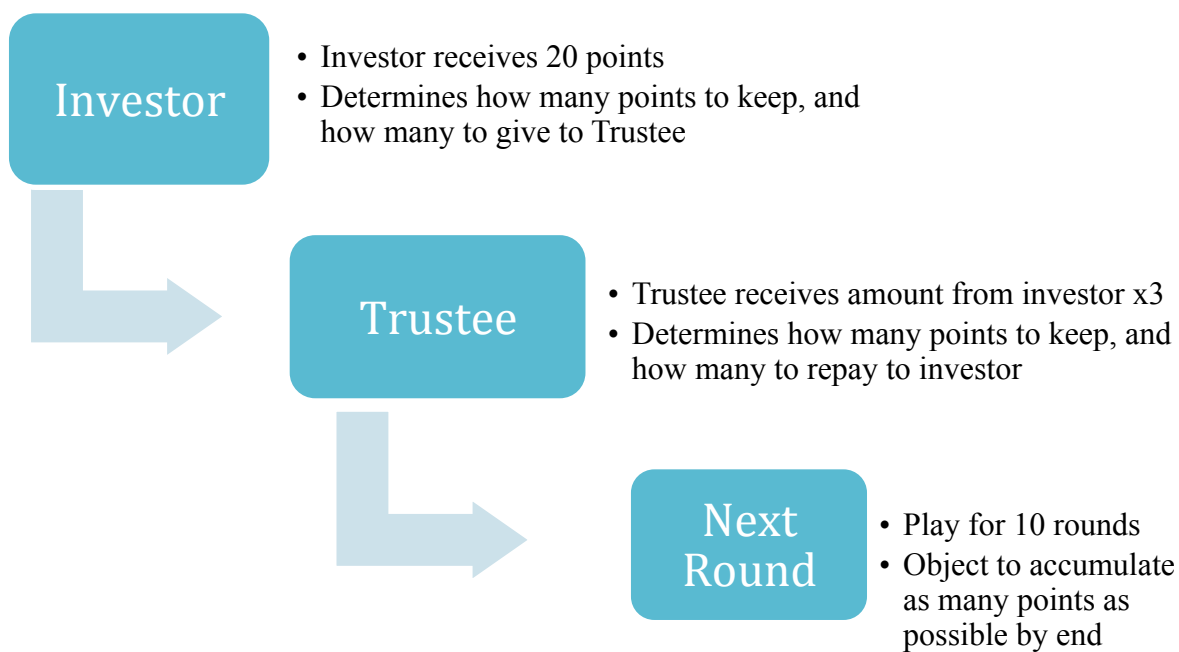
Thank you for your cooperation.

© A. O. Horvath, 1981, 1984, 1991; based on revision by Tracey & Kokotowitc 1989.

1. _____ and I agree about the steps to be taken to improve his/her situation.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

2. My client and I both feel confident about the usefulness of our current activity in therapy.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

3. I believe _____ likes me.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

4. I have doubts about what we are trying to accomplish in therapy.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

5. I am confident in my ability to help _____.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

6. We are working towards mutually agreed upon goals.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

7. I appreciate _____ as a person.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

8. We agree on what is important for _____ to work on.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

9. _____ and I have built a mutual trust.

   | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

10. _____ and I have different ideas on what his/her real problems are.

    | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

11. We have established a good understanding between us of the kind of changes that would be good for _____.

    | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

12. _____ believes the way we are working with her/his problem is correct.

    | 1 Never | 2 Rarely | 3 Occasionally | 4 Sometimes | 5 Often | 6 Very Often | 7 Always |

APPENDIX B: BEHAVIORAL MEASURE

The Trust Game

- Participant is assigned to role of "Trustee." The computer standardized healthy stranger is assigned to role of "Investor."
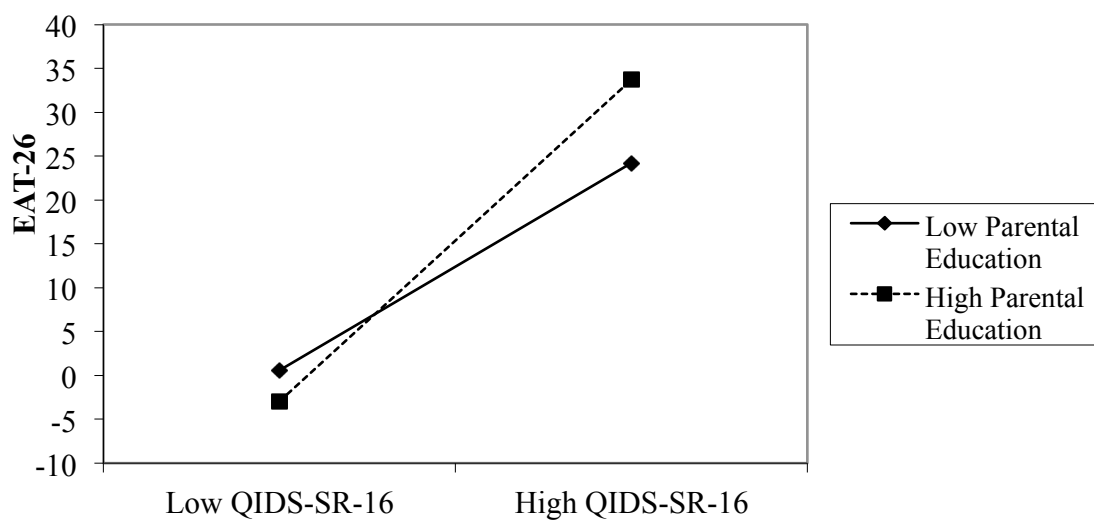
Investor
- Investor receives 20 points
- Determines how many points to keep, and how many to give to Trustee

Trustee
- Trustee receives amount from investor x3
- Determines how many points to keep, and how many to repay to investor

Next Round
- Play for 10 rounds
- Object to accumulate as many points as possible by end

APPENDIX C

Figures

Figure 3. Graph depicting marginally significant interaction of parental education on relationship between depressive and ED symptoms. QIDS-SR-16 = Quick Inventory of Depressive Symptomatology; EAT=26 = Eating Attitudes Test - 26
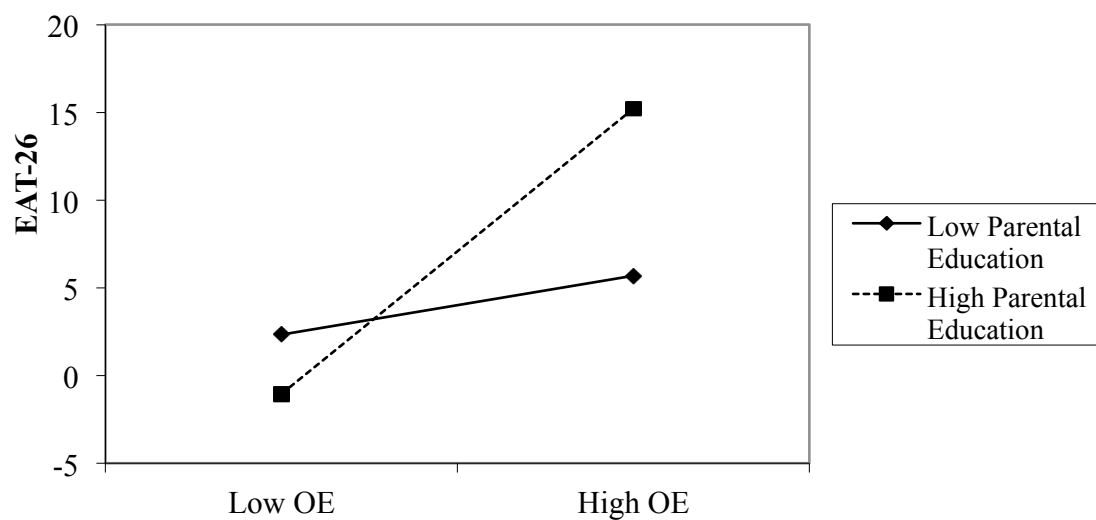
Figure 4. Graph depicting marginally significant interaction of parental education on relationship between OE and ED symptoms. OE = Overall Earnings on the Trust Game; EAT=26 = Eating Attitudes Test - 26.

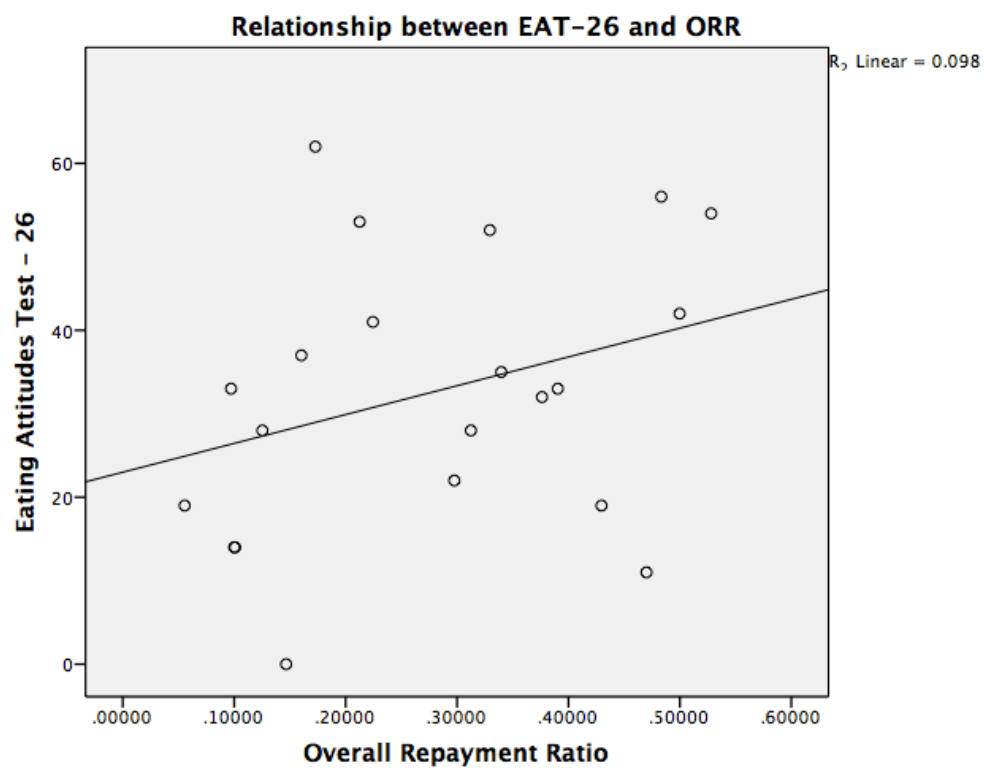*Figure 5.* Relationship Between EAT-26 and Overall Earnings on the Trust Game.

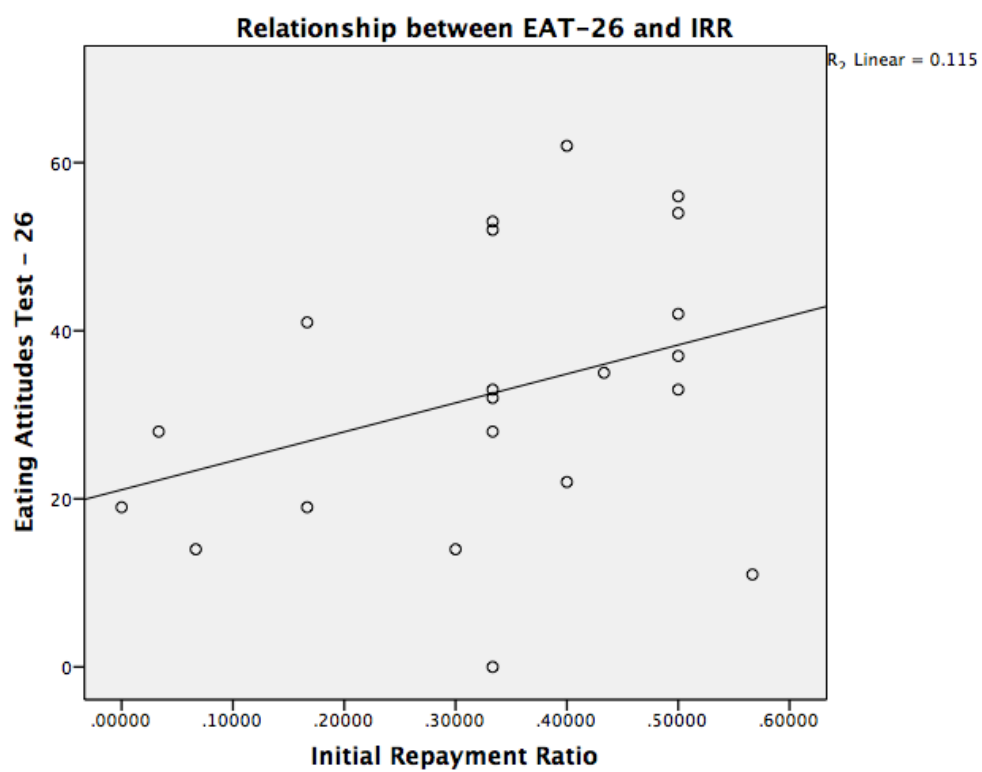*Figure 6.* Relationship Between EAT-26 and Overall Repayment Ratio on the Trust Game.

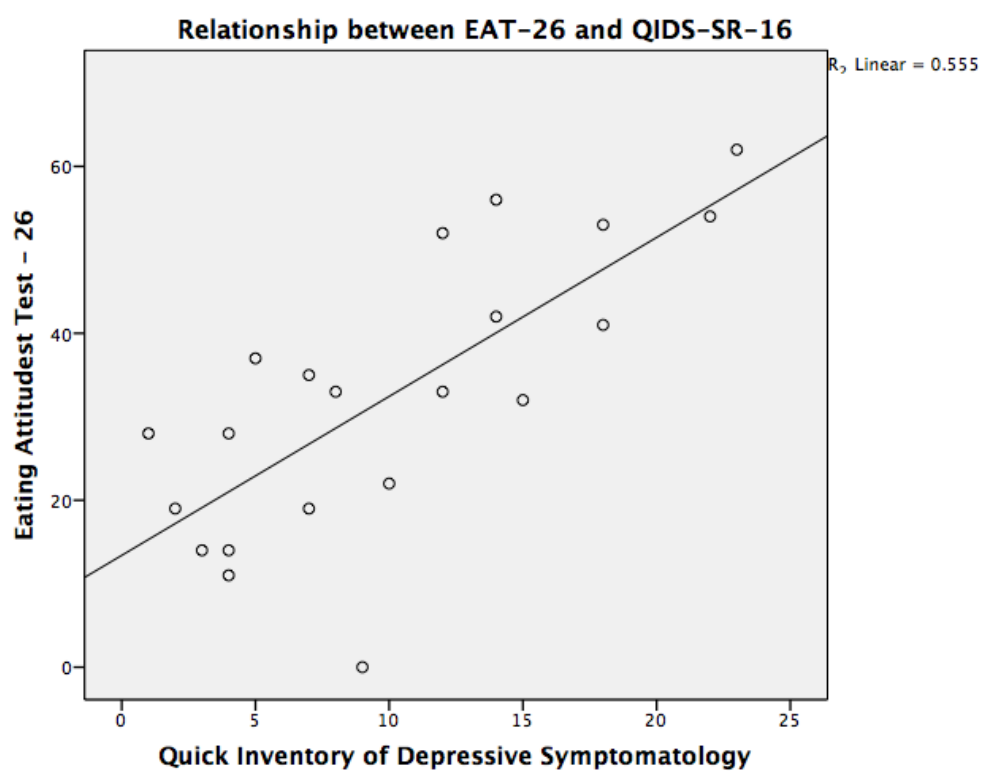*Figure 7.* Relationship Between EAT-26 and Initial Repayment Ratio on the Trust Game.

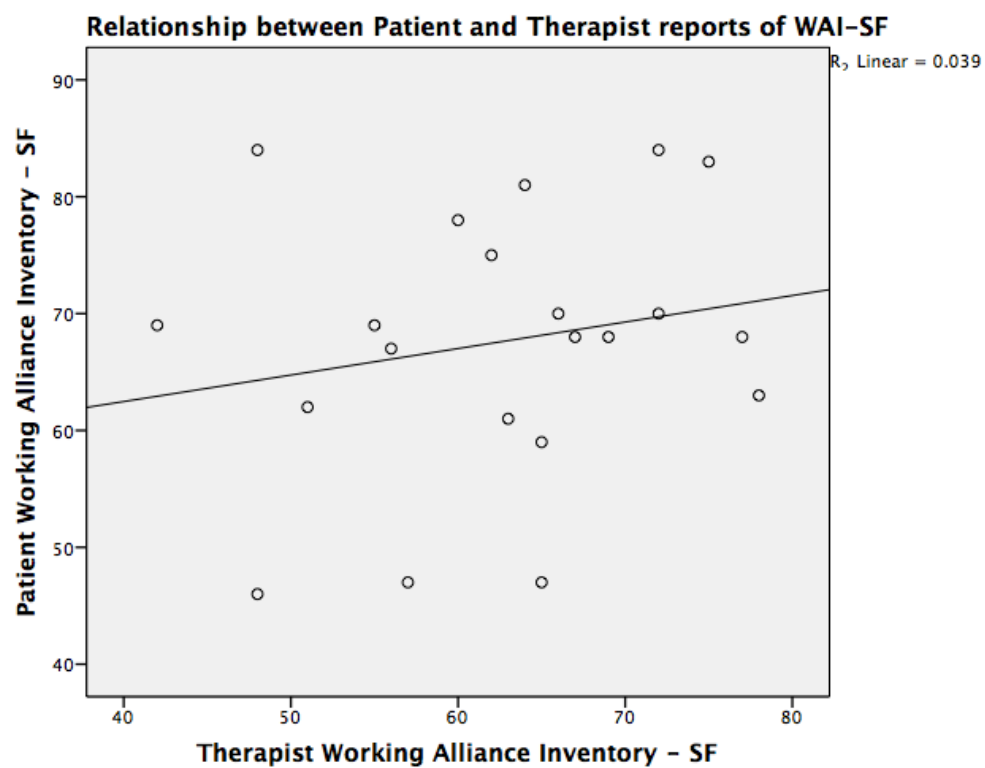*Figure 8.* Relationship Between EAT-26 and QIDS-SR-16.

Figure 9. Relationship Between Patient and Therapist Reports of the Working Alliance Inventory – Short Form

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