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BEAUTY IS BETTER WITH DECEPTION: MOTIVATION AND COMPETITION

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ABSTRACT

BEAUTY IS BETTER WITH DECEPTION: MOTIVATION AND COMPETITION

Anthony J. Crispigna

The present study used a completely randomized factorial design with the factors outcome, attractiveness and deception to investigate intrinsic motivation. Attractiveness and deception have not been previously considered as independent variables in intrinsic motivation studies. Anxiety and interpersonal trust were measured predictor variables in this study. Data were collected from the administration of attitude inventories and from laboratory generated puzzle-task sequences used in competition. A post-questionnaire was used for manipulation checks and all independent variables evidenced face validity. The effects of mixed-gender dyads were noted in this study and have not been a previous consideration in intrinsic motivation studies. Outcome alone did not predict differing levels of intrinsic motivation as in previous studies. However, winning participants demonstrated more persistence than losing participants due to the perception of competence. Moreover, winning participants (compared to losing participants) experienced high levels of “interest” and “enjoyment” and such levels covaried with the perception of competence. In addition, interest, enjoyment and competence feedback covaried with the interaction of outcome, deception and attractiveness. Thus, the most intriguing finding was a three-way interaction of the independent variables. Competence feedback was exacerbated by interacting with the variances associated with physical attractiveness and deception and appeared to predict differing levels of intrinsic motivation.

DEDICATION

This thesis is dedicated to the Department of Psychology at Northern Michigan University. In addition, to all the student participants and research apprentices, to my mother and father, Joseph and Ann Crispigna, my brother, Andrew Crispigna, and my fiancé, Lacey Klucas, who scored many tests and entered data.

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This thesis follows the format prescribed by the College of Graduate Studies at Northern Michigan University and the American Psychological Association Publication Manual.

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SYMBOLS AND ABBREVIATIONS

In Text and Appendices A-C:

- ITS = Interpersonal Trust Scale
- IMTM = Interpersonal Mistrust-Trust Measurement
- TAS = Test Anxiety Scale
- IM = Intrinsic Motivation

INTRODUCTION

Intrinsic Motivation. Competition implies a task (or activity) involving participants, and generally the participants will feel competent upon "winning" and feel incompetent upon "losing". Researchers such as Deci and Olson (1989) reviewed many intrinsic motivation studies, and studies utilizing a task during competition acknowledge that winning (and the perception of competence) results in significant levels of intrinsic motivation (compared to losing, etc.). In addition, intrinsic motivation studies have investigated predictor variables (such as anxiety and locus of control) to measure the extraneous framework of intrinsic motivation in competition. However, the framework has yet to be determined scientifically finite, and not only will outcomes (i.e., winning and losing) be investigated in this study, but the impact of additional salient variables such as attractiveness and deception. Thus, this study will attempt to understand intrinsic motivation through evaluating people's levels of anxiety and interpersonal trust, followed by manipulating the variables of outcome, physical attractiveness and deception with the aim of discovering interesting measures of intrinsic motivation following a competition utilizing an appropriate task.

Intrinsically motivated behaviors are defined as those behaviors motivated by the underlying need for competence and self-determination (Deci, 1975). An individual's desire to seek out and conquer challenges is due to intrinsic motivation (Deci & Ryan, 1980). People are said to be intrinsically motivated if they engage in an activity in the apparent absence of extrinsic rewards or constraints (Deci & Olson, 1989). Vallerand et al. (1992) define intrinsic motivation as behavior performed for its own sake, such as for the fun or satisfaction of accomplishing something or learning new things, as opposed to

Reeve (1992a). Reeve states that intrinsically motivated behavior is done purposefully for the interest and enjoyment inherent in performing a given activity. People feel positive emotion (e.g., interest and enjoyment) when they act on their curiosity, competence and self-determination and engage their surroundings. Thus, although there are several definitions of intrinsic motivation, the behavior is manifested as positive affect and/or engagement in a task with no apparent reinforcement.

The typical operational definition (or measurement) of intrinsic motivation is the amount of time an individual engages in a specific task during a free choice interval—and has been since Harlow, Harlow and Meyer (1950) observed free choice, puzzle-playing behaviors in rhesus monkeys. Persistence at a task is often primary to the development of competencies (Losier & Vallerand, 1994). That is, if a person persists at a task long enough, they eventually become competent. Moreover, intrinsic motivation is fundamentally understood through the process of an individual engaged in an activity (or task), whereas actual mastery of a task is a separate area of intrinsic motivation research.

Intrinsic motivation is increased when a person experiences a positive affect during an activity (i.e., promoting perceptions of competence), and intrinsic motivation is decreased when a person does not experience a positive affect during an activity (i.e., promoting perceptions of incompetence; Deci & Ryan, 1980, 1985). Therefore, successful, or unsuccessful, feedback reflects back on an individual's general sense of competence (Bandura, 1982a). Successful feedback is synonymous with the perception of competence, or competence feedback, whereas unsuccessful feedback is synonymous with the perception of incompetence, or incompetence feedback.

Learning is thought to be optimally achieved through intrinsic motivation when compared to extrinsic rewards (Reeve, 1992a). Extrinsic rewards undermine intrinsic motivation when individuals expect an extrinsic reward upon the completion of a task (i.e., individuals show less intrinsic motivation) compared to individuals who complete a task and receive an unexpected extrinsic reward (Lepper & Greene, 1976). The anticipation of extrinsic rewards has been shown to create extrinsic-seeking behavioral expectations within individuals (Deci & Ryan, 1987, 1992). These behavioral expectations are distractions from intrinsically motivated behaviors, shifting attention from the general enjoyment of a task to the extrinsic reward. The affect is a reduction in intrinsic motivation.

Research on intrinsic motivation is divided into two areas (Reeve, 1992a). The first is activities having particular characteristics that make them intrinsically motivating. That is, the first area has to do with the task itself and whereby some activities are more interesting and enjoyable than others (i.e., depending on the individual). The second area involves self-perception, which plays a role in facilitating or inhibiting intrinsic motivation. Individuals who perceive themselves as curious and competent while participating in an activity tend to re-engage in the same activity.

Reeve described intrinsic motivation and intrinsically motivated behaviors as a two-stage event in competitive situations. Stage one occurs when the individual determines if the activity is interesting and/or piques curiosity. If the activity does not provoke interest or curiosity, the individual shifts attention to an alternate activity. In other words, some tasks are inherently interesting to an individual while some tasks are not. If the activity is interesting and/or curiosity-provoking, stage two begins. In stage

two the individual engages in the activity and learns whether the activity is challenging to personal skills and competencies, and whether the activity gives competence performance feedback. The individual will continue to re-engage the activity as long as the activity provides both challenge and competence feedback (Reeve, 1992a). Therefore, the success of stage two becomes a multi-dimensional, cyclical process of competence exploration compared to the baseline process of stage one. Such a cyclical process is fundamental to enabling the process of motivation to maintain direction towards the completion of a task. Intrinsically motivated activities are discontinued when curiosity is exhausted (Reeve, 1992a), or incompetence is perceived (Reeve, Olson & Cole, 1987).

Stage two is when the individual persists at the tasks. Thus, intrinsic motivation is operationally defined and measured as the amount of time an individual re-engages in a task during a free choice interval (Deci & Olson, 1989). Individuals who persist at a task during a free-choice interval are said to be intrinsically motivated towards the task.

Competence, self-determination, and excitement are basic to intrinsic motivation (Reeve, 1992a). Thus, intrinsic motivation is shown to have affective, behavioral and cognitive components. Furthermore, intrinsic motivation is superior when extrinsic rewards are absent, and intrinsic motivation is affected by certain situations such as competition.

Competition. Competition has an impact on intrinsic motivation (Deci & Olson, 1989). The first study examining how competition affected intrinsic motivation was performed by Deci, Betley, Kahle, Abrams and Porac (1981). The authors had two groups of college students work on puzzle tasks. Each participant was paired with an experimental confederate posing as a participant. Participants in one group were

instructed to try to solve the puzzle before the other person (to beat the confederate). Participants in the second group were told merely to try to solve the puzzles as fast as possible (i.e., no-competition condition). All participants solved the puzzle before the experimental confederates. Results from a subsequent free-choice period (the operational definition of intrinsic motivation) indicated that the individuals who were instructed to beat the other person displayed lower intrinsic motivation than individuals in the no-competition condition.

In another study by Reeve, Olson and Cole (1987), who had some criticisms of Deci et al. (1981), they also used puzzle tasks and confederates posing as participants to further examine the impact of competition on intrinsic motivation. Participants were assigned to one of two groups: participants who were to win and participants who were to lose. Winning and losing was manipulated by the experimental confederates. Reeve et al. found that individuals who received competence feedback (i.e., those that won the competition) experienced a greater level of positive affect as compared to individuals who lost or received incompetence feedback. Although competition/no-competition was not addressed, the study showed that winning (which promoted competence) resulted in higher levels of intrinsic motivation by individuals than did losing.

Competition research has shown that outcomes will increase or decrease intrinsic motivation (Deci & Olson, 1989). Some researchers have shown that intrinsically motivated behaviors are adversely affected by competition (Bumpus, Olbeter & Glover, 1998; Deci, Betley, Kahle, Abrams & Porac, 1981; Rosenbaum et al., 1980). Other researchers have suggested that not all competitive experiences are alike (Deci & Olson, 1989; Reeve, Olson & Cole, 1985), and that the increase or decrease of intrinsically

motivated behaviors in competition is contingent upon competence information feedback (i.e., the feelings of competence or incompetence resulting from the activity). Thus, feedback provides self-evaluation information to the individual, which is important in the study of intrinsic motivation and task performance. Not surprising, competence feedback varies with respect to competitive outcome (e.g., winning or losing), and winners experience competence feedback and losers experience incompetence feedback (Reeve, Olson & Cole, 1985). Relative to losing, winning enhances intrinsic motivation.

Intrinsic motivation research has highlighted the salient significance of the perception of competence, which has been found to be a predictor of intrinsic motivation (Bandura, 1982a, b; Deci, 1975; Deci & Ryan, 1980, 1985; Losier & Vallerand, 1994; Reeve, Olson & Cole, 1985, 1987). To highlight the idea that competence has an impact on intrinsic motivation, Losier and Vallerand (1994) studied the temporal relationship of perceived competence and motivation in a natural competitive setting. Their study was carried out over a 5-month period on a sample of French-speaking Canadian elite hockey players. These hockey players had from four to 13 years of playing experience up to their first year of Elite AAA hockey. All hockey players in this sample completed questionnaires measuring perceived competence and motivation. The questionnaires were administered two weeks after the beginning of the study and again after five months into the study. As predicted, perceived competence measured two weeks into the hockey season was significantly related to motivation at the end of the regular season. Thus, those with higher levels of perceived competence at the beginning also had higher levels of motivation at the end of the five months. In contrast, those with higher levels of motivation at beginning did not have higher levels of perceived competence at the end of

the five months. Motivation was not significantly correlated with perceived competence at the end of the season. In other words, intrinsic motivation does not predict perceived competence, but perceived competence predicts differing levels of intrinsic motivation (Losier & Vallerand). Furthermore, and to segue to the next variable that was investigated, differences in the individual internal experience during competition (such as anxiety) affects differing levels of intrinsic motivation (Reeve, 1992b).

Anxiety. Anxiety is a learned drive which is a function of the nature of the task, test materials and instructions, and can serve to impact, and sometimes improve, performance at a task (Mandler & Sarason, 1951). Other researchers define anxiety as evaluation apprehension (Reeve, Olson & Cole, 1987). It is also said to be a significant predictor of motivation in competition studies (Beck & Emery, 1985; Kelly, 2002; Napieralski, Brooks & Droney, 1995; Ntoumanis & Biddle, 1998; Reeve & Olson, 1984; Reeve, Olson & Cole, 1987; Spence & Spence, 1966). Heightened anxiety has been found to inhibit intrinsic motivation in people by diminishing performance expectancy (as well as actual performance) compared to people with low levels of anxiety (Reeve, Olson & Cole, 1987). Researchers have found that highly anxious individuals are more apprehensive than low anxious individuals in situations where task competence is evaluated, and specifically, in those situations with an unfavorable outcome (Reeve, Olson & Cole, 1987; Spence & Spence, 1966; Weiner, 1966). The subsequent result of evaluation apprehension, during and after the completion of a task, occurs in the appraisal of performance (Reeve, Olson & Cole, 1987). An individual likely to receive objective competence information will be in an apprehensive evaluation situation. Thus, subjecting

oneself to a situation where appraisal will occur potentially offers both the objective competence information and feelings of anxiety.

The pressure to achieve a favorable outcome is assumed in a competitive situation. Prior research has demonstrated that when an individual perceives the pressure to achieve a favorable outcome, intrinsic motivation decreases (Reeve, 1992a; Ryan, 1982). Due to the pressure to achieve a favorable outcome, highly anxious individuals perceive this as an evaluation which negatively impacts intrinsic motivation. Low anxiety individuals perceive less pressure to achieve a favorable outcome in a competitive situation and consequently are in a position to attend to the cues offered from feedback information.

Low anxiety individuals are attentively in a position to be more successful towards achieving a favorable outcome than highly anxious individuals during a competition due to differing perceptions of pressure. The anxiety dichotomy mentioned here is not to be confused with a different type of dichotomy associated with arousal theory (i.e., very high levels of arousal and very low levels of arousal; see Hebb, 1955). Support for this low anxiety/highly anxiety dichotomy was shown by Beck and Emery (1985). Those authors found that a low-to-moderate degree of anxiety increased alertness and improved learning and problem solving. Furthermore, Ntoumanis and Biddle (1998) studied the relationship between competitive anxiety, achievement goals and motivational climates, and their results showed that low levels of anxiety were associated with high self-confidence.

Prior research has examined the relationship between intrinsic motivation and anxiety by placing “high” or “low” anxious participants in a puzzle-solving competition

(Olson & Reeve, 1984). Those authors discovered that participants' levels of anxiety had a significant impact on competition outcome. Specifically, high anxious winning participants displayed greater intrinsic motivation than high anxious losing participants. Low anxious losing participants displayed greater intrinsic motivation than low anxious winning participants. In fact, low anxious losing participants displayed the greatest level of intrinsic motivation across all conditions. Competency-related information from outcome was attended to (or interpreted) differently by the groups of high anxious and low anxious participants. Thus, anxiety has an impact on outcome in a given situation concerning the pursuit of completing a task (Kelly, 2002; Reeve, 1992a). Furthermore, with regard to identifying new variables having an impact on intrinsic motivation and competition, this study contends that the saliency of physical attractiveness will be significant in this investigation.

Physical Attractiveness. Physical attractiveness has been shown to have an impact on competition. Moreover, physical attractiveness is one of the most salient variables in interpersonal relations (Berscheid & Hatfield, 1983; Bersheid & Walster, 1974; Burnstein & Worchel, 1962; Newcomb, 1960; Parekh & Kanekar, 1994; Snyder & Rothbart, 1971; Tardy, 1988). People are prone to visual perceptions, and physical appearance is often the first piece of information available and may well prime other interpersonal impressions (Chia, Allred, Grossnickle & Lee, 1998). Physically attractive traits such as small/pert noses, large eyes and large pupils, shapely lips, small chins, prominent cheekbones and narrow cheeks, high eyebrows, blemish-free complexions and slim/athletic bodies typically creates a stereotype of an individual that is generally rated as "physically attractive". Furthermore, this study contends that the operational

definition of physical attractiveness is how a person initially rates, or perceives, another person on a Likert-type dimension of attractiveness, or physical beauty.

There is a strong bias for physical beauty. People who are physically attractive are more rewarding to be with (Brehm, 1992). Beautiful people are thought to be more socially adept, extraverted and popular than less attractive people (Eagly, Ashmore, Makhijani & Longo, 1991). Moreover, aesthetic appeal is one possible reason as to why people favor physically attractive people more than the physically unattractive (Brehm, 1992). "Goodness" is associated with physical attractiveness (Aronson, Wilson & Akert, 2005). However, physical beauty can also create an adverse bias. Attractive women are sometimes seen as egotistical and vain, and attractive men are sometimes seen as unintelligent. Thus, although highly physically attractive individuals have many social advantages, there are some social disadvantages to being perceived as beautiful.

A likeable, physically attractive person can also become a source of frustration in competition. Berscheid and Hatfield (1983) reported that likeability and frustration are substantial elements in the perception of attractiveness. The authors found that attractiveness becomes "unattractive" during competition for rewards, and results in competitor frustration. Although rewards have been shown to decrease intrinsic motivation, the literature suggests a relationship exists between attractiveness and competition.

Competition outcome exposes individuals to various inferences and perceptions in conjunction with attractiveness. As stated earlier, winning is perceived as a favorable outcome and losing is perceived as an unfavorable outcome. Berscheid & Hatfield (1983) have expanded such perceptions (associated with competition outcome) by

showing that winners are perceived as more likeable and attractive than losers. People tend to dislike those who fail and perceive such individuals as less attractive than those who succeed. In addition, Eagly, Ashmore, Makhijani and Longo (1991) conducted a meta-analytic review to take the perceptions within this scope of attractiveness even further. They showed that physical attractiveness has a strong effect on judgments of social competence, and a weaker effect on judgments of potency (i.e., physical attractiveness stereotype), adjustment and intellectual competence. Furthermore, physical attractiveness had practically no effect on judgments of integrity and concern for others. In addition, some researchers believe that these types of perceptions from the perceiver can manifest (or display) characteristics and traits associated with attractiveness (Parekh & Kanekar, 1994). Thus, the various perceptions associated with physically attractive people and outcomes may combine (or interact) to influence a competition, and these findings suggest a relationship between attractiveness and outcome.

A thorough review of the literature found that physical attractiveness has not been considered in previous motivation research. Physical attractiveness alone may be sufficient to account for intrinsic motivation in competitive situations. Although the initial perception of attractiveness elicits a priming effect (i.e., a previous perception of physical attractiveness evidenced by physical traits and/or style of dress) in an individual's impression of another individual, such a priming effect may be impacted by other variables such as outcome, deception or interpersonal trust. The review of the present literature suggests that attractive participants could be perceived as more "good" (or "rewarding to be with") than unattractive participants, and attractiveness could be mediated by other aforementioned variables such as deception or trustworthiness.

Deception and Interpersonal Trust. According to Kornet (1997) everyone lies and some lies evoke more mistrust than others. Lying is readily practiced and experienced. Furthermore, "lying" (sometimes minimized as cheating), has historically impacted interpersonal competitions and interpersonal trust has significant importance in understanding human behavior (Butler, 1995; Depaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; DePaulo & Kashy, 1998; Dirks, 1999; Giffin, 1967; Gurtman, 1992; Mothersill, 1996; Omodei & McLennan, 2000; Rempel, Holmes & Zanna, 1995; Rempel, Ross & Holmes, 2001; Robinson & Jackson, 2000; Rotter, 1967, 1980; Tardy, 1988; Zaheer, McEvily & Perrone, 1998). Fallacies and fabrications of the truth are cognitive distortions of previously occurred events or situations, which result in individuals behaving in ways to promote these distortions through lying and deceiving others (Kagle, 1998). Subsequently, some researchers found that "deception" is a ubiquitous phenomenon in real life (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; DePaulo et al., 2003; Petress, 2004). Thus, it appears that the perception of lying (deception) challenges the interpretation of trust and this may pose a challenge to measuring intrinsic motivation following competition.

There are two types of lies: the so-called self-centered lies and the so-called other-oriented lies (Depaulo, Kashy, Kirkendol, Wyer & Epstein, 1996; DePaulo & Kashy, 1998). Self-centered lies are told for an individual's own benefit. Other-oriented lies, sometimes referred to as altruistic lies, are told for the benefit of others. Thus, in the laboratory, it is important to mention that different "types" of lies could influence the perceiver, but such a dichotomy will not be addressed in this study. Furthermore, regardless of the type of lie, deception and lying are choice behaviors and some

researchers support that deception is a passive form of lying (Englehardt & Evans, 1994). Subsequently, it is noteworthy that the motivation to deceive can be passive or active on the part of the deceiver, and such behaviors may be feasible to manipulate in the laboratory because untrustworthy behaviors are subjectively interpreted and commonly experienced by the perceiver.

Individual differences in deception, or untrustworthy behaviors, are also found to be related to motivation and competition. Some authors have shown that trust facilitates cooperation and mistrust facilitates competition (Friedlander, 1970; Steinel & De Dreu, 2004; Zaheer, McEvily & Perrone, 1998). Others such as Gurtman (1992) discovered that "distrusting" (mistrusting) individuals experienced competitiveness as vindictive situations. Further, Dirks (1999) examined interpersonal trust in terms of group performance (i.e., laboratory assigned dyads), and found trust is a moderator variable that converts motivation into work group processes and performance. Thus, there is an observable link between motivation and competition and trust, and this study will measure trust prior to competition (for the purpose of getting a better picture of intrinsic motivation).

To reliably measure interpersonal trust, researchers such as Omodei and McLennan (2000), and Rotter (1967) have developed interpersonal trust scales to measure trust by the individual perceiver. Rotter (1967) contended that measuring trust was contingent upon locus of control. Locus of control posits that people perceive reinforcements or outcomes as a consequence of their behavior (Rotter, 1966). Individuals who rate themselves as high in interpersonal trust are less dependent upon others and place their locus of control internally (Rotter, 1967). External locus

individuals are rated as lower in interpersonal trust because they bestow less behavioral control to any given situation, and they tend to perceive outcomes as contingent upon chance or the influence of other individuals.

Reeve, Olson and Cole (1987) discovered that intrinsic motivation was significantly impacted by the predictor variable locus of control in a puzzle-playing competition. Locus of control was found to have an impact on outcome—winning versus losing. Winning participants having an internal locus of control (internal locus winners) showed greater intrinsic motivation than winning participants having an external locus of control (external locus winners). Internal winners showed greater levels of intrinsic motivation than internal losers, and external losers showed slightly greater levels of intrinsic motivation than external winners. Subsequently, internal winners showed the greatest levels of intrinsic motivation and internal winners reported greater positive affect than did external winners. Thus, the aforementioned literature suggests a significant relationship between interpersonal trust, intrinsic motivation and competition. Moreover, individual perceptions of trust, motivation and competition in the laboratory may be offset by the saliency of physical attractiveness.

Although this was mentioned in the previous section, attractiveness has been shown to have an impact on interpersonal trust. For example, in a study by Lee, McGill and Uhlemann (1988), verbal and nonverbal cues lent explanation to ratings of competency, trustworthiness and attractiveness. These authors used a sample of 32 male and female counselor-trainees and 32 male and female clients. After a 20-minute standardized interview, counselors and clients rated competency, trustworthiness and attractiveness and indicated the degree to which they relied on verbal and nonverbal cues

to make their judgments. They found that counselors and clients rely more on verbal cues in rating competence, and on nonverbal cues in rating attractiveness and trustworthiness. Moreover, other researchers such as deCarufel and Insko (1979) found an increase in attractiveness when subjects' rated high trustworthy communicators as sincere compared to low trustworthy communicators. Thus, this research further suggests a relationship between attractiveness and outcome and interpersonal trust.

The literature covered in this study was selected to build a unique scientific frame in which to investigate intrinsic motivation following a competition. First and foremost, it was necessary to take what is known about outcomes, competence feedback and anxiety and replicate previous findings. Next, to proceed with a unique investigation, it was necessary to understand the "aesthetic" "good" of physical attractiveness and the potential competence-impacting deception (and interpersonal trust), and effectively manipulate these variables in the laboratory. Finally, the scientific frame was assisted by reliable instruments (such as a puzzle task used in previous studies), methods (such as previously used observation methods) and a ratio scale of measurement.

Hypotheses

Hypothesis One. Anxiety will have an impact on outcome in competition. The purpose of this hypothesis is to replicate previous findings for outcome (Olson & Reeve, 1984). High anxious winners will be more intrinsically motivated than high anxious losers, and low anxious winners will be less intrinsically motivated than low anxious losers. Low anxious losers will be the most intrinsically motivated.

Hypothesis Two. Interpersonal trust will have an impact on outcome in competition. Interpersonal trust, as a predictor variable, has not been previously

hypothesized to have an impact on differing levels of intrinsic motivation. High trust winners will be more intrinsically motivated than high trust losers, and low trust winners will be less intrinsically motivated than low trust losers. High trust winners will be the most intrinsically motivated.

Hypothesis Three. There will be a main effect for outcome. The purpose of this hypothesis is to replicate previous findings for outcome. Outcome has been found to predict differing levels of intrinsic motivation (Reeve, Olson & Cole, 1985, 1987). Thus, winners playing with the puzzles will be more intrinsically motivated than losers playing with the puzzles. During the free choice interval, winners will be more persistent at playing with the puzzles than losers.

Hypothesis Four. There will be a main effect for deception. Deception, as an independent variable, has not been previously examined to predict differing levels of intrinsic motivation. Participants paired with deceptive confederates will be less intrinsically motivated than participants paired with non-deceptive confederates.

Hypothesis Five. There will be a main effect for physical attractiveness. Physical attractiveness, as an independent variable, has not been previously examined to predict differing levels of intrinsic motivation. Participants paired with physically attractive confederates will be more intrinsically motivated than participants paired with physically unattractive confederates.

METHOD

Participants and Materials

To investigate intrinsic motivation the present study used a 2 x 2 x 2 completely randomized factorial design with three factors (i.e., outcome, attractiveness and deception). All participants in this study were enrolled in introductory psychology courses at a university in the northern part of the Midwest. Data were collected in two phases of research, and each student participated as a partial fulfillment of a course requirement. In phase I, 216 undergraduate students, 117 females and 99 males, participated. Additionally, in phase II, initially 132 students participated—3 participants were eliminated because they had not participated in phase I. A statistical power chart was used to determine sample size, and 128 participants were needed to complete both phases of the experiment. Participants from the completed data analysis were 129 undergraduate students, 79 females and 50 males.

In phase I, individual difference measures were administered by the principal investigator. Participants completed the Interpersonal Trust Scale (ITS, Rotter, 1967; see Appendix A), the Interpersonal Mistrust-Trust Measurement (IMTM, Omodei & McLennan, 2000; see Appendix A) and the Test Anxiety Scale (TAS, Mandler & Sarason, 1952; see Appendix A). The principal investigator did not discuss phase II of the experiment at this time.

In phase II of the experiment, participants were independently recruited from the same subject-pool of students used to obtain the phase I data. Phase II participants were recruited to participate in a problem-solving study and were not informed until the end of the experiment that the experiences of phase I and phase II were related.

Phase II consisted of a competition in which the participant and an experimental confederate competed on puzzle solving tasks in a small room. Prior to the competition, the participant and the confederate were seated on a couch in a small alcove outside the experimentation room and signed an informed consent. In the laboratory experimentation room, the participant and the confederate completed a pre-questionnaire (Olson, 2005; see Appendix A). The responses to all questionnaires in this study used an 11-point Likert-type scale.

The confederates in this study consisted of 12 (female and male) university students, and the puzzle tasks in this study have been effectively used in previous intrinsic motivation studies (Deci & Olson, 1989). The puzzle, known as "happy cubes", was an eight-cubed assembly, three-dimensional puzzle that could be shaped into a variety of forms. Participants attempted to solve five possible forms of the puzzle and the first person to solve the puzzle was declared "the winner". Furthermore, an ink drawing and a wooden replica of each puzzle solution was presented as a visual aid during the competition. Following the competition, the participants completed a post-questionnaire used for manipulation checks (Olson, 1987; see Appendix A). All participants signed an additional informed consent during the debriefing session which allowed the investigator to use phase I data.

Independent Variables

Outcome. All confederates were trained to master the puzzles for purpose of manipulating outcome. Outcome was manipulated in phase II, the competition phase, in the laboratory. Participants and confederates competed on the puzzle tasks in two practice trials and three competition trials.

In the two practice trials, the participant always won the first and lost the second. The practice trials were intended to evoke the feelings associated with objective competence information (i.e., winning and losing). In addition, the winning and losing was intended to balance the perception for the participant that he or she was equal in ability to their confederate opponent.

In the three competition trials, the participant was randomly assigned to win or lose. When the participant was assigned to "win", the confederate always completed the puzzle after the participant. When the participant was assigned to "lose", the confederate always completed the puzzle before the participant.

Deception. Deception, in this study, is operationally defined as the confederate's response to a key question asked by the experimenter prior to the beginning of the practice trials of the competition. Prior to entering the lab, the participant and the confederate were seated on a couch in a small alcove. The participants were randomly assigned to the deception or no-deception conditions. In the deception conditions, the confederate informed the participant through small talk that he or she has knowledge of the experiment. The confederate went on to state, "I have played with these puzzles before". Moreover, the "small talk" was previously rehearsed by all confederates. In the no-deception conditions, the confederates engaged the participant in non-deceptive, uninformative small talk.

In the laboratory room, where the competition took place, the experimenter asked the participant and the confederate the key question, "has either of you played with these puzzles prior to the experiment?" The confederate was trained to always respond "NO". After both "NO" responses were verbalized, the experimenter quickly prompted both

participants to open folder #1 and complete the brief questionnaire. This quick prompt by the experimenter kept the experiment moving along. Preventing a pause after both participants responded to the key question was also intended to prohibit the participant from verbalizing his or her knowledge of being deceived (i.e., observing that the confederate lied to the experimenter).

Physical Attractiveness. Physical attractiveness was manipulated by the appearance of the confederates' hair (i.e., tidy or untidy), style of dress (i.e., "dressed up" or "dressed down"), make-up and "clean" appearance. Participants were randomly assigned to compete against either a high-attractive or low-attractive confederate. In the attractive conditions, male confederates were clean shaven with combed hair and pressed shirt. In the unattractive conditions, males were unshaven with "bed-head" hair and dressed in disheveled "lay-around-the-house" clothes (e.g., sweatpants, unmatched, colored shirt, etc.). The female confederates in the attractive conditions wore make-up with properly styled hair and either wore a dress or business slacks. In the unattractive conditions, females did not wear make-up, did not style their hair, and dressed in disheveled "lay-around-the-house" clothes.

Dependent Variable

The dependent measure for intrinsic motivation, as in most studies examining intrinsic motivation, was the amount of time the participant played with the puzzle while left alone in the laboratory room for an 8-minute period. Thus, intrinsic motivation is operationally defined as the amount of time (in seconds) a participant spends while alone either touching or re-engaging with the puzzle. Intrinsic motivation was measured vis-à-vis surreptitious observation. Following the competition, the experimenter directs the

confederate to another room to participate in an alleged interview, and tells the participant that he or she will "return in about five to 10 minutes". The participant was left in the laboratory room alone. When the experimenter shuts the door to exit the room, two stopwatches begin and measure puzzle-playing time. The experimenter takes a seat next to the principal investigator to surreptitiously observe the participant for the eight-minute period. Synchronized times were recorded by the principal investigator and the confederate experimenter on a standardized data record. Inter-rater reliability were consistent with an estimated Pearson's *r* of 1.0.

Procedure

In the first week of classes during the winter semester, 216 students enrolled in the introductory to psychology courses participated in the phase I questionnaire study. These data collection sessions generally took 35-45 minutes to complete. Data were collected in groups of up to 30 students. Raw scores of each test were summed according to the procedures for each test. Test scores were placed in a Microsoft Excel spreadsheet which was exported to SPSS for data analysis. In phase II, participants were recruited for individual appointments and were randomly assigned to one of the eight conditions. The eight conditions and their respective sample sizes are shown in Table 1. (see Appendix B).

Participants read and signed the informed consent while sitting on a couch in a small alcove approximately 15 feet from the experimental room, after which the experimenter informed both competitors that it would be a few minutes while the laboratory was set up for the experiment. After the experimenter left to set up the laboratory, the confederate began "small talk" with the participant. During this initial

conversation, the confederate either mentioned their familiarity with the puzzles or not. When the confederate disclosed knowledge of the puzzle, he or she stated, “I played with these puzzles”. This was done to cause “mistrust” when the confederate later denied knowledge of the puzzle (i.e., responding “NO” to the experimenter’s key question).

After the three to five minute small talk in the alcove, the experimenter returned, and escorted the participant and the confederate into the laboratory. The laboratory consisted of a four-foot round table in the middle of the room with two chairs on opposite sides. The room also contained some magazines and books. On the table there were two sets of folders labeled “#1” through “#6”, two “happy cubes” puzzles and two example (i.e., wooden replicas) figures with their associated drawings and blocks.

The confederate always took the seat closest to the door. Once both participants were seated, the experimenter explained that the purpose of the study was to examine the effects on competition in solving puzzles. During this introduction, the experimenter asked the key question: “Has either of you played with these puzzles before?” In all cases, the confederate was trained to respond “NO”. All participants had not seen or played with these puzzles before.

Once the confederate and participant responded to the key question, the experimenter asked the participant and the confederate to open folder #1. Both participants were instructed to complete the brief questionnaire. Once the competitors had completed the questionnaire, they moved folder #1 off to the side.

The experimenter then reminded the participant and the confederate that the experiment involved competition in solving the puzzle. They were informed that the object of the task was solving the puzzle before the other person. Then, for

demonstration purposes, the experimenter presented a wooden replica of a puzzle and solved a puzzle sequence. Next, the competitors were informed that five trials would be conducted—two practice trials and three competitive trials. A maximum time of three minutes was allowed to solve the puzzle in each of the two practice trials, and a maximum time of five minutes was allowed to solve the puzzle in each of the three competition trials. The purpose of the two practice trials was to allow the participant to become familiar with the puzzles and form the initial impression that the participant and the confederate were of comparable (or equal) ability.

On the first practice trial, the confederate never solved the puzzle before the participant. The confederate was trained to "lose" the first practice trial. This first puzzle sequence was by far the least difficult to solve. On the second practice trial, the confederate always solved the puzzle before the participant. Thus, the confederate was trained to "win" the second practice trial. After each practice trial, the experimenter addressed the winner with the phrase, "you won that trial". Each participant in this phase experienced both competence and incompetence feedback prior to the competition trials. Although the main purpose of the practice trials was to create the perception of balanced, equal ability between competitors, a phrase such as "you won that trial" was intended to assist in creating a competitive environment and assist in the perception of competence and incompetence.

For the three competition trials, the confederate either won or lost all of the trials. After the result of each competition trial, the experimenter continued to address the winner with the phrase, "you won that trial". When the confederate "lost" during competition, he or she was trained to solve each of the three puzzles after the participant.

When the confederate “won”, he or she was trained to solve each of the three puzzles before the participant.

After all practice and competition trials were completed, the experimenter requested a private interview with each competitor to discuss the effects of the competition and how each competitor went about solving each puzzle. The confederate, sitting in the chair closest to the exit door, was always selected first and was directed to enter an interviewing room adjacent to the waiting area alcove. As the two left for the alleged interview, the experimenter assured the participant that she would return in “about five or 10 minutes”. Subsequently, for the purpose of establishing a free choice interval, the participant was left alone in the room for eight minutes.

In addition to the puzzles, the experimental room was equipped with a number of distractors—including books, magazines, participants’ personal items and the experimenter’s behavioral notes. To allow an accurate rating of the participants’ puzzle-playing times, the eight-minute free choice interval was always rated by the confederate experimenter and the principal investigator. The free choice interval began when the experimenter shut the laboratory room door after escorting the confederate out of the room. When the laboratory room door shut, the principal investigator and experimenter started timing the eight-minute free choice interval via synchronized stopwatches and recorded the puzzle playing time, or persistence, in seconds. After the eight-minute free choice interval had elapsed (480 seconds), the experimenter re-entered the room and administered the post-questionnaire used for manipulation checks. During this time, the experimenter remained in the room to answer questions and reset the laboratory for the next experiment.

Each debriefing session was conducted by the principal investigator. During the debriefing session, each participant was asked to sign an additional informed consent statement requesting permission to use data from the first phase of research. All participants were informed that the data from the questionnaires would be used in conjunction with the data from the puzzle competition.

RESULTS

Between-Subjects Manipulation Checks

Outcome, Deception and Physical Attractiveness. The post experiment questionnaire included manipulation check items for outcome, deception and physical attractiveness. A three-way between-subjects analysis of variance (ANOVA) was performed to check for successful manipulations of the independent variables (outcome, deception and physical attractiveness) with their corresponding items of measurement on the post-questionnaire. Results showed main effects for outcome with *competence*, $F(1, 121) = 58.871$, $p<.05$ (power of 1.000), deception with *trustworthiness*, $F(1, 121) = 19.249$, $p<.05$ (power of .992) and physical attractiveness with *attractiveness*, $F(1, 121) = 26.523$, $p<.05$ (power of .999). There were no main effects for deception with *competence*, $F(1, 121) = 2.092$, $p>.05$ (power of .300), physical attractiveness with *competence*, $F(1, 121) = .037$, $p>.05$ (power of .054), no two-way interaction effects for outcome and deception with *competence*, $F(1, 121) = .865$, $p>.05$ (power of .152), outcome and physical attractiveness with *competence*, $F(1, 121) = .089$, $p>.05$ (power of .060), deception and physical attractiveness with *competence*, $F(1, 121) = .441$, $p>.05$ (power .101) or no interaction effects for outcome, deception and physical attractiveness with *competence*, $F(1, 121) = 1.480$, $p>.05$ (power of .226). Additional results showed

no main effects for outcome with *trustworthiness,* F (1, 121) = .004, p>.05 (power of .050), physical attractiveness with *trustworthiness,* F (1, 121) = .266, p>.05 (power of .080), no two-way interaction effects for outcome and deception with *trustworthiness,* F (1, 121) = .509, p>.05 (power of .109), outcome and physical attractiveness with *trustworthiness,* F (1, 121) = .875, p>.05 (power of .153), deception and physical attractiveness with *trustworthiness,* F (1, 121) = .150, p>.05 (power of .067) or no interaction effects for outcome, deception and physical attractiveness with *trustworthiness,* F (1, 121) = .087, p>.05 (power of .060). Further results showed no main effects for outcome with *attractiveness,* F (1, 121) = .232, p>.05 (power of .077), deception with *attractiveness,* F (1, 121) = .006, p>.05 (power of .051), no two-way interaction effects for outcome and deception with *attractiveness,* F (1, 121) = .078, p>.05 (power of .059), outcome and physical attractiveness with *attractiveness,* F (1, 121) = .006, p>.05 (power of .051), deception and physical attractiveness with *attractiveness,* F (1, 121) = .427, p>.05 (power of .099) or no interaction effects for outcome, deception and physical attractiveness with *attractiveness,* F (1, 121) = .247, p>.05 (power of .078). Thus, results showed main effects for outcome with the perception of competence. Manipulation checks were successful and the independent variables evidenced face validity (see ANOVA Table 2. in Appendix B).

Between Subjects Analyses

A three-way between subjects analysis of variance (ANOVA) was performed on the independent variables (outcome, deception and attractiveness) with intrinsic motivation. Results showed no main effects for *outcome* (winners, losers), F (1, 121) = 2.235, p>.05 (power of .317; see Figure 1. in Appendix C), *deception* (deception, no-

deception), F (1, 121) = .144, p>.05 (power of .066; see Figure 2. in Appendix C), or *attractiveness* (physical attractiveness, physical unattractiveness), F (1, 121) = .107, p>.05 (power of .062; see Figure 3. in Appendix C). Additional results showed no two-way interaction effects for *outcome and deception*, F (1, 121) = .473, p>.05 (power of .105), *outcome and attractiveness*, F (1, 121) = .118, p>.05 (power of .063), or *deception and attractiveness*, F (1, 121) = .418, p>.05 (power of .098). Further results showed a significant three-way interaction effect for *outcome, deception and attractiveness*, F (1, 121) = 4.973, p<.05 (power of .600; see Figures 13. and 14. in Appendix C) Thus, no main effects were found and their respective hypotheses were not supported (see ANOVA Table 3. in Appendix B). Treatment condition persistence time means and their respective standard deviations and sample sizes are displayed in Table 4. (see Appendix B).

Anxiety and Interpersonal Trust. A two-way between-subjects analysis of variance (ANOVA) was performed on outcome and these independent variables (anxiety, interpersonal trust from the ITS and interpersonal trust from the IMTM) with intrinsic motivation times. Results showed no main effects for *outcome*, F (1, 121) = 2.112, p>.05 (power of .303; see Figure 4. in Appendix C), *anxiety*, F (1, 121) = 1.149, p>.05 (power of .219; see Figure 5. in Appendix C), *outcome* from the ITS, F (1, 121) = 2.425, p>.05 (power of .339; see Figure 7. in Appendix C), *interpersonal trust* from the ITS, F (1, 121) = .145, p>.05 (power of .067; see Figure 8. in Appendix C) or *outcome* from the IMTM, F (1, 121) = 2.117, p>.05 (power of .303; see Figure 10. in Appendix C). There was a main effect for *interpersonal trust* from the IMTM, F (1, 121) = 7.341, p<.05 (power of .767; see Figure 11. in Appendix C). Additional results showed no two-way interaction

effects for *anxiety and outcome*, F (1, 121) = .048, p>.05 (power of .055; see Figure 6. in Appendix C), *interpersonal trust and outcome* from the ITS, F (1, 121) = .070, p>.05 (power of .058; see Figure 9. in Appendix C) or *outcome and interpersonal trust* from the IMTM, F (1, 121) = 2.285, p>.05 (power of .323; see Figure 12. in Appendix C). Interaction effects were not found and their respective hypotheses were not supported (see ANOVA Table 4. in Appendix B). A main effect for interpersonal trust from the IMTM was dichotomized for further analysis in the following section.

Additional Between-Subjects Analyses

Interpersonal Trust from the IMTM—Main Effect for Trust. A two-way between-subjects analysis of variance (ANOVA) was performed with outcome and this dichotomized independent variable (low and high interpersonal trust) with intrinsic motivation times. Results showed a main effect for *low interpersonal trust*, F (1, 56) = 4.919, p<.05 (power of .587; see Figure 15. in Appendix C) and no main effect for *high interpersonal trust*, F (1, 56) = .151, p>.05 (power of .265; see Figure 16. in Appendix C). Low interpersonal trust winners showed greater intrinsic motivation times than low interpersonal trust losers (see ANOVA Table 4. in Appendix B).

Interpersonal Trust Correlations. Correlations were performed with the Interpersonal Trust Scale (Rotter, 1967) and the Interpersonal Mistrust-Trust Measurement (Omodei & McLennan, 2000) from the laboratory testing phase, r = -.199, p<.05, two-tailed. Previous research by Omodei and McLennan (2000) has shown the Interpersonal Trust Scale to be negatively correlated with the Interpersonal Mistrust-Trust Measurement (r = -.41). Omodei and McLennan (2000), the authors of the Interpersonal Mistrust-Trust Measurement, developed this self-report inventory to measure

interpersonal mistrust as a negative cognitive orientation towards others. Further, the measure comprised items describing perceptions of specific hypothetical interpersonal situations rather than asking individuals to describe their own general behavior. Rotter (1967), the author of the Interpersonal Trust Scale, took into account locus of control and comprised items asking individuals to describe their levels of introversion and extraversion.

In the interpersonal trust scales, high scores represented participants who were high in trust, and low scores represented participants who were low in trust. The Interpersonal Trust Scale (Rotter, 1967) was negatively correlated with the Interpersonal Mistrust-Trust Measurement (Omodei & McLennan, 2000). This finding is consistent with previous research by Omodei and McLennan (2000).

Interest and Enjoyment. A one-way between-subjects analysis of variance (ANOVA) was performed for the items "interest" and "enjoyment" as covariates of outcome with intrinsic motivation times. Results showed a main effect for *outcome*, $F(1, 121) = 4.561$, $p<.05$ (power of .555; see Figure 17. in Appendix C). When outcome is adjusted for the items "interest" and "enjoyment", intrinsic motivation shows a linear relationship with interest and enjoyment. Intrinsic motivation times increase as a function of the increase of interest and enjoyment (see ANOVA Table 4. in Appendix B).

Physical Attractiveness. A two-way between-subjects analysis of variance (ANOVA) was performed with these variables (attractiveness and gender) with the item "attractive". Results showed interaction effects for *attractiveness and gender*, $F(1, 121) = 14.908$, $p<.05$ (power of .969; see Figure 18 in Appendix C). Males appeared to be more impacted by physical attractiveness and were more "judging" of attractiveness than

females. Males appeared to more successfully discriminate, or differentiate, between attractiveness and unattractiveness compared to females. The saliency of physical attractiveness were more strongly revealed through higher male ratings of attractiveness and lower ratings of unattractiveness compared to female responses which appears to have no significant difference (see ANOVA Table 4. in Appendix B).

A Tukey post-hoc correction were performed with attractiveness (physical attractiveness, physical unattractiveness) and participants (male, female), HSD (1, 121) = 1.77. The Tukey HSD shows a significant difference for male responses, and males were the most impacted by physical attractiveness manipulation and the most discriminatory in their ratings of attractiveness when compared to females. There were no significant differences in female responses to the manipulation of physical attractiveness. Thus, not all pair-wise differences among means were significant, $p<.05$.

DISCUSSION

Accomplishing the hypothetical goals of this study were not achieved, but the intent to expound the framework of intrinsic motivation and competition was a success. The post-questionnaire administered during the competition phase was used for manipulation checks, and each of the independent variables were valid. However, no hypothesized main effects were reported in this study, and thus, hypotheses one through five were unvalidated. Subsequently, the three-way interaction in this study appeared to predict differing levels of intrinsic motivation. Thus, the results of this study are simultaneously intriguing and confusing.

The absence of main effects for outcome was unusual because puzzle playing time in previous studies has demonstrated the most powerful influence of competence

feedback on intrinsic motivation. However, previous studies have not included competence interacting with attractiveness and deception. In addition, previous studies show competence having significant impact on puzzle playing time, and the manipulation of competence was successful in this present study (Reeve, Olson & Cole, 1985; 1987). In fact, winners experienced more interest, enjoyment and competence feedback than losers on the post-questionnaire.

Interest, enjoyment and competence covaried with puzzle playing time. Outcome predicted differing levels of intrinsic motivation when accounting for the variances associated with interest, enjoyment and competence. Winners in this study rated the puzzle tasks as more interesting and enjoyable than losers. In other words, participants who were winners in this study experienced more feelings of interest and enjoyment than losers.

Interest and enjoyment have strong implications in this study. Specifically, it was more interesting and enjoyable to win the competition than to lose. Previous intrinsic motivation research has shown interest and enjoyment to be strongly associated with intrinsic motivation. When individuals show the intrinsically motivated behaviors of challenge confrontation, persistence and re-engagement, they self-report feelings of "interest" and "enjoyment" (Reeve, 1992a). Intrinsically motivated behaviors in this study may be explained via interest, enjoyment and competence feedback.

Winning is considered to be a positive experience (Reeve, Olson & Cole, 1985). In this study, winners experienced greater levels of interest and enjoyment than did losers. In addition, winners reported higher levels of competence than did losers. Reeve, Olson and Cole (1987) found that winners experienced a higher level of positive affect

than losers. Positive affect is inherent in winning, and the present data supports Reeve's (1992a) proposal that positive affect can account for intrinsic motivation. In other words, the positive affect of interest, enjoyment and competence feedback may account for differing levels of intrinsic motivation in this study. It appears that the motivation to persistently play with the puzzles (i.e., re-engage with the puzzles) during the free choice interval is a function of the positive, internal experiences of higher levels of interest, enjoyment and competence from winning the competition.

Intrinsic motivation was impacted by outcome and competence feedback. This study shows that the outcome may predict interest, enjoyment and competence feedback (in the post-questionnaire). However, the intrinsic motivation predicted was not the result of winning or losing (Reeve, Olson & Cole, 1985, 1987). It seemed that competence feedback was perceived by participants such that winners rated themselves as more competent than losers.

Bandura and Schunk (1981), Bandura (1982a, b), Deci (1975), Deci and Ryan (1980, 1985), Losier and Vallerand (1984), and Reeve, Olson and Cole (1985, 1987) all found that competence feedback is a predictor of intrinsic motivation. Competence feedback in this study appeared to reflect back on the perceived competence of the participant (Bandura, 1992a), and competence feedback may lend support to an explanation of the complex three-way interaction in this study.

The interaction effect in the study is the most intriguing finding. This three-way interaction varied as a function of the complexity of interest, enjoyment and competence feedback. Further, interest, enjoyment and competence feedback covaried with the interaction of outcome, deception and attractiveness. Unfortunately, such covariance

does not lend complete support to a feasible explanation of the intriguing interaction effects. Competence feedback appeared to be impacted by deception and physical attractiveness (in half of the conditions). Thus, the variables of attractiveness and deception provide an addendum to this complex finding.

Persistence times (intrinsic motivation in seconds) can be explained via the interaction of competence feedback, deception and attractiveness. Participants in these conditions either won or lost and experienced the internal feelings associated with competence or incompetence. Furthermore, competence feedback was exacerbated by variances associated with deception and attractiveness. Winning was not the typical positive, perceptually-balanced "competence" experience when competing against a "liar" who was physically attractive. Consequently, losing was not the typical un-enjoyable, perceptually-balanced "incompetence" experience when competing against a "liar" who was physically attractive. Winning and losing participants paired with attractive/deceptive confederates show the highest and lowest levels of intrinsic motivation measured in this study.

Attractiveness in this study seems to be misunderstood from a standpoint of the saliency of physical beauty. Physically attractive, beautiful confederates were found be "attractive", but such ratings cannot explain what affect attractiveness has on competition. Attractive/deceptive confederates appear to have an impact on the highest and lowest intrinsic motivation times observed in this study. Moreover, this study suggests that participants perceived the attractive confederates to be more competent and "lying" (the deception variable) impacted the perception of competence experienced by the participants. For example, and to expand upon this suggestion, a study by Patterson,

Churchill, Burger and Powell (1992) found that people's perceptions of performance was directly related to physical attractiveness, and they suggested that physical appearance could make the difference between winning and losing. Participants in this study watched tapes of Ronald Reagan and Walter Mondale's 1984 presidential debate, and "favorability" ratings were higher for Reagan than Mondale. Subsequently, higher ratings were partly attributed to Reagan's higher physical attractiveness and Reagan won the election by a large margin. In other words, attractive/deceptive confederates (in this present study) had an exacerbating impact on competence feedback.

Competence was impacted by physical beauty and lying. Attractive/deceptive confederates persuaded participants via "small talk". Therefore, they communicated to the participants that they were decent, if not good, at puzzle playing (i.e., they "played with these puzzles before"). Moreover, it has been found that beauty is "good", and this study suggests that physical attractiveness (when interacting with the variances associated with the variables of deception and outcome) is also associated with higher perceived levels of competence. Thus, winners were not only feeling competent because of winning (and losers were not only feeling incompetent due to losing), but also because the perception of competence appeared to be directly related to deception (lying) and physical attractiveness.

The competence associated with winning was exacerbated by the fact that the winner competed against an opponent that claimed to be competent and looked competent. After defeating the competent opponent in the puzzle competition, the participant felt intrinsically motivated and re-engaged in puzzle playing while left in the room alone. Such participants displayed the highest persistence times (intrinsic

motivation). Similarly, the incompetence associated with losing was exacerbated by the fact that the loser "won" a practice trial despite competing against an opponent that claimed to be competent and looked competent. To lose the competition to a "competent" opponent was probably not a "shock" to the losing participant; however, it was not a completely un-enjoyable experience because persistence times were observed. Subsequently, losing participants displayed the lowest persistence times (intrinsic motivation). Thus, this study further suggests that deception sent a verbal message of competence, while attractiveness sent a non-verbal message of competence. These messages (i.e., perceptions) of competence may also differentially affect gender and competition.

Same-sex and opposite-sex pairings were used for the confederate-subject dyads. The dyads were not controlled and random number generation was used. Deci and Olson (1989) reviewed many intrinsic motivation studies and found that those studies only used same-sex dyads. Subsequently, this study did not plan an analysis of the data for gender effects associated with attractiveness.

It is important to note that this study is consistent with previous research (Maner, Kenrick, Becker, Delton, Hofer, Wilbur & Neuberg, 2003) which found that male subjects were more responsive, or discriminatory, of the manipulation of physical attractiveness than females. As in this study, males showed more differentiation between attractiveness and unattractiveness than females. A Tukey HSD test in this present study shows no significant differences for female ratings of attractiveness and unattractiveness. Male participants were impacted by the saliencies associated with physical beauty and unattractiveness (see Houghton & Tipper, 1994, for a review). Males were easily

provoked to rate a physically attractive confederate as “beautiful” (or attractive), compared to females. Similarly, males were easily provoked to rate a physically unattractive confederate as “ugly” (or unattractive), compared to females. This study suggests that the gender effects associated with attractiveness may need further investigation. Thus, all possible sex dyads should be considered in motivation and competition studies.

Gender effects have been found to significantly impact attractiveness (Chia, Allred, Grossnickle & Lee, 1998; Maner, Kenrick, Becker, Delton, Hofer, Wilbur & Neuberg, 2003; and Tracy & McKelvie, 1993). Conversely, gender effects have not demonstrated much significance with respect to intrinsic motivation research due to the use of same-sex dyads only (Reeve, 1992a; Olson & Reeve, 1984; and Reeve, Olson, & Cole, 1985, 1987). However, randomly-generated dyads may have contributed to the confusing findings in this study.

The randomized same-gender and mixed-gender dyads may not have allowed for reliable measurements of trust. Prior research has highlighted gender differences with regard to interpersonal trust. In general, males and females think about trust differently (Johnson-George & Swap, 1982). Women, specifically, are more hesitant to rate another individual’s level of trustworthiness and proceed to collect additional conclusive information before making an inference of trust. Thus, gender effects should be a real concern for intrinsic motivation studies investigating the impact of interpersonal trust, attractiveness and deception.

The intention for using deception in this study was to evaluate the impact of lying on intrinsic motivation. Confederates actively lied to the experimenter to deceive the participants. Lying, in turn, impacted the perception of competence. Consequently, Englehardt and Evans (1994) suggest that deception is a passive form of lying. Additionally, Depaulo, Kashy, Kirkendol, Wyer and Epstein (1996) and DePaulo and Kashy (1998) demonstrated that people tell 1.5 lies day. Such lies have been classified as either self-centered or altruistic in nature. Thus, to expound upon the impact of the deception variable in this present study, such findings suggest that the intentions of the deception can govern the perceptions associated with lying.

It is likely that the participants in this study have been exposed to self-centered or altruistic lying for their entire lives (actively or passively). Deception (lying) in this study was not manipulated in an active, passive, self-centered or altruistic manner. Nonetheless, participants were likely to bring individual perceptions into the laboratory. Furthermore, it is also likely that everyone tells a "lie" each day, and everyone may also experience a "lie" each day. Such individual perceptions may have confounded the perceived competence associated with the manipulation of deception. Moreover, lying is all too common and extraneous factors may be added into such a (deception) manipulation.

Lying had a strong impact on how confederates were rated for trustworthiness (on the post-questionnaire). When participants observed lying, confederates were rated as less trustworthy than the confederates that did not lie. Subsequently, interpersonal trust was an observable experience between the competitors and the measurement of

interpersonal trust was completed in phase I, and interpersonal trust provides some support to the intrigue and confusion in this study.

Interpersonal trust did not have an impact on outcome in competition as hypothesized. When the data were sampled for interpersonal trust (via Rotter's, 1967, Interpersonal Trust Scale and Omodei & McLennan's, 2000, Interpersonal Mistrust-Trust Measurement), there were no main effects for outcome. However, interpersonal trust from the Interpersonal Mistrust-Trust Measurement shows some significant variances.

A dichotomized analysis found a main effect for low interpersonal trust via the Interpersonal Mistrust-Trust Measurement. Low trust winners were more intrinsically motivated than low trust losers. Moreover, "low trusters" perceive the social world with mistrust. Thus, interpersonal trust, as operationally defined by Omodei and McLennan (2000), had an impact on competence, and low trust participants were more impacted by the experiences of winning and losing.

A possible explanation for the relationship between low trust and competence may be rendered through the commonality of both "telling" and "hearing" lies in everyday experiences. Low trust participants may bring a unique (acute) perception which may bring an ability to successfully compete in a puzzle solving competition involving competence feedback, attractiveness and deception. After all, low trust participants displayed significant persistence times (intrinsic motivation).

The low trust participants in this sample are grouped according to the description of interpersonal trust as defined by Omodei and McLennan (2000). People have a tendency to mistrust (or trust) based upon the perceptions of accumulated social experiences. Furthermore, the instrument was developed by Omodei and McLennan in

an Australian university population. This study amended the item language where needed for use with an American university population. Conversely, Rotter's (1967) instrument was developed in a north-eastern American university population in the late 1960's. Thus, the situation-specific definition of interpersonal trust by Omodei and McLennan proved to be more useful in this study than Rotter's (1967, 1980) locus of control-introversion/extraversion definition of interpersonal trust.

In developing their instrument of interpersonal trust, Omodei and McLennan deemed Rotter's Interpersonal Trust Scale a necessary instrument of comparison and contrast. Rotter (1967, 1971 & 1980) has been a pioneer in the development of measuring interpersonal trust. Nonetheless, Omodei and McLennan took a different operational stance of interpersonal trust and found their instrument was negatively correlated with Rotter's Interpersonal Trust Scale ($r = -.41$). Although this study found a moderately significant Pearson's r ($r = -.199$), such a finding speaks to the success of this study which suggests that the lower negative correlation is due to population differences. However, such a negative correlation does not lend enough support to a bewildering three-way interaction.

In the laboratory used for competition, unique interpersonal situations occurred. Physical attractiveness and deception may have interacted with competence feedback—a known predictor of intrinsic motivation. People were differentially persistent at a task after competing against a competent-attractive-deceptive opponent. Some of these people won the competition and defeated a competent-looking liar. Similarly, other people lost the competition, despite winning a practice trial, and were defeated by a competent-looking liar. Thus, and speaking to the most-challenging intrigue of this

present study, competence feedback was exacerbated by interacting with the variances associated with physical attractiveness and deception. Furthermore, competence feedback appeared to result in increased feelings of interest and enjoyment despite being impacted by the successful manipulations of attractiveness and deception (two salient variables). Subsequently, such an interpersonal experience would appear to vary as a function of varying degrees of attractiveness and deception. Nonetheless, understanding and measuring these degrees of variance and how they differentially affect intrinsic motivation is an argument for another study.

In conclusion, disconfirming the hypotheses led to the discovery of an interesting and complex three-way interaction. Outcome and competence feedback have been shown to be significant factors in intrinsic motivation studies, and now it appears that deception and attractiveness are also significant factors in studying motivation and competition. Attractiveness and deception has an exacerbating impact on competence feedback and appears to predict intrinsic motivation. In addition, this study would like to highlight the notion that prior intrinsic motivation research should have considered the effects of gender and attractiveness. Thus, future arguments should support the validity of all these aforementioned variables to potentially increase the understanding of a bewildering three-way interaction.

People who are winners are intrinsically motivated by deception and attractiveness. Moreover, the self-perceptions of competence in the intrinsically motivated individual seem to motivate such an individual to re-engage in an activity following competition (despite losing). Beauty is better with deception, and there is intrinsic motivation to account for this.

APPENDIX A

GENERAL OPINION SURVEY

(Rotter, 1967; Interpersonal Trust Scale)

This is a questionnaire to determine the attitudes and beliefs of different people on a variety of statements. Please answer the statements by giving as true a picture of your own beliefs as possible. Be sure to read each item carefully and show your beliefs by marking the appropriate number in the blank.

If you always agree (i.e., believe it to be absolute truth), circle "0". Circle "2" if you mildly agree (i.e., believe it to be more true than untrue) with the item. Circle "5" if you feel the item is about equally true as untrue. Circle "8" if you mildly disagree (i.e., believe it to be more untrue than true) with the item. If you always disagree with an item circle the item numbered ten.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

1.____Most people would rather live in a climate that is mild all year around than in one in which winters are cold.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

2._____Hypocrisy is on the increase in our society.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

3._____In dealing with strangers, one is better off to be cautious until they have provided evidence that they are trustworthy.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

4._____This country has a dark future unless we can attract better people into politics.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

5._____Fear of social disgrace or punishment rather than conscience prevents most people from breaking the law.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

6.___Parents usually can be relied upon to keep their promises.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

7.___The advice of elders is often poor because the older person doesn't recognize how times have changed.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

8._____Using the Honor System of not having a teacher present during exams would probably result in increased cheating.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

9._____The United Nations will never be an effective force in keeping world peace.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

10.___Parents and teachers are likely to say what they believe themselves and not just what they think is good for the child to hear.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

11.___Most people can be counted on to do what they say they will do.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

12.___As evidenced by recent books and movies, morality is diminishing in this country.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

13.___The judiciary is a place where we can all get unbiased treatment.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

14._____It is safe to believe that in spite of what people say most people are primarily interested in their own welfare.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

15._____The future seems very promising.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

16._____Most people would be horrified if they knew how much news the public hears and sees is distorted.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

17._____Seeking advice from several people is more likely to confuse than it is to help one.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

18._____Most elected public officials are really sincere in their campaign promises.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

19._____There is no simple way of deciding who is telling the truth.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

20._____This country has progressed to the point where we can reduce the amount of competitiveness encouraged by schools and parents.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

21._____Even though we have reports in newspapers, radio and television, it is hard to get objective accounts of public events.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

22.___It is more important that people achieve happiness than that they achieve greatness.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

23.___Most experts can be relied upon to tell the truth about the limits of their knowledge.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

24.___Most parents can be relied upon to carry out their threats of punishment.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

25.___One should not attack the political beliefs of other people.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

26._____In these competitive times one has to be alert or someone is likely to take advantage of you.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

27.___Children need to be given more guidance by teachers and parents than they now typically get.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

28.___Most rumors usually have a strong element of truth.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

29._____Many major national sport contests are fixed in one way or another.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

30.____A good leader molds the opinions of the group he is leading rather than merely following the wishes of the majority.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

31.____Most idealists are sincere and usually practice what they preach.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

32.____Most salesmen are honest in describing their products.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

33.____Education in this country is not really preparing young men and women to deal with the problems of the future.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

34.____Most students in school would not cheat even if they were sure of getting away with it.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

35.____The hordes of students now going to college are going to find it more difficu1t to find good jobs when they graduate than did the college graduates of the past.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

36.____Most repairmen will not overcharge even if they think you are ignorant of their specialty.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

37.____A large share of accident claims filed against insurance companies are phony.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

38.___One should not attack the religious beliefs of other people.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

39.__R__Most people answer public opinion polls honestly.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

40._____If we really knew what was going on in international politics, the public would have reason to be more frightened than now seem to be.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Always agree Mildly agree Agree and Disagree Mildly disagree Always disagree

APPENDIX A (CONTINUED)

GENERAL OPINION SURVEY

(Omodei & McLennan, 2000; Interpersonal Mistrust-Trust Measurement)

Example

You are discussing a personal difficulty with a friend. He interrupts and says that he has to leave to attend a meeting.	---	*Your friend is too selfish to want to listen to your difficulties.*

First, you carefully imagine yourself in the situation in the first column, and then you consider the statement given in the second column. If, for example, you are 100% sure that he/she is selfish, then you would circle "10" (*Always*). If, however you think it *Equally* likely that he/she is or is not selfish, then you would circle "5".

In some of the situations, your reaction would depend on who the other person happened to be—in this case, just give your reaction for a typical situation. Although some situations appear similar, they are not identical, and you might react differently.

1. A workmate complains to you of a bad headache and asks you to finish a boring task.	---	*The headache is just as bad as he or she says it is.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way	Equally likely to respond in this way	Always likely to respond in this way

2. While working with a friend on a task that you are obviously quite good at, the friend remarks on how well you work.	---	*He or she really thinks that your work is good.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way	Equally likely to respond in this way	Always likely to respond in this way

3. You are in the bar with an acquaintance who refuses your offer of a drink.	---	*He or she wants to stop you from feeling generous.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way	Equally likely to respond in this way	Always likely to respond in this way

4. You are having trouble using an automatic banking machine. The next person behind you offers to help. --- *He or she plans to read your secret code number.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

5. You are waiting to order a meal in a restaurant, and your companion recommends a particular dish. --- *Your companion's main concern if that you enjoy your meal.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

6. Your employer suggests you leave work early because you look tired. --- *Your employer is feeling kindly towards you.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

7. You are involved in a minor accident that is the other person's fault. He or she keeps asking if you are hurt. --- *The person is trying to stop you from realizing that it was his or her fault.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

8. You and a friend are working on a difficult task that you are certain that you are doing in the easiest way possible. Your friend suggests that another way would be easier still. --- *The friend's main concern is to make your task easier.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

9. During an interview for entry into a special program or course, the interviewer asks if you find the room stuffy. --- *There is a hidden reason for this question.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

10. You are telling a close friend a personal problem. This friend asks you a question that you find irrelevant. --- *Your friend is trying hard to understand your problem.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

11. Someone in your household complains of not feeling well and asks you to finish some unpleasant housework for him or her. --- *The household member is feeling better than he or she pretends.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

12. You are trying on a garment in a department store, and the salesperson comments on how well it suits you. --- *He or she is trying to give you good advice.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

13. A workmate offers to help you finish your work because you look slightly ill. --- *The workmate is feeling sorry for you.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

14. You offer a ride to an acquaintance, but your offer is refused. --- *He or she does not want you to feel noble for going out of your way.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

15. You are vacationing in a new city and become lost. A stranger offers to show you to your hotel. --- *The stranger has sinister motives.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

16. A co-worker accidentally causes a small fire. As you both put out the fire, this workmate keeps asking if you are burnt. --- *The workmate is trying to stop you from realizing that he or she caused the fire.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

17. During an interview for an important job, the interviewer asks you if you find the room warm enough. --- *The interviewer is trying to find out something about you.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

18. While telling a close friend of an embarrassing mistake you made, you see the friend smile. --- *The friend feels kindly toward you because of your mistake.*

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Never likely to respond in this way | Equally likely to respond in this way | Always likely to respond in this way

APPENDIX A (CONTINUED)

TEST ANXIETY SCALE

(Mandler & Sarason, 1952)

Please circle the number which best describes you.

1. While taking an important exam I find myself thinking of how much brighter that other students are than I am.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extemely Unharacteristic — Moderately Characteristic — Extremely Characteristic

2. If I were to take an intelligence test, I would worry a great deal before taking it.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

3. I dread courses where the professor has the habit of giving ‘pop’ quizzes.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

4. During course examinations I find myself thinking of things unrelated to the actual course material.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

5. I get to feel very panicky when I have to take a surprise exam.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

6. During tests I find myself thinking of the consequences of failing.

0-------1-------2-------3------4-------5-------6-------7------8------9------10

Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

7. While taking an important exam I perspire a great deal.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

8. After important tests I am frequently so tense that my stomach gets upset.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

9. I freeze up on things like intelligence tests and final exams.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

10. Getting a good grade on one test doesn't seem to increase my confidence on the second.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

11. I sometimes feel my heart beating rapidly during very important tests.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

12. After taking a test I always feel I could have done better that I actually did.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

13. I usually get depressed after taking a test.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Moderately Extremely
Uncharacteristic Characteristic Characteristic

14. I have an uneasy, upset feeling before taking a final exam.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

15. When taking a test my emotional feelings do not interfere with my performance.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

16. During a course examination I frequently get so nervous that I forget facts I really know.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

17. I seem to defeat myself while working on important tests.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

18. The harder I work at taking a test or studying for one, the more confused I get.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

19. I can’t seem to stop worrying about an exam even though the exam is over.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

20. During exams I sometimes wonder if I’ll ever get through college.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

21. I would rather write a paper than take an examination for my grade in a course.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

22. I wish examinations did not bother me so much.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

23. I think I could do much better on tests if I could take them alone and not feel pressured by a time limit.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

24. Thinking about the grade I may get in a course interferes with my studying and performance on tests.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

25. If examinations could be done away with, I think I would actually learn more.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

26. On exams I take the attitude, “If I don’t know it now there’s no point in worrying about it.”

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

27. I really don’t see why some people get so upset about tests.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

28. Thoughts of doing poorly interfere with my test performance.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

29. I don't study any harder for my final exams than I do for the rest of my course work.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

30. Even when I'm prepared for a test, I feel very anxious about it.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

31. I don't enjoy eating before an important test.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

32. Before an important examination I find my hands or arms trembling.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

33. I seldom feel the need for "cramming" before an examination.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

34. The University ought to recognize that some students are more nervous than others about tests and that this affects their performance.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

35. It seems to me that examination periods ought not to be made the tense situations which they are.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

36. I start feeling very uneasy just before getting a test back.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

37. If I knew I was going to take an intelligence test, I would feel confident and relaxed beforehand.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

38. Nervousness, while taking an exam or test, hinders me from doing well.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

39. I work most effectively under pressure, as when the task is very important.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

40. In a course where I have been doing very poorly, my fear of a bad grade cuts down my efficiency.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

41. When I am poorly prepared for a test or exam, I get upset and do worse than I should.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

42. The more important the examination, the less I seem to do well.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

43. While I may (or may not) be nervous before taking an exam, once I start I seem to forget to be nervous.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

44. During exams or tests, I blank on questions to which I know the answers—even though I might remember them as soon as the exam is over.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

45. Nervousness while taking a test helps me do better.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

46. When I start taking a test nothing is able to distract me.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

47. In courses in which the total grade is based on one exam I seem to do better than other people.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

48. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

49. I look forward to exams.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

50. I am so tired from worrying about an exam, that I find that I almost don't care how well I do by the time I start the test.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

51. The time pressure on an exam causes me to do worse than the rest of the group under similar conditions.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

52. Although cramming under pre-examination tension is not effective for most people, I find that if the need arises, I can learn material immediately before an exam under considerable pressure—and successfully retain it to use on the exam.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic | Moderately Characteristic | Extremely Characteristic

53. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

54. I enjoy taking a difficult exam more than an easy one.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

55. The more important the exam or test the better I seem to do.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

56. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on an easy question later on.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Extremely Uncharacteristic — Moderately Characteristic — Extremely Characteristic

APPENDIX A (CONTINUED)

(pre-questionnaire)

(Olson, 1985, 1986, 1987)

1. How interesting do you think the task will be?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

2. How competent do you think you will be at this task?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

3. How competent do you think the other person will be at this task?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

4. How enjoyable do you think this task will be?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

APPENDIX A (CONTINUED)

(post-questionnaire)

(Reeve, Olson & Cole, 1985; 1987)

1. How interesting did you find the task?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

2. How competent were you at the task?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

3. How important was it for you to do well at this task?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

4. Would you be willing to do this experiment in the near future with the same opponent?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

5. Would you be willing to do this experiment in the near future with another opponent?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

6. How enjoyable was this task for you?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

7. I tried very hard at this task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

8. How friendly was the other person?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

9. I felt very pressured while doing this activity?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

10. How competitive was the atmosphere during the experiment?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

11. How attractive was your opponent?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

12. I tried to do as well as I could at this activity?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

13. How competent was your opponent?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

14. How trustworthy was your opponent?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

15. How much tension did you feel during the competition?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Not at all Extremely

16. My opponent had a good personality.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

17. After doing this activity for a while, I felt very competent.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

18. While I was doing the puzzles, I found myself enjoying the task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

19. The presence of my opponent affected my performance.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

20. I am very satisfied with my performance.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

21. The experimenter was organized.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

22. The experiment was very difficult for me.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

23. I enjoyed conversing with my opponent.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

24. Compared to other students, I think I did very well at this task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

25. I did not put much energy into this experiment.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

26. I think I am pretty good at this task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

27. I felt very relaxed while doing this task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

28. I put a lot of effort into this task.

0-------1-------2-------3------4-------5-------6-------7------8------9------10
Disagree Agree

29. Did you play with the puzzle while you were left in the room?

0-------1-------2-------3------4-------5-------6-------7------8------9------10
No, not at all Yes, very much

APPENDIX B

Table 1. Treatment Conditions and Sample Sizes

Competition Outcome		**Confederate**	
Win/Lose	**Deception/No Deception**	**Attractive/Unattractive**	**N=129**
Win	Deception	Attractive	18
Win	Deception	Unattractive	20
Win	No Deception	Attractive	22
Win	No Deception	Unattractive	12
Lose	Deception	Attractive	18
Lose	Deception	Unattractive	12
Lose	No Deception	Attractive	13
Lose	No Deception	Unattractive	14

Table 2. Between-Subjects (ANOVA) Manipulation Checks

Source	*Df*(bet)	*df*(w)	*F* score	*Power*	*a*=.05
outcome w/ *competence*	**1**	**121**	**58.871*** **	**1**	**p<.05**
deception w/ *trustworthiness*	**1**	**121**	**19.249*** **	**0.992**	**p<.05**
physical attractiveness w/ *attractiveness*	**1**	**121**	**26.523*** **	**0.999**	**p<.05**
deception w/ *competence*	1	121	2.092	0.3	p>.05
physical attractiveness w/ *competence*	1	121	0.037	0.054	p>.05
outcome & deception w/ *competence*	1	121	0.865	0.152	p>.05
outcome & physical attractiveness w/ *competence*	1	121	0.089	0.06	p>.05
deception & physical attractiveness w/ *competence*	1	121	0.441	0.101	p>.05
outcome, deception & physical attractiveness w/ *competence*	1	121	1.48	0.226	p>.05
outcome w/ *trustworthiness*	1	121	0.004	0.05	p>.05
physical attractiveness w/ *trustworthiness*	1	121	0.266	0.08	p>.05
outcome & deception w/ *trustworthiness*	1	121	0.509	0.109	p>.05
outcome & physical attractiveness w/ *trustworthiness*	1	121	0.875	0.153	p>.05
deception & physical attractiveness w/ *trustworthiness*	1	121	0.15	0.067	p>.05
outcome, deception & physical attractiveness w/ *trustworthiness*	1	121	0.087	0.06	p>.05
outcome w/ *attractiveness*	1	121	0.232	0.077	p>.05
deception w/ *attractiveness*	1	121	0.006	0.051	p>.05
outcome & deception w/ *attractiveness*	1	121	0.078	0.059	p>.05
outcome & physical attractiveness w/ *attractiveness*	1	121	0.006	0.051	p>.05
deception & physical attractiveness w/ *attractiveness*	1	121	0.427	0.099	p>.05
outcome, deception & physical attractiveness w/ *attractiveness*	1	121	0.247	0.078	p>.05
***BOLD = denotes significant findings					

Table 3. Intrinsic Motivation Times—Win Conditions (N=72)

WIN	ATTRACTIVE	UNATTRACTIVE
DECEPTION	IM=288.5sec; SD=204.9sec; N=18	IM=166.75sec; SD=200.44sec; N=20
NO-DECEPTION	IM=179.18sec; SD=178.1sec; N=22	IM=254.92sec; SD= 211.07sec; N=12

Lose Conditions (N=57)

LOSE	ATTRACTIVE	UNATTRACTIVE
DECEPTION	IM=125.22sec; SD=150sec; N=18	IM=180.17sec; SD=206.98sec; N=12
NO-DECEPTION	IM=216.23sec; SD=196.73sec; N=13	IM=162.43sec; SD=180.47sec; N=14

Table 4. Between-Subjects (ANOVA) Analyses (Intrinsic Motivation)

Source	*df*(bet)	*df*(w)	*F* score	*Power*	*a*=.05
Outcome	1	121	2.235	0.317	p>.05
Deception	1	121	0.144	0.066	p>.05
Attractiveness	1	121	0.107	0.062	p>.05
outcome & deception	1	121	0.473	0.105	p>.05
outcome & attractiveness	1	121	0.118	0.063	p>.05
deception & attractiveness	1	121	0.418	0.098	p>.05
outcome, deception & attractiveness	**1**	**121**	**4.973*** **	**0.6**	**p<.05**
outcome & anxiety w/ *outcome*	1	121	2.112	0.303	p>.05
outcome & anxiety w/ *anxiety*	1	121	1.149	0.219	p>.05
outcome & interpersonal trust w/ *outcome (ITS)*	1	121	2.425	0.339	p>.05
outcome & interpersonal trust w/ *interpersonal trust (ITS)*	1	121	0.145	0.067	p>.05
outcome & interpersonal trust w/ *outcome (IMTM)*	1	121	2.117	0.303	p>.05
outcome & interpersonal trust w/ *interpersonal trust (IMTM)*	**1**	**121**	**7.341*****	**0.767**	**p<.05**
anxiety & outcome	1	121	0.048	0.055	p>.05
outcome & interpersonal trust (ITS)	1	121	0.07	0.058	p>.05
outcome & interpersonal trust (IMTM)	1	121	2.285	0.323	p>.05
low interpersonal trust (IMTM)	**1**	**56**	**4.919*** **	**0.587**	**p<.05**
high interpersonal trust (IMTM)	1	56	0.151	0.265	p>.05
interest & enjoyment w/ *outcome*	**1**	**121**	**4.561*** **	**0.555**	**p<.05**
physical attractiveness & gender w/ *attractiveness (item)*	**1**	**121**	**14.908*** **	**0.969**	**p<.05**
item = item ratings from post-questionnaire					
***BOLD = denotes significant findings**					

APPENDIX C

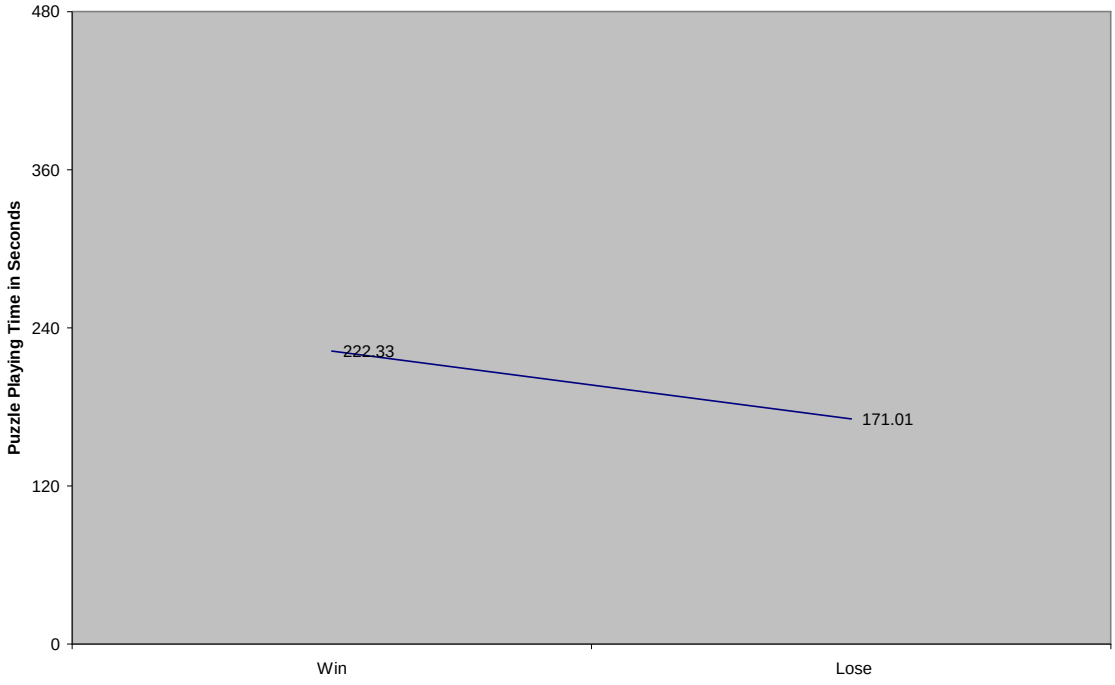

Figure 1: Puzzle-Playing Time as a Function of the Competition Outcome Variable

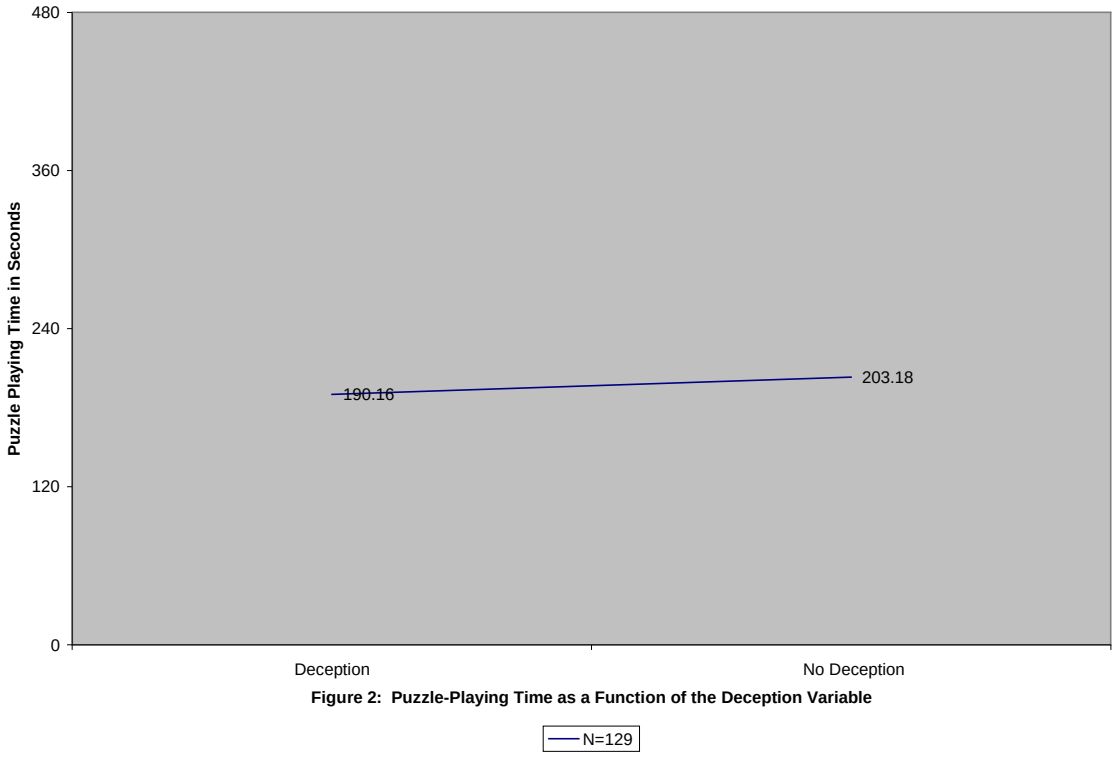

Figure 2: Puzzle-Playing Time as a Function of the Deception Variable

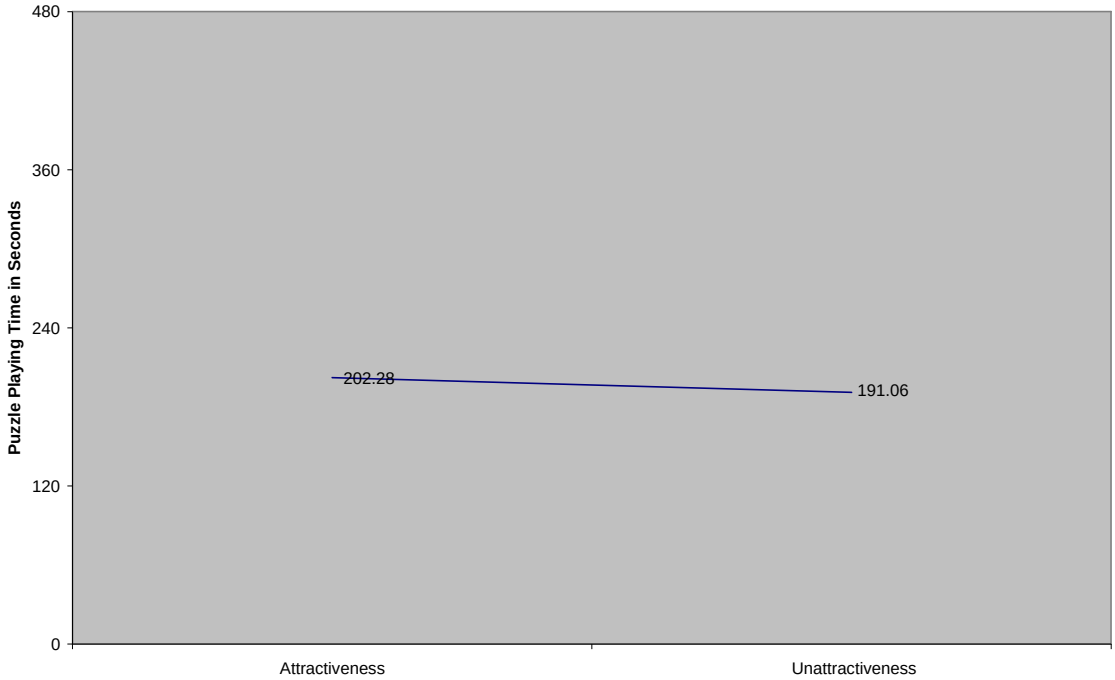

Figure 3: Puzzle-Playing Time as a Function of the Physical Attractiveness Variable

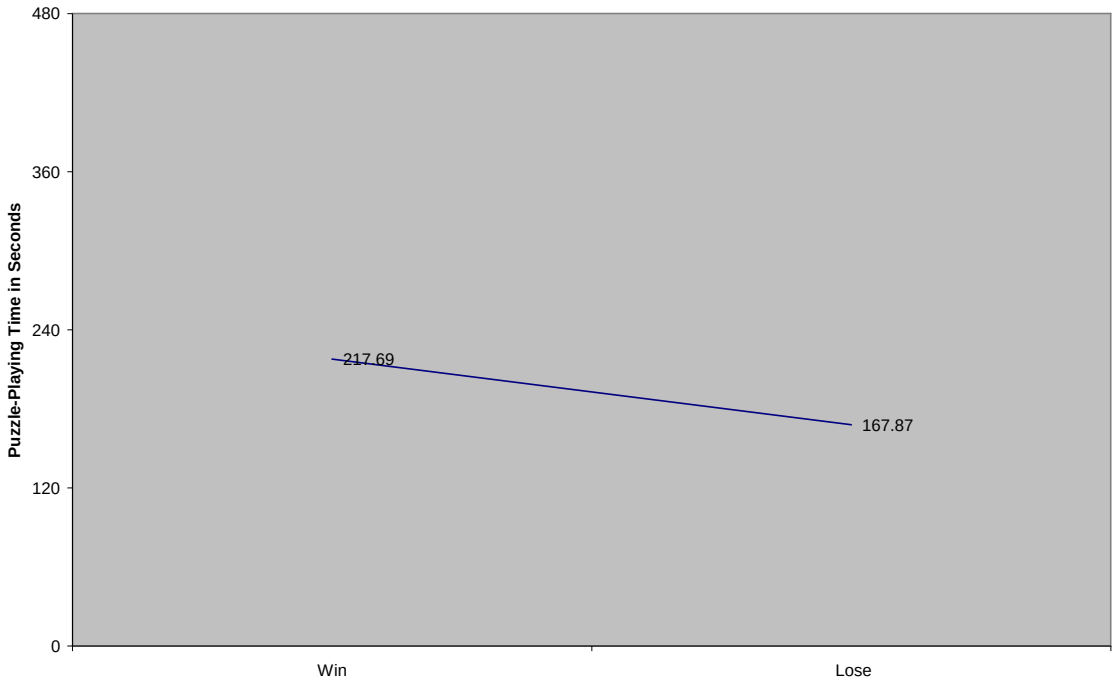

Figure 4: Puzzle-Playing Time as a Function of Competition Outcome and Anxiety

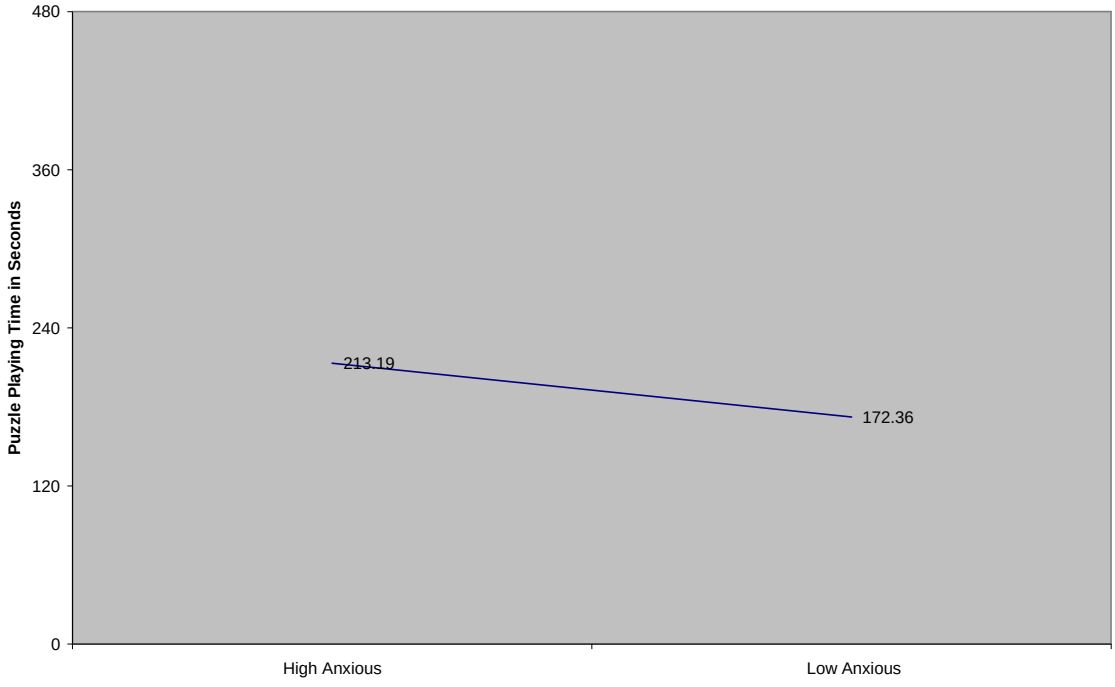

Figure 5: Puzzle-Playing Time as a Function of Anxiety

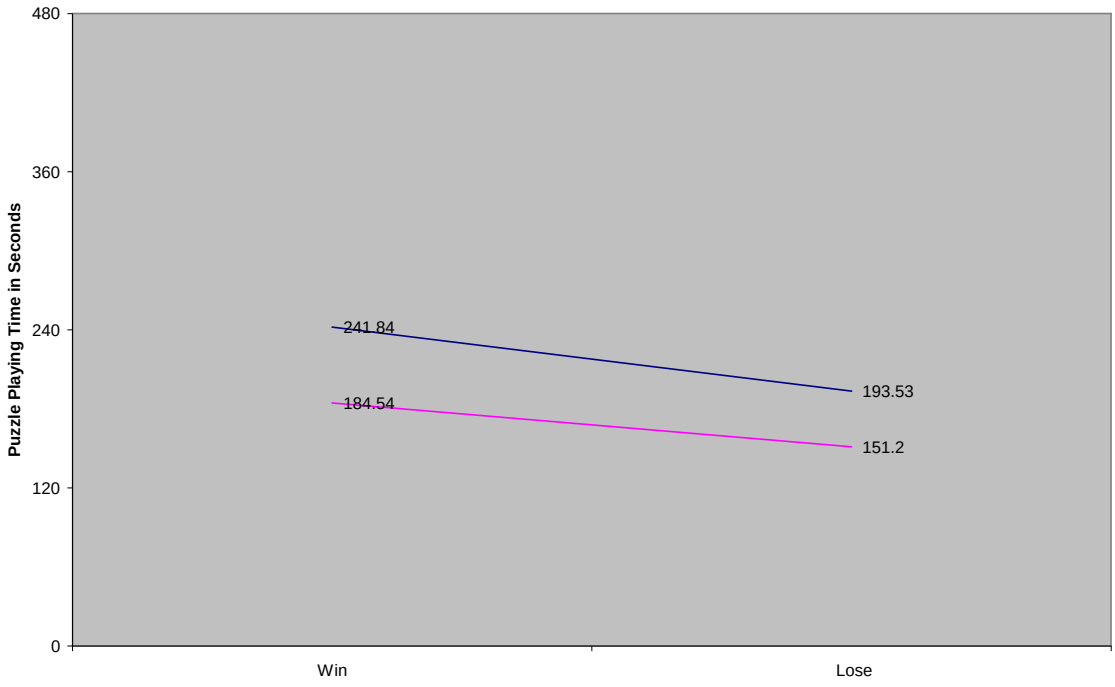

Figure 6: Puzzle-Playing Time as a Function of the Interaction of Competition Outcome and Anxiety

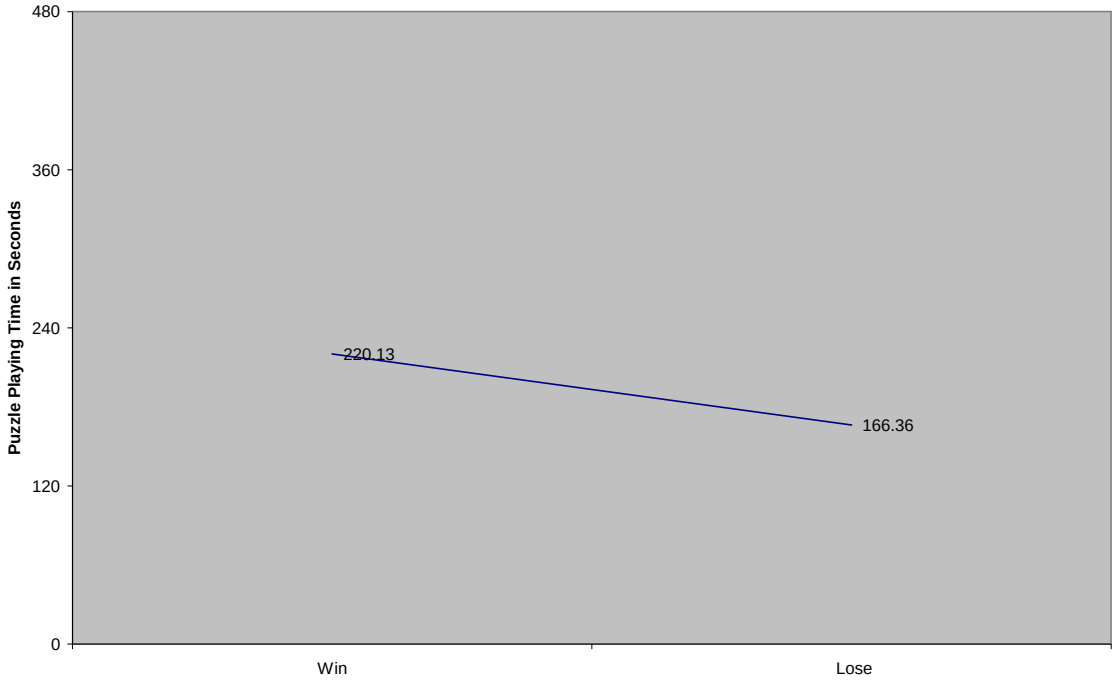

Figure 7: Puzzle-Playing Time as a Function of Competition Outcome and Trust (ITS)

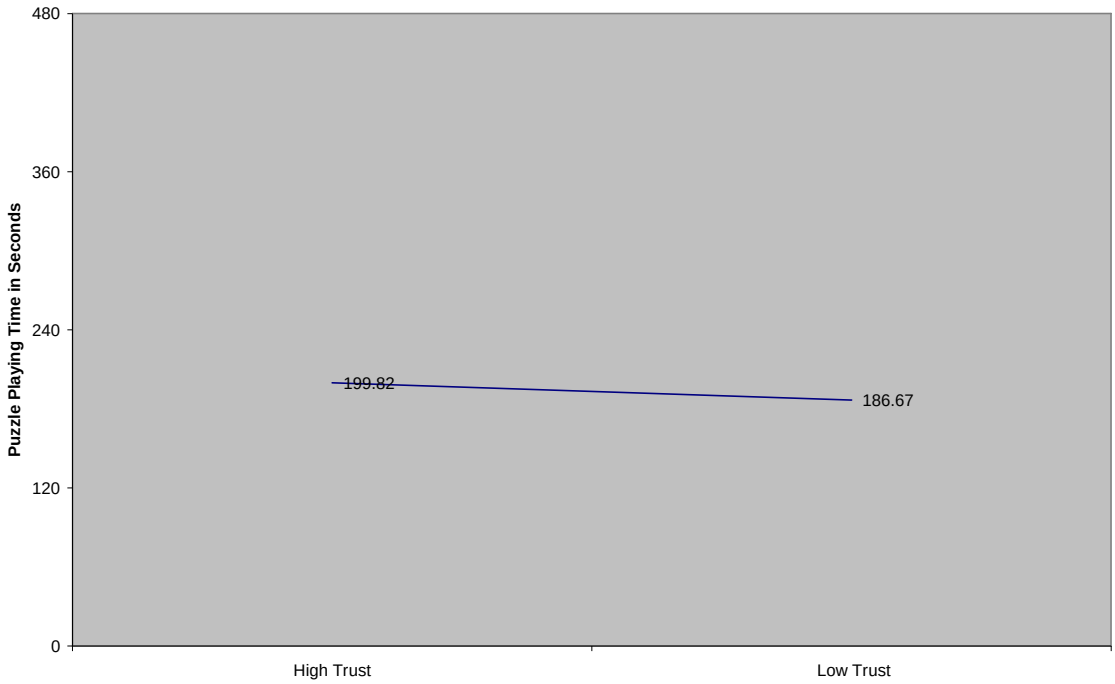

Figure 8: Puzzle-Playing Time as a Function of Trust (ITS)

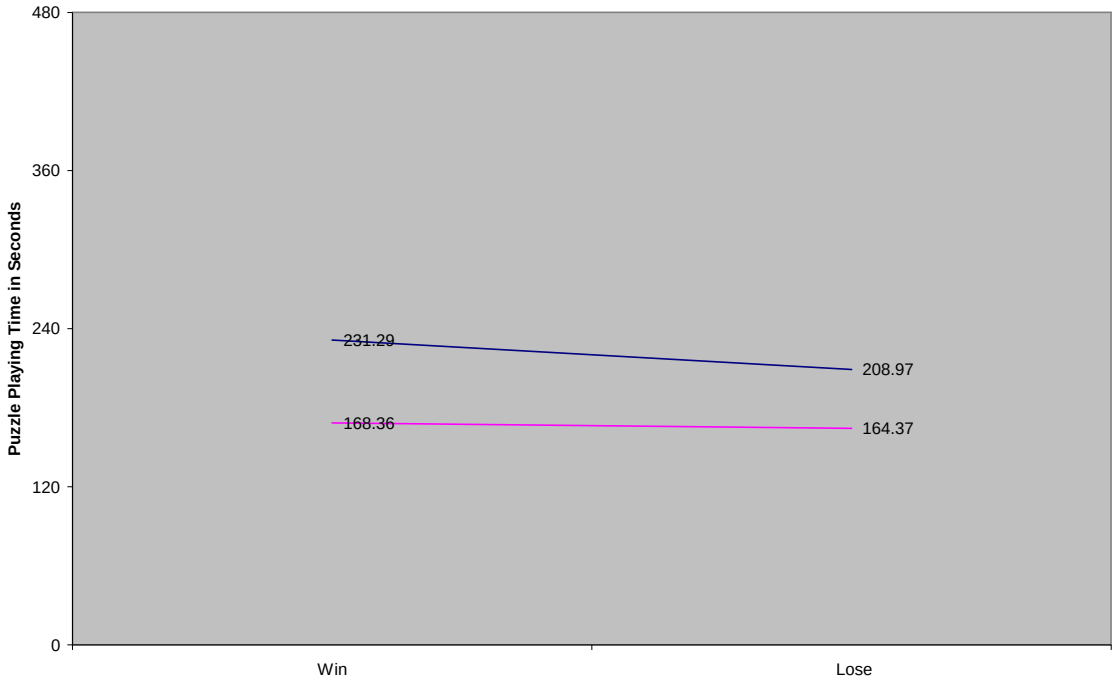

Figure 9: Puzzle-Playing Time as a Function of the Interaction of Competition Outcome and Trust (ITS)

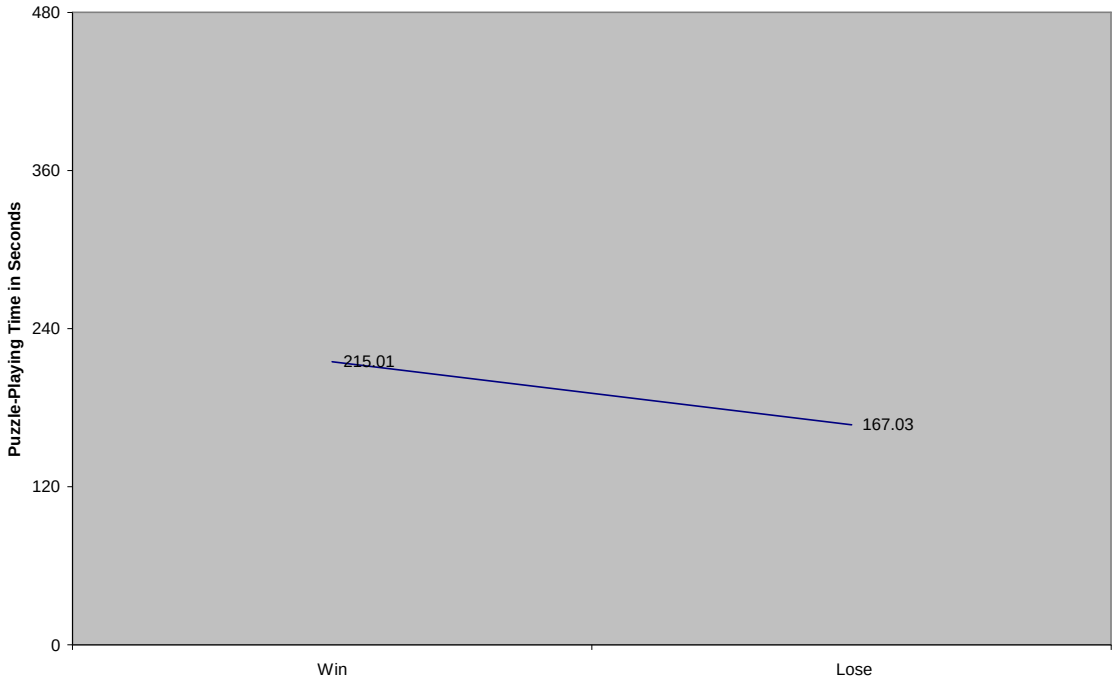

Figure 10: Puzzle-Playing Time as a Function of Competition Outcome and Trust (IMTM)

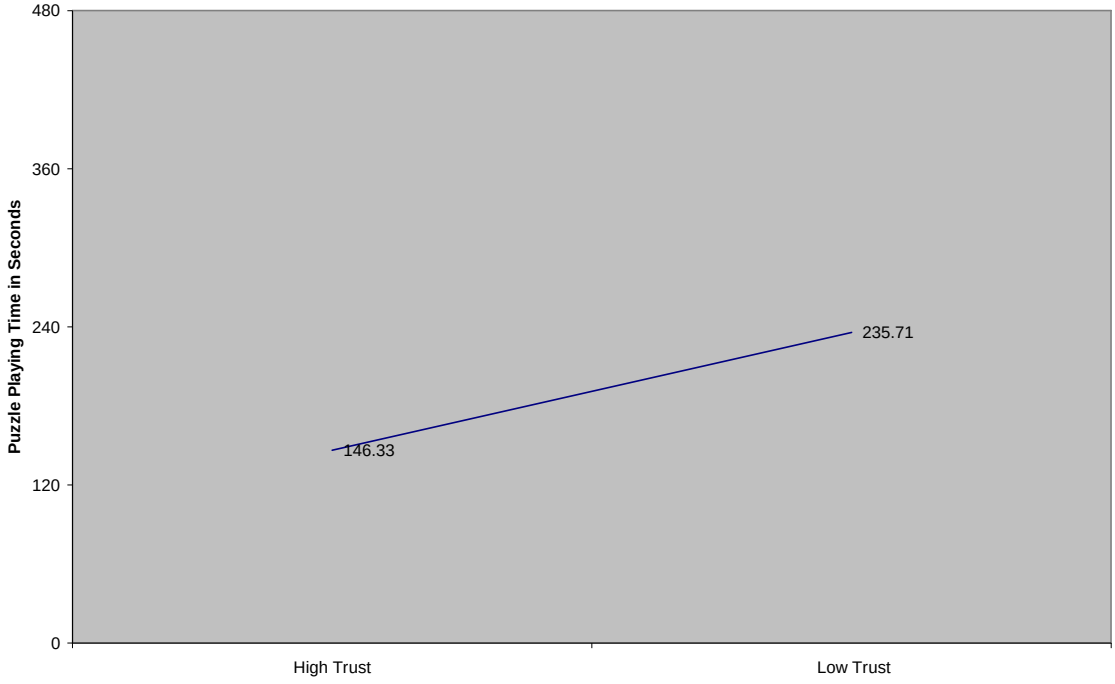

Figure 11: Puzzle-Playing Time as a Function of Trust (IMTM)

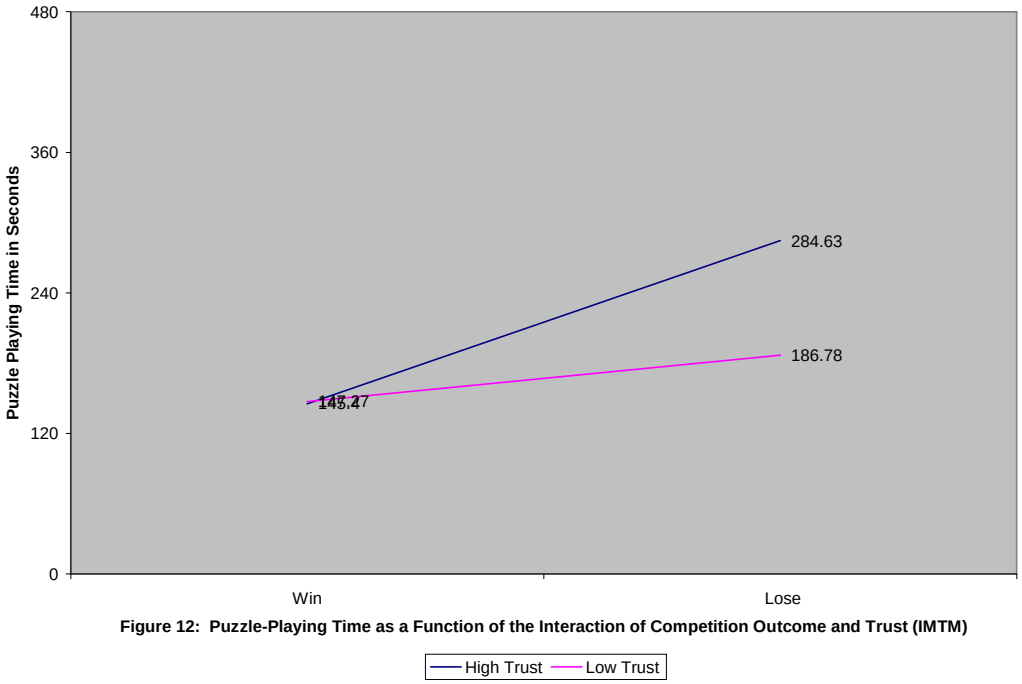

Figure 12: Puzzle-Playing Time as a Function of the Interaction of Competition Outcome and Trust (IMTM)

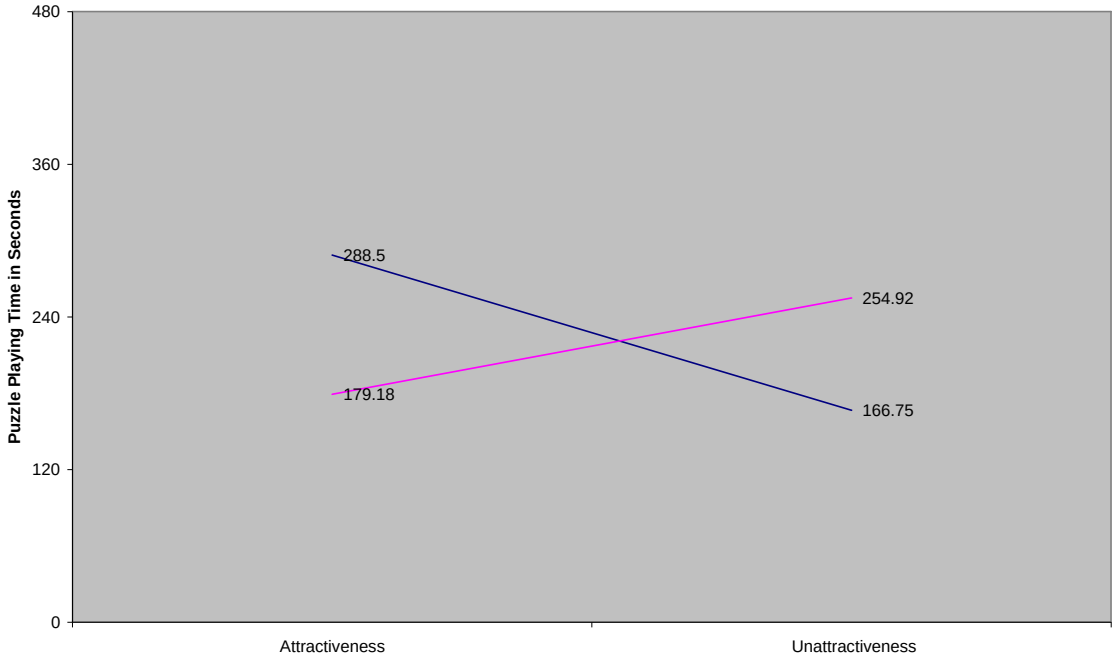

Figure 13: Puzzle-Playing Time as a Function of the Interaction of Competition Outcome (Win), Attractiveness and Deception (N=129)

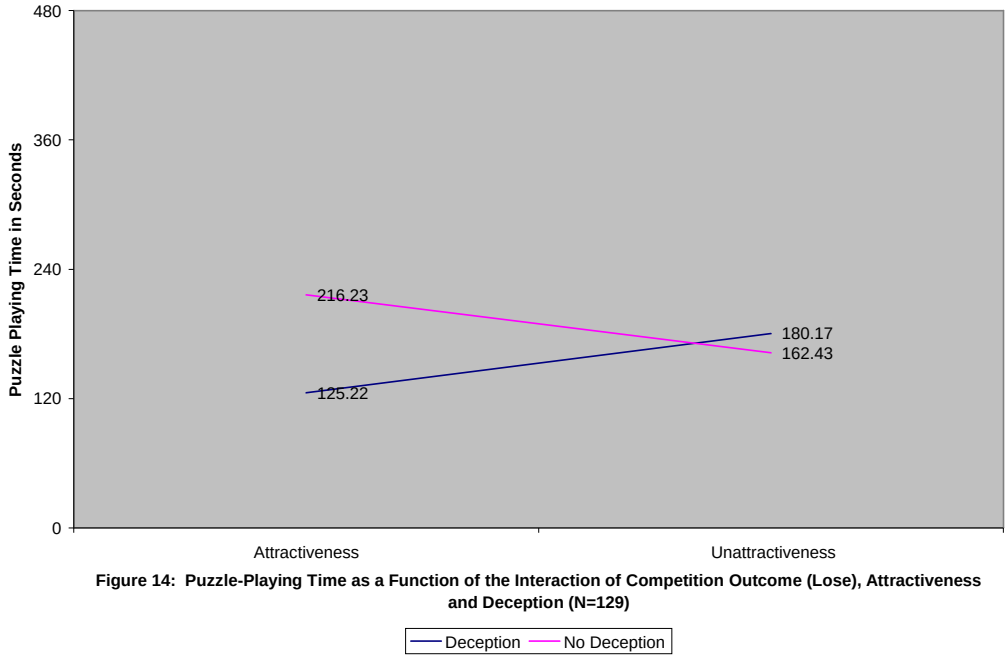

Figure 14: Puzzle-Playing Time as a Function of the Interaction of Competition Outcome (Lose), Attractiveness and Deception (N=129)

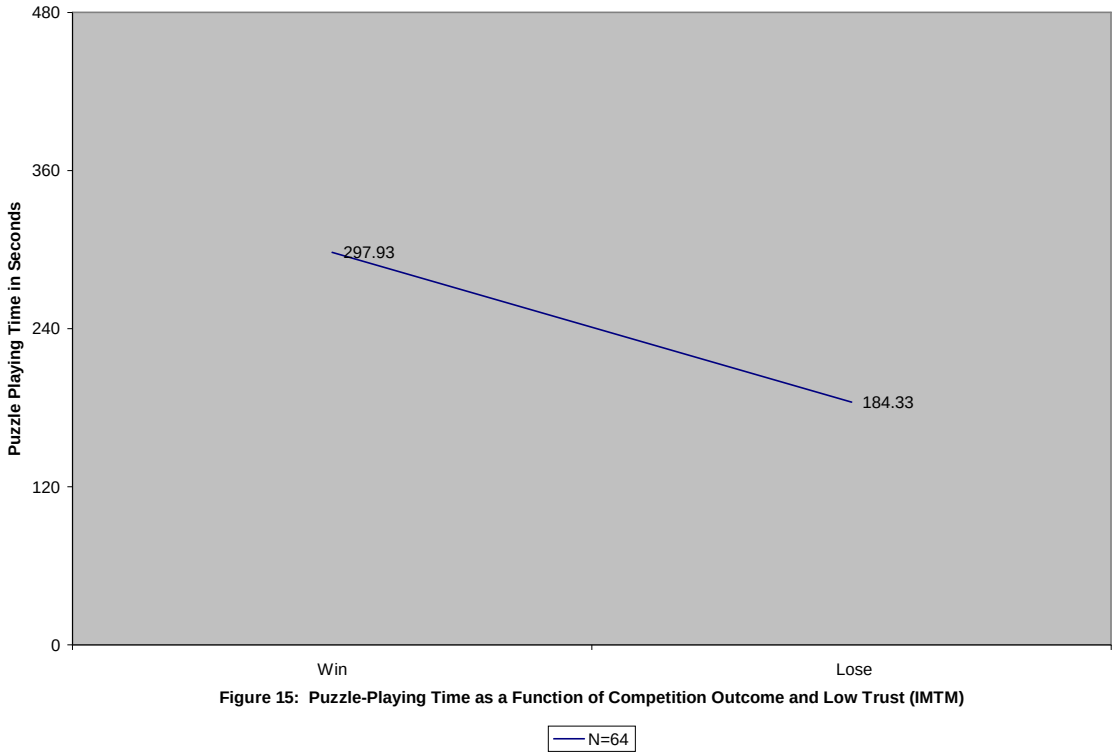

Figure 15: Puzzle-Playing Time as a Function of Competition Outcome and Low Trust (IMTM)

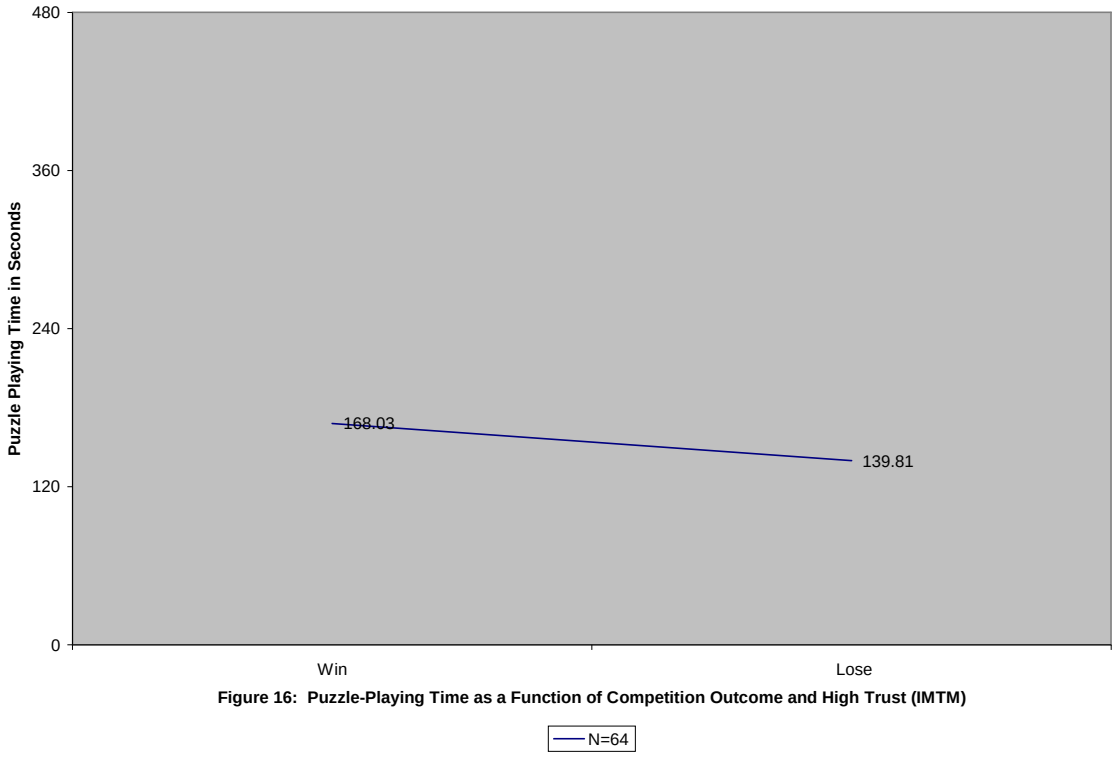

Figure 16: Puzzle-Playing Time as a Function of Competition Outcome and High Trust (IMTM)

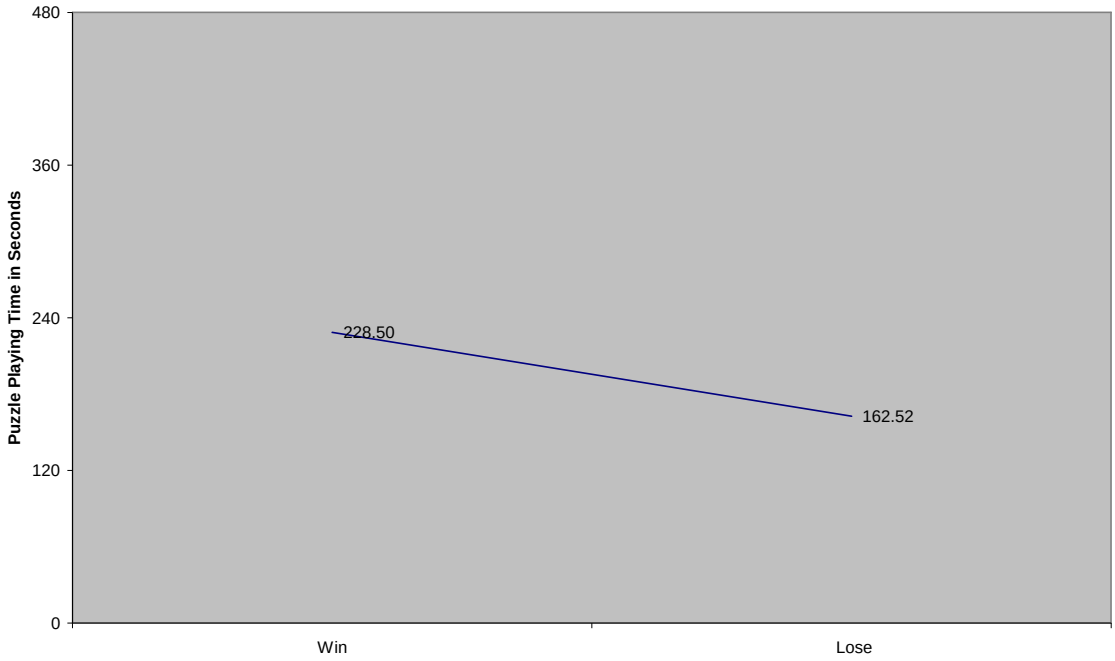

Figure 17: Puzzle-Playing Time as a Function of Competition Outcome (With the Covariance of Interest and Enjoyment)

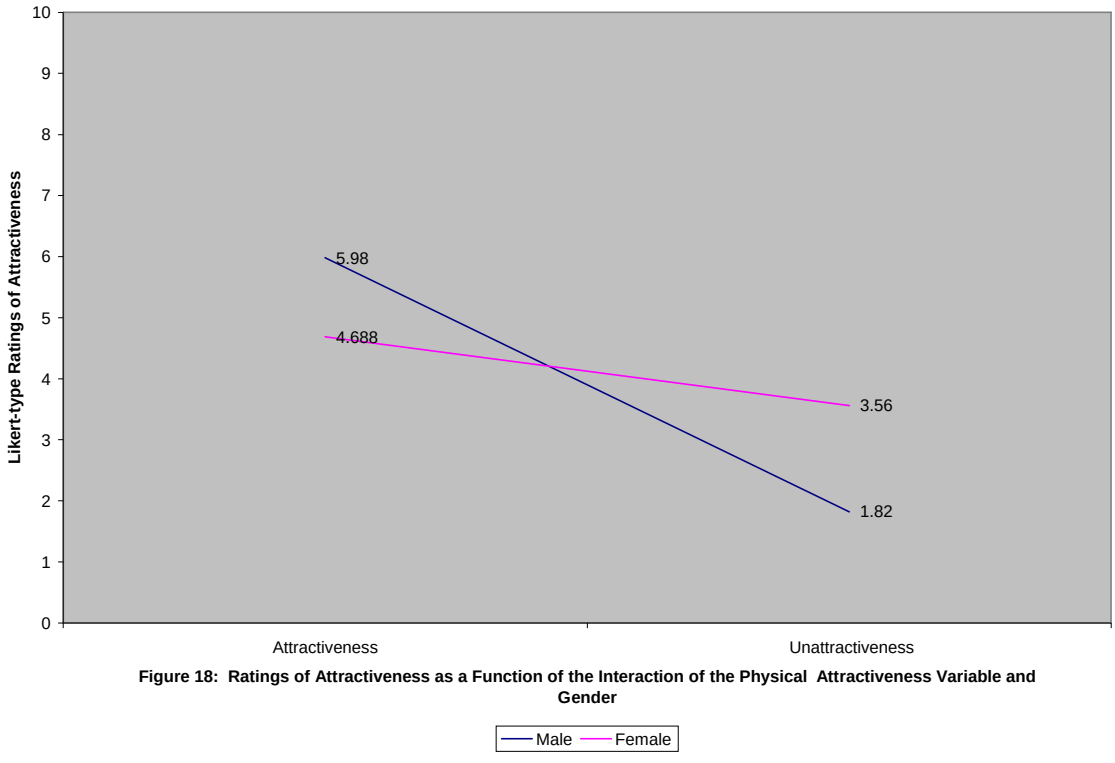

Figure 18: Ratings of Attractiveness as a Function of the Interaction of the Physical Attractiveness Variable and Gender

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December 23, 2005

TO: Anthony Crispigna
Psychology Department

FROM: Cynthia A. Prosen, Ph.D.
Dean of Graduate Studies & Research

RE: Human Subjects Proposal #HS05-066
Motivation and Deception

The Human Subjects Research Review Committee has reviewed your proposal and has given it final approval. To maintain permission from the Federal government to use human subjects in research, certain reporting processes are required. As the principal investigator, you are required to:

A. Include the statement "Approved by HSRRC: Project # (listed above) on all research materials you distribute, as well as on any correspondence concerning this project.

B. Provide the Human Subjects Research Committee letters from the agency(ies) where the research will take place within 14 days of the receipt of this letter. Letters from agencies should be submitted if the research is being done in (a) a hospital, in which case you will need a letter from the hospital administrator; (b) a school district, in which case you will need a letter from the superintendent, as well as the principal of the school where the research will be done; or (c) a facility that has its own institutional Review Board, in which case you will need a letter from the chair of that board.

C. Report to the Human Subjects Research Review Committee any deviations from the methods and procedures outlined in your original protocol. If you find that modifications of methods or procedures are necessary, please report these to the Human Subjects Research Review Committee before proceeding with data collection.

D. Submit progress reports on your project every 12 months. You should report how many subjects have participated in the project and verify that you are following the methods and procedures outlined in your approved protocol.

E. Report to the Human Subjects Research Review Committee that your project has been completed. You are required to provide a short progress report to the Human Subjects Research Review Committee in which you provide information about your subjects, procedures to ensure confidentiality/anonymity of subjects, and the final disposition of records obtained as part of the research (see Section II.C.7.c).

F. Submit renewal of your project to the Human Subjects Research Review Committee if the project extends beyond three years from the date of approval.

It is your responsibility to seek renewal if you wish to continue with a three-year permit. At that time, you will complete (D) or (E), depending on the status of your project.

ljh

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