Barriers to Understanding:
The Judgment of Rationality and the Role of Three Egocentric Assumptions

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ABSTRACT

BARRIERS TO UNDERSTANDING: THE JUDGMENT OF RATIONALITY AND THE ROLE OF THREE EGOCENTRIC ASSUMPTIONS

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In seven studies, I examined the impact of three egocentric assumptions on a perceiver’s judgment of a target’s rationality. First, I hypothesized that perceivers assume that their reasoning is accurate and use that as a standard to judge a target’s reasoning. Second, I hypothesized that perceivers assume that the target has the same goals as them. Third, I hypothesized that perceivers assume that how they perceive the situation is accurate and is how the target has perceived the situation. The first three experiments examined the assumption of valid and shared reasoning and its impact on the judgment of rationality by measuring reasoning ability and having participants view a (correct or incorrect) completed test of a single target (study 1), a target group (study 2) or their target ingroup/outgroup (study 3). I found that perceivers use their own reasoning, even if faulty, as a standard to judge others’ reasoning, particularly for perceivers with strong reasoning skills. For perceivers who are poor at logical reasoning, seeing that a group of people reasoned differently than them, particularly their ingroup, reduced this tendency. The fourth study assessed the assumption of valid and shared goals and its impact on the judgment of a target’s rationality. Pairs of participants completed a building blocks task, though both participants were provided different task goals, and then rated their partner’s rationality. Participants who were later informed that their partner had been
working toward a different task goal, rated their partner as more logical than when they were uninformed. Studies five, six and seven examined the assumption of naïve realism by examining the conditions that increase and decrease naïve realism (study 5) and the impact of naïve realism on the judgment of rationality (studies 6 and 7). First, I found that naïve realism increases when perceivers have more exposure to a situation and decreases when perceivers learn of an alternative interpretation of the situation. Second, I found some support for a causal relationship between naïve realism and the judgment of the rationality. Implications for theory and everyday life are discussed.
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Introduction

Consider the following situations: a New Orleans resident decides to remain in his home during an emergency evacuation caused by Hurricane Katrina; a man decides to continue smoking after being diagnosed with lung cancer; a woman decides to remain in an abusive relationship. The solutions to such dilemmas are ostensibly simple: the New Orleans resident should leave, the smoker should quit, and the woman should go to a shelter. Yet, these situations are often not as simple as they might seem. The New Orleans resident had to assess and compare the probability of safety for himself and his family at their home and the evacuation site (the Louisiana Superdome) in terms of survival as well as violence. The smoker’s goal was not life extension, but enjoyment of his last days. The woman did not perceive her situation as one of abuse because it fell in line with her experiences as a child and how her mother was treated. Considering these targets’ decisions without taking into consideration the targets’ logic, goals and understanding of the situation could lead to a hasty judgment of irrationality. Unfortunately, as these cases suggest, the judgment of irrationality may occur more often than not. It is, therefore, a pertinent social judgment in need of social psychological examination.

The judgment of rationality is also an important social psychological variable for examination due to the wealth of information it can provide regarding basic social psychological processes. An investigation into the judgment of rationality provides social psychologists a unique opportunity to examine how multiple theoretical frameworks interact in this one attribution. Being able to take a step back and understand how someone’s seemingly irrational behaviour might be rational in accordance with the person’s unique perspective of the situation, their goals, and their reasoning, involves a complex person perception (Macrae & Quadflieg,
2010), mind perception (Epley & Waytz, 2010), judgment and decision making (Gilovich & Griffin, 2010) and social comparison process (Festinger, 1954).

To this end, I will present evidence from seven studies to demonstrate that the judgment of rationality is impeded by three egocentric assumptions held by the perceiver. The first assumption is that perceivers tend to assume that how they reason is how others reason. The second assumption is that perceivers tend to assume that the goals they have are the goals that others have. The third assumption is that perceivers tend to assume that how they construe a situation is how others construe a situation. Therefore, the purpose of this dissertation is to investigate the impact of three egocentric assumptions on a perceiver’s judgment of a target’s rationality.

This introduction will commence with a discussion of the consequences of the judgment of irrationality. Then, I will provide a brief background to the extensive philosophy, economics, and psychology literature on rationality. This will provide the groundwork for the subsequent discussion on the judgment of rationality. Once this groundwork is established, I will outline and discuss each of the hypothesized egocentric assumptions related to the judgment of rationality. I will finish the introduction with a summary, including the methods and hypotheses, of each of the seven studies presented in this dissertation.

**Consequences of the Judgment of Irrationality**

Judging someone as irrational is a loaded judgment; it has been associated with attributions of cognitive deficit, mindlessness, and mental illness (Hinshaw, 2005, 2006; Wahl, 1996). Many philosophers considered rationality to represent the quintessence of humanity and the core characteristic distinguishing humans from other species (e.g., Aristotle, 2006; Plato, 1970; Kant, 1785/1991). This is aligned with social psychological research demonstrating that
people, in fact, do perceive rationality as a trait that is unique to humans alongside civility, refinement, moral sensibility, and maturity (Haslam, 2006). Such traits are also viewed as distinct from traits that are common, but not unique, to humans (e.g., emotional responsiveness, interpersonal warmth; Haslam, 2006). Thus, it is possible that judging someone to be irrational does not only imply they lack a trait that most people have, but that they lack a trait that makes one human. Furthermore, perceiving a person as less human than others has severe consequences. The less people are perceived as human, or without a mind, the more they are viewed as subservient and the fewer human rights they are granted (Waytz, Gray, Epley, & Wegner, 2010). Dehumanization is linked with hostility and aggression and serves as self-justification for perpetuated violence against ‘lesser’ humans (Haslam, 2006). In sum, the judgment of rationality is more than just an insult; it has a deeper human rights connotation. Therefore, it is important that the judgment of rationality not be lumped with other social judgments, but assessed on its own and alongside its long history in the philosophy, economics and psychology literature. In other words, in order to understand the judgment of rationality in all its complexity, an understanding of the broader literature on rationality is an important first step.

**Rationality**

Research and thought on what constitutes rationality spans the philosophy, mathematics, economics and psychology literatures. Rationality can be conceptualized as two different types: epistemic rationality and instrumental rationality. Epistemic rationality concerns how well beliefs map onto reality (Stanovich, West, & Toplak, 2011). People have beliefs that may or may not reflect reality and people make inferences (logically or illogically) based on these beliefs. Instrumental rationality occurs when people act on their beliefs and inferences towards a goal (Over, 2004). In other words, people are optimizing their goal fulfillment or expected utility
(Stanovich et al., 2011). For example, if one is going to meet a friend for lunch who has just been through a bad breakup (belief) and one knows she likes to read science fiction novels (belief) and one thinks that bringing her a science fiction novel as a gift would help cheer her up (inference), one might give her the gift at lunch because one wants one’s friends to be happy (goal). As stated by Stanovich and colleagues (2011, p. 791), “to be rational, a person must have well-calibrated beliefs and must act appropriately on those beliefs to achieve goals.” Goal fulfillment, or expected utility, is the focus of decision theory in economics and economic models of rational choice. In general, these models suggest that an agent, when deciding how to act in an uncertain environment, thinks of the different outcomes resulting from one’s possible actions and considers how much one values the outcome and the probability of that outcome occurring and chooses the action that leads to the best choice for himself (Kahneman, 2011). Decision theory is a Panglossian position (Stanovich, 1999), such that people are considered rational agents and their decisions map the agent’s expected utility. All decisions are rational when

in light of the agent’s own beliefs and desires [utility], the intended action is for the agent a reasonable thing to do [or] ... the propositional contents of reasons, if carefully spelled out, would form a practical reasoning argument that concludes with the intention to act (Malle, 1999, p. 36).

In other words, a Panglossian believes that a person’s behaviour is always rational because it can always be explained by the person’s beliefs and desires.

However, not all researchers agree that people consider all beliefs, desires and expected utilities when making a decision (Gigerenzer & Selten, 2011; Stich, 1990; Tversky & Kahneman, 1974) and suggest that people use shortcuts to deal with large amounts of decision-related information. Specifically, the heuristics and biases literature (Kahneman, Slovic, &
Tversky, 1982; Tversky & Kahneman, 1974) looked to quick ‘rules of thumb’ (i.e., heuristics) that people use in order to bypass these complex calculations (e.g., representative and availability heuristics, anchoring and adjustment). Although time saving and useful, the use of these heuristics demonstrated significant errors in reasoning (Tversky & Kahneman, 1974). The heuristics and biases literature is conceptualized by Stanovich (1999) as an Apologist position because, unlike the Panglossian position, Apologists view errors in reasoning as poor reasoning or irrationality. “That people ‘simply get it wrong’ was the tacit assumption in much of the early work in the heuristics and biases tradition” (Stanovich, 1996, p. 6).

Bounded rationality theorists (e.g., Simon, 1956, 1957; Gigerenzer & Selten, 2001), however, do not view all decision making mistakes that are caused by heuristics to be irrational. Bounded rationality theory recognizes that decisions are made under constraints of limited time, limited knowledge and limited computational capacities. Bounded rationality theorists view satisficing, not optimizing, as the ultimate goal. Simon (1956) suggested that people take a number of cognitive shortcuts in decision making according to a satisficing principle, such that outcomes are classified as ‘satisfactory’ or ‘unsatisfactory’ on certain variables or attributes. For example, an investment plan can be rated in terms of profit and security. One perceives a satisfactory level for both profit and security. The first alternative that is satisfactory on each relevant variable is selected (Coombs, Dawes, & Tversky, 1970). In other words, people choose the first alternative that is good enough, not necessarily perfect; people satisfice. Furthermore, bounded rationality theorists accept that people can make reasoning mistakes, but they suggest that the cognitive processes involved developed in the environment of evolutionary adaptiveness (EEA) and, thus, are successful when used in environments similar to the EEA. For example, people tend to neglect base-rate information when assessing probabilities, but when probabilities
(90%) are presented in the form of frequencies (9 out of 10) people make fewer mistakes (Gigerenzer, 2008). Gigerenzer (2008) states that this is because reasoning with frequencies evolved during the EEA, whereas reasoning in terms of probability is a relatively recent development. Thus, Gigerenzer argues that cognitive shortcuts help us to make rational decisions when they are used in the right environment, reflective of our EEA. In contrast, errors in reasoning are more of a consequence of a mismatch between the EEA and the current environment and less a result of human error. Stanovich (1999) labels bounded rationality theorists as taking a Meliorist position because, unlike Panglossians who see all decisions as rational, or Apologists who see errors in reasoning as irrational, Meliorists take the middle ground. They suggest that not all errors in reasoning are irrational when considering cognitive constraints and a mismatch of the environment.

However, Gigerenzer’s (1991) argument that “biases are not biases” (p. 86) or that the decision making errors outlined by Tversky and Kahneman (1974) do not demonstrate irrationality because our reasoning, as it is today, must be rational and unbiased due to evolutionary pressure, has been rebutted by Kahneman and Tversky (1996) and Gilovich and Griffin (2002). The rebuttal is that evolutionary pressures do not necessarily produce perfection, but produce adaptations that are better than existing adaptations.

Evolutionary pressures acting on the bulk of human judgments are neither sufficiently direct nor intense to sculpt the kind of mental machinery that would guarantee error-free or bias-free judgment. As Simon pointed out long ago (1956, 1957), evolutionary pressure only lead to local (“better than”), not global (“best possible”) optimization. Evolutionary pressures lead to adaptations that are as good or better than a rival’s; they do not lead to adaptations that are optimal (Gilovich & Griffin, 2002, p. 9).
In sum, although there is mostly agreement in the philosophy, economic and psychology literatures on what constitutes rationality - sound inference on well-mapped beliefs in the pursuit of goals (Stanovich et al., 2011) - the definition of irrationality is highly contentious. However, the purpose of this dissertation is to investigate not the definition of irrationality, but how lay people judge the rationality of others. Therefore, using this literature as a framework, in the next section I will discuss the social cognition literature in relation to the judgment of rationality and the three egocentric assumptions associated with the judgment of rationality. Although discussion regarding the Apologist, Meliorist and Panglossian continuum will be suspended for the moment, these distinctions are important to keep in mind. I will return to this continuum in the discussion section in order to characterize lay people’s tendencies in the judgment of rationality based on the evidence presented in this dissertation.

The Judgment of Rationality

Just as researchers make judgments about participants’ rationality, lay perceivers make judgments of the rationality of strangers, co-workers, friends and family. When judging the rationality of a target, a perceiver can wonder whether the target is reasoning logically and/or whether the target is acting in her best interest to fulfill her goals. In other words, the perceiver can examine the target’s epistemic or instrumental rationality. When assessing the epistemic rationality of the target, the perceiver is determining whether the target holds beliefs that map well onto reality and whether the inferences that the target makes are logical. When assessing the instrumental rationality of the target, the perceiver can determine whether the target is acting in a way that will lead the target to fulfill her goals. In both cases, the perceiver, through perspective taking, needs to discern 1) the target’s beliefs and inferences and 2) the target’s goals. Furthermore, both the perceiver and the target and the decisions and actions they make are
embedded in situations that can be subjectively construed (Griffin & Ross, 1991; Ross, 1987; Robinson, Keltner, Ward, & Ross, 1995; Ross & Ward, 1995, 1996). Understanding how the target perceives a situation is vital in the understanding of a target’s behaviour. In sum, in order to understand the decision making context in which the target is situated, the perceiver needs to accurately perceive the target’s beliefs, inferences, goals and perception of the situation. The judgment of rationality in irrational-like circumstances is a critical test of understanding. I argue that the more the perceiver accurately perspective takes and accurately understands the target’s decision making context the less likely the perceiver is to judge the target as irrational and the more likely they are to understand the target’s behaviour.

However, a great deal of social psychological research suggests that people overestimate the extent to which their choices, attitudes and behaviours are shared by others (i.e., false consensus effect, Marks & Miller, 1987; Mullen et al., 1985; Ross, Greene, & House, 1977). Furthermore, people have a default state of egocentrism in perspective taking (Epley, Keysar, Van Boven, & Gilovich, 2004). When people seek to understand what others know, they construct a model of others’ knowledge and this starts with a model of one’s own knowledge; in other words, people impute their knowledge onto others regardless of its accuracy (Nickerson, 1999; Dawes, 1989; Hoch, 1987). Further, perceivers assume that how they perceive a situation is how a target perceives a situation, “people are guilty of a kind of naïve realism or egocentrism, one that gives them neither the insight nor encouragement necessary to make adequate inferential allowance for the constructed (and hence variable and uncertain) nature of their situational construals” (Griffin & Ross, 1991, p. 334). Thus, it is likely that perceivers do not immediately perspective-take to discern the target’s beliefs, inferences, goals and perception of the situation. Instead, perceivers likely use their reasoning, their goals and their perception of the situation to
judge the behaviour of the target. Specifically, these egocentric tendencies to assume that how one reasons is how a target reasons, that one’s goals are also the goals of a target and that how one perceives a situation is how a target perceives the situation are critical barriers to the understanding of a target’s rationality. The purpose of this dissertation is to investigate the impact of these three egocentric assumptions in the judgment of rationality in a series of seven social psychological experiments. Specifically, I hypothesize that perceivers assume that their reasoning is accurate and use that as a standard to judge a target’s reasoning (assumption of valid and shared reasoning). Second, I hypothesize that perceivers assume that the target has the same valid goals as them (assumption of valid and shared goals). Third, I hypothesize that perceivers assume that how they perceive the situation is accurate and is how the target has perceived the situation (assumption of naïve realism; Ross & Ward, 1996; Griffin & Ross, 1991; Ross, 1987; Griffin, Dunning, & Ross, 1990). Overall, I hypothesize that the use of these egocentric assumptions decreases the judgment of rationality.

However, before a more detailed discussion of each assumption is provided, some theoretical notes must preface this discussion. First, in this dissertation, the assumption of valid and shared reasoning is assessed in a highly objective context (i.e., reasoning with propositional logic), whereas, the assumption of valid and shared goals and the assumption of naïve realism are assessed in highly subjective contexts (i.e., an abstract film, an ambiguous event caught on CCTV). Within the context of propositional logic, where the assumption of valid and shared logic is assessed, there are, by definition, objective rational and irrational responses, whereas, in the subjective contexts, where the assumption of valid and shared goals and the assumption of naïve realism are assessed, rationality is, arguably, subjective, particularly in the instrumental sense. Consequently, egocentric projection for highly rational perceivers in the context of
Reasoning with propositional logic is not an error; however, it is still a form of egocentric projection and it is likely to impact the judgment of a target’s rationality. In subjective contexts, egocentric projection is an error and interferes with the understanding of others. Second, it is important to note that the assumption of naïve realism theoretically overlaps with the assumption of valid and shared reasoning and the assumption of valid and shared goals. This is because all three assumptions can be embedded in subjective situations. Although the assumption of valid and shared reasoning was tested in an objective context in this dissertation, it can also be tested in subjective contexts, particularly when the perceiver is assessing the extent to which the target maximized his or her utility as opposed to assessing the target’s propositional logic. Further, not only can all three assumptions be embedded in subjectively construed situations, the assumption that one’s perception of a situation is valid and shared by others (naïve realism), is likely to be followed by the assumption of valid and shared reasoning as well as the assumption of valid and shared goals. Finally, the form of all three assumptions, such that one believes that X is valid and that X is shared by others was originally developed by the authors of naïve realism (Ross & Ward, 1996). This form has been borrowed and applied to the assumption of valid and shared reasoning as well as the assumption of valid and shared goals. Thus, there is considerable overlap between all three assumptions; however, for the purpose of clarity, these three assumptions are treated as discrete assumptions in this dissertation.

Assumption of Valid and Shared Reasoning

One’s logical ability, like intelligence, is an individual difference variable (Stanovich, 1999; Stanovich & West, 1998). Some people are trained in logical reasoning (lawyers, philosophers, mathematicians, economists, psychologists), but most learn it through observation (Piaget, 1960) and so there are varying levels of ability (Stanovich, 1999; Stanovich & West,
1998). Consequently, there are many perceivers with poor reasoning skills judging targets’ reasoning. When perceivers assess a target’s reasoning ability, probably the most salient guideline at the perceivers’ disposal is how they would reason; thus, it is likely that perceivers will use their reasoning as a standard to judge a target’s reasoning. Two exacerbating factors may be that 1) people have limited access to how they reasoned in past decisions (Kahneman & Fredrick, 2005) and 2) those with poor reasoning do not realize that they have poor skills (Kruger & Dunning, 1999).

The term “introspection illusion” was first coined by Nisbett and Wilson (1977) and refers to people’s unawareness of their unawareness; “...while we may sometimes admit to confusion about how we solved a particular problem or why we evaluated a person in a given way, it is often the case that we feel as though we have direct access to cognitive processes” (p. 255). Wilson and Nisbett (1978; Nisbett & Wilson, 1977) contend that people are motivated to explain their actions through introspection, but as this information is unavailable, people unintentionally confabulate reasons for their actions. To demonstrate this error, Nisbett and Wilson (1977; Wilson & Nisbett, 1978) asked participants who had previously memorized a list of word pairs (e.g., ocean-moon) to free-associate words with a category (e.g., brand of detergent). Although semantic cuing doubled the frequency with which the target word (e.g., Tide) was chosen as a consumer preference, when asked why they had given each of their responses in the word association task, participants did not identify the word-pair as a causal reason, instead participants mostly reported personal preferences (e.g., “I like the Tide box”; Wilson & Nisbett, 1978, p. 243). In a second experiment, Nisbett and Wilson were aware that there was a consumer preference to choose the right-most object in a row of consumer goods. They set up an experiment with four pairs of identical stockings hung up in a line and asked
participants to choose the best pair (Wilson & Nisbett, 1978; Nisbett & Wilson, 1977). The effect held; participants were more likely to choose the right-most pair. When probed for their reasons, no participant mentioned the position of the pair of stockings and when asked if it might have had an influence, they vehemently denied the suggestion. Since Nisbett and Wilson’s (1977; 1978) research there has been a steady stream of research that demonstrates that although people may have access to the content of their thoughts, people do not have full access to the causal factors that influence their decisions and behaviour. Further, more recent research suggests that a dual-process model of cognition may help to explain why the introspection illusion may occur.

Many of people’s intuitive answers to problems and cognitive processes occur in system one, the unconscious, automatic, associative, and fast system (Evans, 2008; Kahneman & Frederick, 2005; Stanovich, 2012). Kahneman and Frederick (2005) argue that people are generally unaware of the shortcuts they are taking in system one, “people who make a casual intuitive judgment normally know little about how their judgment came about and know even less about its logical entailments” (Kahneman & Frederick, 2005, p. 274). This result has been demonstrated in a number of studies in cognitive psychology where participants were completely unaware of their unconscious cognitive processes (Brasil-Neto, Pascual-Leone, Valls-Solé, Cohen, & Hallett, 1992; Becahara, Damasio, Tranel, & Damasio, 1997). For example, in a study investigating the unconscious acquisition of procedural knowledge, Lewicki, Hill and Bizot (1988) asked psychology professors to complete a complex pattern detection computer task. The professors were indeed able to detect the pattern by choosing the right target, but they had absolutely no awareness of the actual pattern. Some professors even considered (incorrectly) that they were being subliminally primed. In a study on the perception of intent, Wegner and Wheatley (1999) found that when participants moved a computer mouse in tandem with a
confederate (like playing on a Ouiji board), they thought that they chose to stop the computer mouse when, in fact, it was the confederate. This perception of intent increased when participants heard a word (e.g., swan) through their earphones that described the object on the screen where the confederate stopped the mouse. The closer in time the word heard through the earphones paired up with the stopping of the mouse (by the confederate) on the object described, the more likely participants were to think they stopped the mouse.

However, this type of research has been strongly criticized on theoretical and methodological grounds (Smith & Miller, 1978). Smith and Miller’s (1978) original criticism focused on Nisbett and Wilson’s (1977) research methodology, but it also applies to more recent research. Smith and Miller (1978) stated that due to a between-subjects design in the word association study, participants were unable to detect the variability in conditions and did not have enough information to recognize the influence of the word-pair on their choices.

Nisbett and Wilson, in making this claim, are implicitly using an impossible criterion for introspective awareness: that subjects be aware of what we systematically and effectively hide from them by our experimental designs. ... They cannot be expected to divine what factors differentiate their situation from those of other subjects in the study because they do not experience variation of these factors and hence have no evidence from which to infer their causal role (Smith & Miller, 1978, p. 356).

However, Smith and Miller’s (1978) main suggestion was that instead of trying to demonstrate that people have no access to the causal factors of their behaviour, researchers should investigate the conditions of such access. Further, I argue that a focus on the process of confabulation is more important than a focus on participants’ lack of awareness of hidden manipulations.
Evidence of confabulation has been demonstrated through research on false confessions. Not only do people confess to crimes they did not commit, they can confabulate reasons for committing the crime. In a recent study, Shaw and Porter (2015) found that in a familial-informant false-narrative paradigm designed to create false memories within participants, 70 percent of participants falsely provided a highly detailed account of committing a crime during childhood that put them in contact with police. In an earlier study, Kassin and Kiechel (1996) asked participants to complete a task at a computer and were told by the research assistant not to press the alt key as the alt key would cause the computer to crash and all the data would be lost. In the middle of the computer task (which was either high or low on cognitive load) the computer “crashed” and the frantic research assistant asked the participants if they had pressed the alt key, asked participants to sign a confession, later listened to their explanation to a second confederate waiting in the hallway and also asked participants how it happened. Overall, 69% of the participants signed a confession, 28% admitted to a different confederate that they pressed the alt key and nine percent confabulated. In the cognitive load condition, 35% of participants confabulated (Kassin & Kiechel, 1996). Thus, the introspection illusion is strong enough to cause someone to admit to a negative event that they did not cause and confabulate as to how it occurred.

Finally, Bem’s self-perception theory and overjustification effect (1967, 1972) suggest that people have limited access to their internal states and preferences and that people, unknowingly, look to their behaviours to understand and label their internal states. In a classic study, Lepper, Greene and Nisbett (1973) studied children who had a previously expressed interest in an activity. Children who expected an award for completing the activity were less interested in the task (did not choose to participate) compared to children in the unexpected and
no award conditions (Lepper et al., 1973). That is, children who expected an award attributed the award as their reason for completing the task and children who were not expecting an award attributed their reason for completing the task to their internal states (i.e., interest).

In sum, people think they have access to the reasoning underlying a decision, but many times they do not. As stated by Wilson (2002), “we know less than we think we do about our own minds, and exert less control over our own minds than we think” (p. 48). If perceivers do not have full access to their reasoning in past decisions, then they likely cannot properly assess their reasoning or properly learn from their reasoning mistakes. This may produce an inflated sense of reasoning ability and an increased confidence in the use of one’s reasoning as a guideline from which to judge other’s reasoning. Indeed, this was found by Kruger and Dunning (1999) in their assessment of the second exacerbating factor, that people with poor skills do not realize they have poor skills.

In a series of studies, David Dunning and Justin Kruger demonstrated the Dunning-Kruger effect, which they define as “those who are incompetent, for lack of a better term, should have little insight into their incompetence” (Dunning, 2011, p. 260). In the first set of studies, Kruger and Dunning (1999) demonstrated that people who fell in the bottom quartile for humour, grammar, and logic greatly overestimated how well they performed. Specifically, in one study, Kruger and Dunning (1999) asked participants to complete a logic test of 20 items from the Law School Admissions Test study guide (LSAT; Orton, 1993). After completing the logic test, participants rated their general logical reasoning ability on a percentile scale with other students from their psychology class. On average, participants overestimated their logical ability and placed it in the 66th percentile. Participants in the bottom quartile provided the greatest overestimations, ranking themselves above average. Participants in the higher quartiles
overestimated less, to the extent that participants in the highest quartile underestimated their logical ability. In line with their hypothesis, Kruger and Dunning (1999) attributed these findings to a deficit in metacognitive abilities. One must be competent in a domain in order to recognize incompetence in that same domain. For example, one has to have sound knowledge of the rules of grammar to effectively assess one’s writing ability. Kruger and Dunning (1999) also invited back participants who scored in the bottom and top quartiles and asked them to grade five supposed completed tests of their peers that ranged in correctness (same mean and standard deviation as study one). After assessing the targets’ competence, participants reassessed their own competence. Kruger and Dunning (1999) found that top-quartile participants were better graders than bottom-quartile participants. More important, unlike top-quartile participants who rated themselves lower after grading the tests, bottom-quartile participants’ self-assessments were just as high as before. Kruger and Dunning (1999) suggested that a lack of ability in one domain prevented bottom-quartile participants from accurately assessing the ability of others in that same domain. Therefore, viewing their peers’ ostensible test did not impact incompetent participants’ self-assessments because they did not realize that their peers scored better than them. Finally, to demonstrate a causal relationship, Kruger and Dunning (1999) experimentally manipulated metacognitive ability by briefly teaching some participants logical reasoning and not others. They found that bottom-quartile participants who performed poorly on the Wason selection task (Wason, 1966), but were later given a quick lesson on logical reasoning, were better able to assess how they performed on the Wason selection task compared to other classmates. This was not the case for participants who did not receive instruction.

Although Kruger and Dunning’s (1999) main point was not to demonstrate how incompetent people judge others, but how assessing competent people impacted their assessment
of their own incompetence, their research still provides some support for the hypothesized assumption that people use their own reasoning as a basis to judge others’ reasoning, such that incompetent people overestimated their actual competence. In order to determine how accurately participants graded the tests of their peers, Kruger and Dunning (1999) compared grades given by participants versus the actual grades of the fake tests. They found that grades given to the fake tests by top-quartile participants more strongly correlated with actual grades of the fake tests than the grades given to the tests by bottom-quartile participants. An absolute value of the miscalculation in grades was also greater for bottom-quartile than top-quartile participants. In other words, Kruger and Dunning (1999) demonstrated that top-quartile participants rated other high scoring participants as logical and low scoring participants as illogical, in terms of a failing grade in a test of logic (not a dispositional assessment). However, these data only demonstrated that bottom-quartile participants were inaccurate (in terms of absolute value) in their grading of tests. It remains to be tested whether illogical people judge other illogical people as logical.

Another line of research demonstrates that, regardless of whether or not people’s reasoning is flawed, people think they are less biased than others. This is a result of the self-other asymmetry, which is the difference between how people view themselves and how they view others (Pronin, 2008). Recent research in the self-other asymmetry literature has focused on attributions of bias (Pronin, 2006; Pronin, Gilovich, & Ross, 2004; Pronin, Lin, & Ross, 2002). This research suggests that people have a bias blind spot such that they perceive more cognitive and motivational biases in others than in themselves (Pronin, Lin, & Ross, 2002). In a study investigating the existence of the bias blind spot, Pronin and colleagues (2002) asked participants to rate the extent to which they were susceptible to eight specific biases (e.g., self-serving bias, halo-effect, the fundamental attribution error). Participants thought that they were less
susceptible to these biases than the average American, the average fellow classmate, and the average San Francisco International Airport traveler. Further, in a second study, when participants evidenced the better than average effect (rating themselves as higher than others on a series of traits) and then learned what the better than average effect was, most participants did not admit that they fell victim to the bias (Pronin et al., 2002). Lastly, when given a phony “social intelligence test,” participants who received a rigged high score thought that the test was a valid measure of social intelligence and participants who received a rigged low score thought the test was invalid. Further, high scoring participants, who believed that the test was valid, thought that their unsuccessful partner (who thought the test was invalid) was reacting with an ego-defense bias. On the other hand, low scoring participants who felt that the test was invalid, thought that their successful partner (who thought the test was valid) was providing a self-serving assessment of the test for the purpose of ego enhancement (Pronin et al., 2002). Thus, they did not recognize the self-enhancement or ego-defensive bias within themselves, but easily recognized it in others. Further, in a study on asymmetric insight, Pronin, Gilovich and Ross (2004) asked some Harvard students the extent to which they were susceptible to a number of biases and asked other participants the extent to which the average Harvard student was susceptible to the same biases. For the participants who provided self-assessments, they were asked to rate the extent to which they tried to “get inside (their own) head” and the extent to which they considered “how well the description fits (their theories about) the way that people in general tend to behave” (Pronin et al., 2004, p. 791). Participants who rated the average Harvard student were asked to rate the extent to which they tried to get inside the head of their collegiate peers. Interestingly, participants who provided self-assessments said they tried to get inside their head more than they looked to theories of human behaviour. However, participants who rated the
average Harvard student said they looked to theories of human behavior more than they tried to get inside the mind of their collegiate peers.

Overall, previous research suggests that people have little introspective access to how they reasoned, or how well they reasoned and further, they believe they are less biased than others. However, Pronin and colleagues (Pronin, 2006, 2008; Pronin et al., 2002, 2004) never measured participants’ actual reasoning abilities and, thus, did not examine the consequence that poor reasoning abilities have on a perceiver’s assessment of a target’s reasoning ability. Furthermore, although Kruger and Dunning (1999) measured participants’ logical ability, they never examined whether incompetent people judge other incompetent people as competent. Thus, in three studies, I examined the impact of the assumption of valid and shared reasoning, such that perceivers assume their reasoning is correct and shared by a target, on the judgment of a target’s rationality. In other words, perceivers likely use their reasoning as a basis to judge a target’s reasoning. The focus of these three studies is on the judgment of epistemic rationality, in terms of the targets’ beliefs and inferences. In the first study (study 1), participants sat across from another participant (the target) and completed a logic test. Next, participants viewed what they thought was the target’s completed test. In reality, participants were randomly assigned to view a completely correct or incorrect completed test. Participants then rated the rationality of the target. It was hypothesized that low scoring participants would rate the high scoring target (correct condition) as less rational than the low scoring target (incorrect condition). It was also hypothesized that high scoring participants would rate the high scoring target as more rational than the low scoring target.

In order to test the limits of the assumption of valid and shared reasoning, a second study (study 2) examined the extent to which the presence of a group would influence the perceiver’s
judgment of a target’s rationality. Decades of research on conformity and group processes have
demonstrated the impact of group pressure on people’s decision making (Asch, 1951; Bond &
Smith, 1996; Sherif, 1936). Primarily, the classic experiments such as Sherif’s (1936)
demonstration of conformity using the autokinetic effect and Asch’s (1951) demonstration of the
group’s impact on line perception showed that people are highly influenced by the majority and
can conform to seemingly obvious erroneous results (Asch, 1951). Not only do people conform
verbally and behaviourally, they also conform privately (Sherif, 1936). That is, they change their
opinion based on others’ responses. Based on this demonstrably strong effect, I predicted that the
Dunning-Kruger effect (Kruger & Dunning, 1999) might not hold up in the face of majority
opposition. Thus, in study two, participants viewed the ostensibly aggregated group’s responses
and rated the rationality of the group. It was hypothesized that high scoring participants would
rate the high scoring target group as more rational than the low scoring target group. It was also
hypothesized that low scoring participants would rate the high scoring target group as less
rational than the low scoring target group, but to a reduced degree compared to the difference in
high scoring participants’ ratings of the low and high scoring target group. It was also
hypothesized that different mechanisms underlie the evaluation process of low scorers and high
scorers; thus, a dual mechanism hypothesis was generated such that high scorers were predicted
to evaluate the target’s responses using central or systematic route processing and low scorers
were predicted to use peripheral or heuristic route processing (Elaboration Likelihood Model,
systematic route processing involve an evaluation of a message based on the examination of the
message content (Petty & Cacioppo, 1981, 1986; Chaiken, 1987). It is juxtaposed to peripheral
or heuristic route processing which is the evaluation of a message based on cues peripheral to the
central message (Petty & Cacioppo, 1981, 1986; Chaiken, 1987) such as attractiveness (Petty &
Cacioppo, 1984) or source expertise (Kiesler & Mathog, 1968; Wood & Kallgren, 1988), or in
this case, the number of people holding an opinion (i.e., majority, Martin, Hewstone, & Martin,
2007). Thus, assuming high scorers are motivated by an accuracy goal (Petty & Cacioppo, 1981,
1986; Kunda, 1990) and have the ability to evaluate logic arguments (Cacioppo, Petty, Kao, &
Rodriguez, 1986), it was hypothesized that high scorers would be less swayed by the low scoring
majority because they would have the required competence to evaluate logic, something that
would be lacking in low scorers.

Furthermore, if high and low scoring participants use different processing systems then
they should also differ in the extent to which their ratings of rationality of the target group are
impacted when the target group is their ingroup or outgroup. It was hypothesized that high
scorers who adopted central or systematic route processing would be able to discount the
influence of the ingroup or outgroup influences, whereas, low scorers who would be unable to
use central route processing, would be more swayed by peripheral cues or heuristics such as
ingroup or outgroup status. Research on the minimal group experiment has consistently
demonstrated that people who are simply categorized into one of two groups are likely to
“discriminate in favor of their group, show evaluative in-group bias (ethnocentrism), and indicate
that they feel a sense of belonging to their group, and similarity to and liking for their
anonymous fellow in-group members” (Hogg & Abrams, 2001, p. 339). Research also
demonstrates that people are more likely to perceive source credibility, a peripheral or heuristic
cue (Kiesler & Mathog, 1968; Wood & Kallgren, 1988), to their ingroup than outgroup (Clark &
Maass, 1988). Thus, in a third test of the assumption of valid and shared reasoning, I
manipulated ingroup vs. outgroup status. In this study (study 3), participants rated the rationality
of an ingroup or outgroup. It was hypothesized that the outgroup condition (by itself) was expected to match the results of study one and the ingroup condition (by itself) was expected to match the results of study two. Specifically, in the outgroup condition, low scoring participants would rate their high scoring target group as less rational than their low scoring target group; whereas, high scoring participants would rate their high scoring target group as more rational than their low scoring target group (like study one). It was also hypothesized that in the ingroup condition, high scoring participants would rate the high scoring target group as more rational than the low scoring target group. On the other hand, in line with the dual mechanism hypothesis, low scoring participants would rate the high scoring target group as slightly less rational than the low scoring target group, but the difference would be less than the difference between high scoring participants’ rating of the low and high scoring target ingroup (like study two).

**Assumption of Valid and Shared Goals**

When a perceiver tries to understand how a target’s seemingly irrational behaviour might be rational, the perceiver has many factors to take into consideration, but one important factor is the target’s goals. Thus, the second hypothesized assumption in the judgment of rationality, the assumption of valid and shared goals, is that a perceiver assumes that the goals he or she has are valid and that the target holds the same goals as him or her. The assumption of valid and shared goals is primarily concerned with instrumental rationality; whether or not a target is acting in line with his or her goals. For example, a target’s strange behaviour may be deemed irrational when the perceiver assumes that the target is working toward the same goal as him or her. However, a realization that the target is working towards a different goal may reveal the rationality of the target’s behaviour. This does not mean that epistemic rationality, an assessment of the target’s
beliefs and inferences, is left unnoticed, just temporarily withheld from judgment. For instance, if a target is infatuated with someone out of his league (e.g., a celebrity) and the target believes that he is attractive (not well mapped onto reality in the eyes of the perceiver) and thinks that the celebrity is romantically interested in him because the celebrity mailed him a signed picture (an illogical inference in the eyes of the perceiver), the perceiver may still judge the target’s behaviour of romantically pursuing the celebrity (e.g., asking the celebrity out on a date while at a public book signing) rational because it is accordance with the target’s goals.

Knowing a target’s goals helps a perceiver understand a target’s behaviour because behaviour is goal-directed (Carver, 2004; Carver & Scheier, 2000) or utility-directed (Kahneman, 2011). Economists model behaviour by suggesting that a target considers all the potential outcomes of his or her decisions, how much they value those outcomes and their likelihood (Kahneman, 2011). Like economists, perceivers may consider the extent to which a target values an outcome. The extent to which a target values an outcome will likely depend on the target’s goals.

Research on goal perception was slow to develop in social psychology. In the early years of attribution theory (and still today), researchers focused on perceivers’ identification of what caused a target’s behaviour, such as the person or the situation (i.e., correspondent bias, Gilbert & Jones, 1986; fundamental attribution error, Ross, 1977). However, Kruglanski (1975, 1979) has pushed for research on teleological examinations of the cause, or why perceivers thought a target behaved the way he or she did. In order to accurately understand the “why” of behaviour, a perceiver must determine the target’s goals.

In opposition to the typical person versus situation distinction in attribution theory, Malle (1999) provided a new framework for how people explain behaviour. Broadly, Malle suggested
that people explain the behaviour of a target as preceded by an intention (if perceived as intentional), which is a result of a target’s reasons. These reasons consist of beliefs and desires. For example, in explaining why Peter raked his lawn, the perceiver can speak of Peter’s intention (e.g., Peter intended to rake his lawn), Peter’s reasons in terms of a desire (e.g., Peter wanted to impress the neighbours) or a belief (e.g., Peter thought that leaf collection was the next day).

These reasons are embedded in a causal history of reasons, which explain why a target may hold a particular belief or desire, but are not directly responsible for the behaviour. They can consist of personality traits (e.g., Peter is a neat freak), past behaviours (e.g., his neighbours all raked their lawns the day before), cognitive states (an absence of a belief, e.g., Peter did not understand that raking his lawn would turn it to mud) and situational factors (e.g. he stumbled over his rake in the garage). An account of a target’s causal history of reasons does not explain the target’s behaviour per se, but describes the conditions leading up to why the target held specific beliefs or desires that lead to the intention and behaviour. Finally, Malle (1999) also describes enabling factors (or preconditions, McClure, 2002) that come between the intention and behaviour.

Sometimes behaviours occur despite major barriers or unfavourable conditions. In such cases, perceivers may explain the target’s behaviour in terms of the target’s skills, efforts, opportunities or obstacles that were removed. Although Malle (1999) provided evidence that people do think of targets’ behaviours in terms of these aspects, Malle did not examine the accuracy of these explanations. For example, if Peter’s wife, Carol, thought about why Peter raked the lawn, Carol might think that Peter raked the lawn to keep up with his neighbours, when in fact, Peter raked the lawn because leaf collection was the next day. It is possible that Peter’s wife assumed that Peter raked the lawn to keep up with the neighbours because she was embarrassed that they were the last ones on the street to rake their lawn, and she assumed that Peter also felt this way. In
other words, it is still unknown whether perceivers perspective take and think about the target’s goals when judging the rationality of the target’s behaviour or whether perceivers make egocentric assumptions about the target’s beliefs, desires and causal history of reasons.

Some research on goal perception has suggested that some goals are correctly (Meltzoff & Moore, 1996) and automatically (Hassin, Aarts, & Ferguson, 2005; Heider & Simmel, 1944) inferred from behaviour. In Aarts, Gollwitzer and Hassin’s (2004) research on goal contagion, they found that people were able to discern the goals of others and that these goals were “contagious,” such that participants would work toward these same goals. However, the goals that were primed were fairly obvious, or what people might consider by default. In one study (Aarts et al., 2004) participants read a vignette about a man who planned a future vacation and then started a job working on a farm (in the control condition, the man volunteered in the community). In the experimental condition, participants were more likely to behave as if they were motivated for money (e.g., speed at which they completed a task which would let them complete another task with a monetary incentive), thus accurately perceiving that the man in the experimental condition started a job to serve the goal of making money. Importantly, this was particularly the case when participants reported that they were in financial need. In a second study, participants accurately perceived that a man, who walks a woman home from a bar and asks to come in when they get to her door, wants to have sex. Although these studies are an effective way to examine a tendency to pursue the same goals as others (goal contagion) they do not provide much information about goal perception in ambiguous situations. However, the finding that people in financial need were more likely to perceive that the target was motivated to make money provides some support for the egocentric hypothesis that the more one holds a goal, the more one perceives it in others.
Hoffman, Mischel and Mazza (1981) demonstrated that perceivers explain a target’s behaviour in terms of a target’s goals when perceivers are motivated to recall a target’s behaviour or to perspective take (i.e., asked what they would do in the target’s situation). However, perceivers explain the target’s behaviour in terms of the target’s traits when perceivers are motivated to form a personality impression or predict the future behaviour of a target (Hoffman et al., 1981). Once again, the goals were fairly obvious; participants discerned that a woman who stole diet pills from her friend’s purse was trying to lose weight (Hoffman et al., 1981). Further, how the dependent variable is measured may impact the results. For example, Malle and Holbrook (2012) asked participants “Did the behavior reveal a certain goal the actor has?” This phrasing may have prompted participants to perspective take where they might not have done so otherwise.

Some research from Vallacher and Wegner (1987) in the development of action identification theory suggests that perspective taking increases goal perception. Action identification theory predicts when perceivers will identify actions in terms of lower level identities (e.g., moving a finger) that demonstrate how the action was performed or higher-level identities (e.g., shooting the sheriff) that demonstrate why the action occurred or the consequences of the action. Identifying action at a higher-level is associated with a greater degree of ascribing intentionality and ascribing a person with more of a mind (Kozak, Marsh, & Wegner, 2006). Furthermore, perspective taking increases the identification of actions at higher levels where the perceiver considers the goals and purposes of the target rather than focusing on external attributes. However, once again the goals in these studies were fairly obvious.

The question remains whether perceivers perspective take and discern complex goals easily. Research on egocentrism in perspective taking suggests that they do not. In a series of
studies by Epley and colleagues (2004), participants read an ambiguous dialogue where a person was discussing an earlier event that could be understood as sincere or sarcastic, a common ambiguous event, particularly in the era of emails and text messages. Overall, Epley et al. (2004) found that adults may have a default state of egocentrism in perspective taking, but have learned to override it and take on a target’s perspective when necessary. However, their understanding of a target’s perspective is anchored and adjusted from their own.

Adults are less egocentric than children on this account, not because they are less likely to automatically interpret their perceptions egocentrically, but rather because they are better at effortfully correcting that initial interpretation in a subsequent processing stage to accommodate differences between their own perspective and another’s perspective (Epley et al., 2004, p. 761).

Not only were participants’ perspectives of the targets anchored on their own perspective, once participants believed they had reasonably understood another’s perspective, they stopped (i.e., they satisficed). Thus, it is likely that perceivers assume that targets have the same goals as them, but that they have the ability to take on the target’s perspective and try to discern what the target’s goals are when they are motivated to do so. In the end, a perceiver might not understand exactly what the target’s goal is, but may get close enough.

Central to my thesis is that the perception of a target’s goals impacts the judgment of rationality. This hypothesis seems new to social cognition theory and is contentious in the field of personality. In personality research, traits and goals have been largely treated as distinct entities until recently. The distinction originated in personality psychology when Allport (1937) claimed traits were the best way to explain behaviour, whereas Murray (1938) claimed that goals or motives best explained behaviour. Later, McClelland (1951) argued that both traits and
motives were necessary to describe behaviour, but, this set up a false dichotomy in personality theory. Although most research in personality theory is focused on traits, some personality researchers have argued to include goals and motivations in an integrated personality theory (Winter, John, Stewart, Klohnen, & Duncan, 1998). Winter et al. (1988) suggested that an integrated model could “bring together traits and motives – as complementary concepts rather than as antagonistic rivals” (Winter et al., 1998, p. 231). However, the way in which researchers have suggested melding the two are different. On the one hand, some researchers (Read & Miller, 1989) suggest that goals can impact individual differences.

It seems plausible on its face that many of the most important differences between students are in terms of which life tasks [goals] are most important. We have all had students who make us wonder why on earth they ever went to college, because for them the academic life task seems nothing more than an obstacle to the social life task of partying and making friends (Read & Miller, 1989, p. 164).

That is, the students in this example should not be deemed lazy or unintelligent when examining their academic performance without an examination of their goals. An assessment of these traits may move along a continuum when one considers that the student wants to succeed in school in order to get into medical school or that they just need to pass so that they can receive their trust fund or that they are only enrolled in a grueling science program to satisfy strong willed parents when they really want to be an artist. However, this suggested approach has been met with strong opposition by traditional personality researchers, “despite efforts by trait theorists to include motives in their concept of a trait, the concepts are fundamentally distinct” (Pervin, 1994, p. 109). Yet, some personality researchers (Winter et al., 1998) continued to push for an integration, but from a different perspective. They suggested that the relationship is opposite in
causality, such that individual differences (personality) impact goals (Brown, Cron, Slocum, 1998; Winter et al., 1998; Roberts & Robins, 2000). For example, Winter et al. (1998, p. 231) stated that “motives involve wishes, desires, or goals (often implicit or nonconscious), whereas traits channel or direct the ways in which motives are expressed in particular actions throughout the life course” and thus suggests that traits influence motives and not that motives influence traits.

This contentious discussion in the personality literature is not echoed in the social cognition literature. In social cognitive research, the perception of traits and goals are conceptualized as either completely separate or are pitted against each other (Wai-man Ip, Chiu, & Wan, 2006; Hoffmann et al., 1981). For example, as discussed earlier, Hoffmann and colleagues (1981) asked participants to read a vignette and categorize it in terms of the target’s trait (e.g., dishonesty), goal (e.g., losing weight) or a setting (e.g., the library). Although this distinction helps researchers investigate social cognitive research questions, it sets a precedent for a false dichotomy, regardless of intent. However, there are some cases where traits and goals are integrated, but they are assessed in terms of the impact that the perception of traits has on the perception of goals (Wai-man Ip et al., 2006). Instead, I argue that the judgment of irrationality, which can be understood as a trait, may be influenced by the perception of a target’s goals. When a perceiver understands the target’s seemingly irrational behaviour in the eyes of the target and the target’s goals, the target may be deemed rational. Little to no research in social cognition has examined the impact of the perception of a target’s goals on the judgment of the target’s traits.

Overall, it seems that there is mixed evidence to support my hypotheses that 1) perceivers assume that targets share their goals and 2) that the assumption of valid and shared goals impacts the perceivers’ judgment of targets’ rationality. Although there is research to suggest that
perceivers are able to discern fairly overt goals of targets (Aarts et al., 2004; Hoffman et al., 1981; Vallacher & Wegner, 1987); there is little to no evidence that they are able to discern more complex goals without being prompted to perspective take (Epley et al., 2004). Most perceivers would not think twice about universal goals such as avoiding harm or death. People likely assume that others make decisions based on avoiding death and this assumption is likely, in most cases, correct. However, people may also assume that their more personal goals (e.g., working towards a promotion, wanting children, etc.) are shared by others. This is slightly supported by Aarts and colleagues’ (2004) research that indicates that perceivers are more likely to discern a target’s goals when they have the same goals (financial security). Thus, by assuming that others share one’s goals, attributions of irrationality are likely to occur when a target’s actions do not lead them to the goals that the perceiver holds. The impact that the assumption of valid and shared goals has on the judgment of rationality was tested in one experiment (study 4). For this study, participants were paired with a partner in the lab, with whom they were instructed not to speak, and constructed a structure together out of building blocks, not knowing that one participant was instructed to build a skyscraper and the other was instructed to build a bridge. Then they rated the rationality of their partner. In one condition, participants were debriefed about the deception before they rated their partner, in the other condition they were not debriefed until the end of the study. It was hypothesized that participants who were not informed that their partner was provided different instructions would rate their partner as more irrational than those who were informed.

**Assumption of Naïve Realism**

The third assumption in the judgment of rationality is the assumption of naïve realism, such that perceivers assume that how they perceive a situation is accurate and is how the target
has perceived the same situation (Ross & Ward, 1996). Decisions and behaviour are embedded in social situations that are ambiguous. Recognizing the subjectivity in our interpretations of nature is not new (Kant, 1790); recognizing the impact that this subjectivity has on behaviour and attributions is more recent. Since Bruner’s (1957) declaration that people “go beyond the information given” many early social psychologists explored the impact of subjective construal (Asch, 1940, 1952; Brunswik, 1956; Ichheiser, 1949; Kelly, 1955; Koffka, 1935; Lewin, 1935, 1936). Overall, researchers agree that people do not necessarily perceive the world around them as it is, but that they actively construct their perception of reality through their filters or schemas (Fiske & Taylor, 1991). These schemas, defined as cognitive structures that represent “knowledge about a concept or type of stimulus, including its attributes and the relations among those attributes” (Fiske & Taylor, 1991, p. 98), develop out of people’s prior knowledge and personal experiences. In other words, perceivers bring their own schemas or “personal baggage” to how they perceive and understand the world. Perceivers’ schemas may share many similarities with others, particularly for scripted situations (Abelson, 1981; Schank & Abelson, 1977) – if they did not, it would make ordering coffee impossible – but because they are based on perceivers’ unique experiences and knowledge they may have subtle nuanced differences, particularly in cross-cultural situations. The more different a perceiver’s experiences and personal history are from a target, the more different the perceiver’s and target’s schemas will be and therefore, the more differently they may interpret ambiguous situations. Furthermore, how perceivers perceive a situation impacts how they behave. This was reflected upon by Thomas (1928, p. 572), “if men [sic] define situations as real, they are real in their consequences.” In other words, behaviour results from one’s subjective interpretation of a situation, not the
situation itself. However, the problem of subjective construal as stated most notably by Ross (1987) is that,

social perceivers fail to appreciate, and fail to make adequate inferential allowance for the inherent uncertainty of the processes by which they construct social reality. It is that they fail to recognize the full extent, and implications, of their own role in constructing the evidence and information from which they derive social meaning (Ross, 1987, p. 119).

Ross expanded upon this thesis with Ward (Ross & Ward, 1996) suggesting that people have a tendency to be naïve realists. They suggest that there are three tenets to the theory of naïve realism that describe the convictions people hold about their subjective experience. First, a naïve realist assumes that stimuli, entities, events or situations are objective and that one’s interpretation of stimuli, is not in fact an interpretation, but an unbiased view of the world. Second, that other rational people will share one’s reactions, behaviors, and opinions provided that they hold the same information and process that information with an open mind. Third, that differences in interpretation are due to the possibility that the target is uninformed, guided by idiosyncratic traits or that the target is biased (Pronin, Gilovich, & Ross, 2004). Ross and Ward (1996) defined bias in terms of an inability/unwillingness to make reasonable inferences from objective evidence as well as cognitive or motivational bias in interpreting evidence or inferring conclusions from evidence.

Ross and Ward (1996) point to previous research to support naïve realism such as research on the false consensus effect, which shows that people overestimate the extent to which their choices, attitudes and behaviours are shared by others (Marks & Miller, 1987; Mullen et al., 1985; Ross, Greene, & House, 1977) as well as the overconfidence effect (Dunning, Griffin, Milojkovic, & Ross, 1990; Vallone, Griffin, Lin, & Ross, 1990), which shows that people
“express unwarranted subjective certainty in their personal and social predictions” (p. 1129). In the classic false consensus study, Ross and colleagues (1977) asked participants to walk around campus with a sandwich board sign saying “Eat at Joe’s.” Participants who agreed to wear the sign estimated that their response was more common than those who refused. Further, those who agreed to wear the sign assumed that idiosyncratic traits (e.g., uncooperativeness) would predict those who would refuse than those who would agree. Participants who refused stated the opposite, that participants who agreed were “show offs.” Ross and Ward (1996) suggested that the false consensus effect and overconfidence effect occurs because people assume that they see things (stimuli, events, situations, “the world,” social issues, etc.) as how they really are and that their beliefs and opinions are a result of their unbiased perception of these things. Thus, people think that reasonable and rational others should see it the same way, or should have the same “object of judgment” (Asch, 1940; Ichheiser, 1970), because it is not their internal dispositions and schemas that are creating their beliefs and opinions, but the stimulus itself and if the stimulus is objective and unchanging, then reasonable others will share one’s beliefs and opinions. For example, if a murderer is found to be guilty in Texas, a Texan might have the opinion that he should receive the death penalty and assume that others (broadly) would agree. However, the Texan may fail to see that the case was not clear cut (ambiguous) and he may fail to see how growing up in a state with the highest number of executions may desensitize him to its use as well as how his religious and political affiliations may have influenced his opinion. Instead, he may just think that any other rational person will see that the murderer’s actions dictate the death penalty as an appropriate form of justice.

To provide additional support for the relationship between the subjectivity in perception and false consensus effects, Gilovich (1990) reexamined the data from another Ross et al. (1977)
study in which Ross and colleagues asked participants to provide their own answer and rate consensus estimates for 35 items such as, “Are you a first-born or later-born?” and “Are you competitive?” and found that greater false consensus effects were found for items with the greater latitude for alternative interpretation (as rated by judges). In a follow-up study to provide evidence for the causal role of subjectivity in false consensus effects, Gilovich (1990) found that providing participants with more or less ambiguous choices, such as having participants indicate whether they liked aqua or tan (more ambiguous) or which colour swatch they preferred (less ambiguous) and found that the more ambiguous choices resulted in greater false consensus estimates. Gilovich (1990) hypothesized that perceivers neglect to consider the wide range in interpretations of stimuli that the perceivers themselves would dislike or disagree with. For example, in the more ambiguous condition, when choosing aqua over tan perceivers may have pictured a more appealing hue of aqua and a less appealing hue of tan and they failed to consider that targets, who chose tan over aqua, may have pictured a less appealing hue of aqua and a more appealing hue of tan. In a test this hypothesis, Gilovich (1990) found that people who indicated a preference for 1960s music versus 1980s music provided more appealing examples of 1960s music than examples of 1980s music (as rated by judges) from those who indicated they preferred 1980s music and vice versa. This effect held for old versus new movie choices as well (Gilovich, 1990). Thus, perceivers assume that others share their opinions more than they actually do because perceivers assume that the stimulus or “object of judgment” (Asch, 1940) is objective, that their interpretation is correct and shared by the target.

This tendency to project one’s construal onto others is not a result of a purposeful or hostile egocentrism, but the result of a clear failure to see stimuli, entities, events or situations differently from how one originally interpreted them. Research on hindsight bias and the curse of
knowledge suggest that once an interpretation is formed, it becomes difficult to remember the original ambiguity and uncertainty during the interpretation process. Research on the hindsight bias suggests that people underestimate the impact of knowing that an outcome has occurred has on their perceptions of its perceived likelihood (Fischhoff, 1975). That is, knowing that an event has occurred makes it seem more likely than it would seem before the event occurred. In accord with economic decision theory, when making decision in an uncertain situation, one has to consider the probability of different plausible outcomes. However, after the outcome occurs its perceived likelihood increases. For example, when considering whether or not giving a birthday gift to one’s boss is the right thing to do, after experiencing a positive outcome (boss reacts with sincere gratitude), one might think that the positive outcome was more probable than when one was contemplating one’s actions. In fact, one’s boss might have reacted with gracious, yet hesitant, acceptance of the gift, indicating that it probably was not an appropriate action for a subordinate employee. These uncertainties seem to vanish or become reduced upon experiencing an outcome. Later research on the curse of knowledge suggests that knowing a piece of information makes it difficult to not let it colour one’s perceptions. Even when people know that they know something that others do not, they are unable to ignore it, even when they will benefit from ignoring it (Camerer, Loewenstein, & Weber, 1989). Further, Keasar, Ginzel and Bazerman (1995) showed that when a perceiver is predicting a target’s decision, they struggle to discount their privileged information. Two studies have demonstrated how the curse of knowledge prevents people from perceiving stimuli from an alternative perspective. First, in a study on the perception of idioms, Keasar and Bly (1995) provided participants with an unfamiliar idiom and participants learned one of two opposing supposed meanings. After learning of an idiom’s meaning, the learned meaning seemed more transparent than the nonlearned meaning, regardless
of which meaning the participants learned. Second, in a study of naïve realism and the perception of music, Newton (1990) found that people who were asked to finger tap a well-known song (e.g., Rock Around the Clock) to their partner overestimated the likelihood of their partner guessing the song. Thus, they inadequately allowed for the impoverished nature of the situation (no inner music) that their partner was experiencing. Further, in situations where somebody else tapped the song, but listeners were told the name of the song, listeners overestimated the degree to which other non-informed listeners would be able to identify the song (Newton, 1990). Therefore, naïve realism is likely not a result of motivated self-centeredness, but out of a difficulty in perceiving stimuli from an alternative perspective once an interpretation has been formed. Thus, it is likely that the more opportunity perceivers have to solidify their interpretations (Johnson & Seifert, 1994), the more naïve realism will increase. Additionally, it is likely that learning of an alternative interpretation will have less of an impact on naïve realism of perceivers’ more solidified interpretations compared to their less solidified interpretations.

Thus, in one experiment (study 5), I manipulated exposure to an ambiguous stimulus in order to provide participants with more or less opportunity to solidify their interpretation. Participants were randomly assigned to watch the film once (low exposure condition) or five times (high exposure condition). I then manipulated whether or not participants were exposed to an alternative interpretation. I hypothesized that participants in the high exposure condition would exhibit more naïve realism than participants in the low exposure condition. I also hypothesized that participants who learned of an alternative interpretation of the ambiguous situation would exhibit less naïve realism than participants in the control condition. Further, I hypothesized that the alternative interpretation would decrease participants’ naïve realism more in the low exposure condition than in the high exposure condition (because participants would
have more time to solidify their interpretations). Thus, this study assessed the second component of the assumption of naïve realism, which is that perceivers assume that targets construe situations in the same way. It also tested the conditions under which this is most likely to occur (high exposure, no alternative interpretation available). The impact that naïve realism has on the judgment of rationality is the final aspect to be examined.

Ross and Ward tie naïve realism to rationality and bias by suggesting that perceivers assume that others see stimuli as they do and differences in interpretation are perceived as due to a target’s irrationality or bias. To provide support for their thesis, Ross and Ward (1996) cited a study by Vallone, Ross and Lepper (1985). Vallone et al. (1985) presented pro-Israeli, pro-Arab and neutral participants with news coverage of the Beirut massacre and found that, although the neutral participants thought that the news coverage was unbiased, pro-Israeli participants thought the broadcast was biased in favour of Arab people and pro-Arab participants thought the broadcast was biased in favour of Israeli people (Vallone et al., 1985) and that the bias was reflective of the ideologies of the journalists. Therefore, Vallone et al. (1985) provide some evidence that perceivers assume that differences in construal are associated with the target’s ideological bias. However, the more Ross and colleagues explored perceptions of bias and differences in construal, the more evidence they found against their hypothesis that people assume that others share their construals, such that, more often than not, perceivers expect others to have different interpretations (Robinson, Keltner, Ward, & Ross, 1995; Robinson & Keltner, 1996).

In the examination of the construals of pro-life and pro-choice participants and liberal and conservative participants, Robinson, Keltner, Ward and Ross (1995) found that participants overestimated the differences in their rivals’ construals. Pro-life participants were more
sympathetic towards women deciding to have an abortion than both pro-choice participants and pro-life participants themselves predicted. In contrast, pro-choice participants were less sympathetic toward women deciding to have an abortion than the pro-life or pro-choice respondents themselves predicted. Further, pro-choice participants overestimated how much pro-life participants rated the typicality of unsympathetic abortion scenarios (e.g., having an abortion so one could pursue a career). Pro-life participants overestimated the degree to which pro-choice participants estimated the percentage of early abortions during the 10th week as well as estimations of the percentage of abortions that occur once the fetus is viable. Further, in line with the bias blind spot (Pronin et al., 2002), not only did participants think that they were less influenced by political ideology than partisans from the other side, they also thought they were less influenced by political ideology than partisans from their side. In other words, people think they are less biased than others. These results were mostly replicated by comparing liberal, moderate and conservative predictions of liberal and conservative construals of a the Howard Beach incident where a young Black man was struck by a car when fleeing a group of white men in New York City. Liberals, moderates, and conservatives overestimated the extent to which conservatives would perceive the situation as the fault of the Black victim and not the White perpetrators and the extent to which liberals would perceive the situation as the fault of the White perpetrators. Overall, Robinson and colleagues (1995) did not find that an understanding of how rivals perceive situations differently led to positive outcomes, such as a reduction in social conflict or a greater understanding of why rivals hold the opinions that they do. Instead, Robinson et al. (1995) found that participants assumed that rivals, and even others in their ingroup, were biased.
Another study conducted by Robinson and Keltner (1996) examined estimated differences in syllabus book selections by revisionist and traditionalist English instructors. Whereas traditionalists believe in preserving the standard works included in the curriculum, revisionists aim to increase the inclusion of female and minority authors. Robinson and Keltner (1996) found that although traditionalists did select more traditional works than revisionists, they overestimated the extremity of the preferences of revisionists.

In sum, Ross and Ward (1996), suggest that perceivers expect others (even those in their ingroup) to have different construals of a situation because perceivers believe only their interpretation to be veridical. Although this is not a direct contradiction from their first tenet that “other rational social perceivers” (Ross & Ward, 1996, p. 111) will construe stimuli and situations in the same way, if people think that all others, even those in their ingroup, are biased (Pronin et al., 2002), then there really are no “other rational social perceivers” and they have little evidence that people assume any one else shares their construals. The only studies that do show some evidence that perceivers fail to take into consideration how targets may perceive stimuli differently are the unpublished musical tapping study by Newton (1990) and Gilovich’s (1990) research on false consensus effects in preferences between ambiguous categories.

Much of Ross and colleagues’ evidence of naïve realism is either incorporated ad hoc (e.g., false consensus effect, Ross et al., 1977; overconfidence effect, Dunning, Griffin, Milojkovic, & Ross, 1990), as case studies (e.g., Hastorf & Cantril, 1954), or informal interviews with students (Ross & Ward, 1996), are unpublished (Newton, 1990; Ross & Penning, 1985; Ross & Samuels, 1993) or contradictory (Robinson et al., 1995; Robinson & Keltner, 1996). They have yet to provide solid and consistent experimental peer-reviewed evidence of the tenets of naïve realism beyond the bias blind spot (Pronin et al., 2002, 2004). These shortcomings are
likely the reason the focus of this line of research has shifted to the more consistent finding of the bias blind spot (Pronin et al., 2002, 2004). Further, although the syllabus study by Robinson and Keltner (1996) seemed to be a follow-up to the Robinson, Keltner, Ward and Ross (1995) paper, the students of Lee Ross did not discuss naïve realism or suggest that it was their guiding theoretical framework. Yet, Ross and Ward (1996) used it as support for their theory of naïve realism. It is clear that something is amiss. However, I still believe there is merit to their theory and I suggest that the main problem is their dependent variable of bias.

The flipside of what Ross and colleagues (Griffin & Ross, 1991; Ross & Ward, 1996; Ross & Ward, 1995) were originally trying to demonstrate, in broader terms, is that seeing how a target perceives a situation or stimuli differently leads to increased understanding of the target and a reduction in social conflict.

If we were willing to exercise constraint in drawing strong conclusions about behavior or judgments that differ from our own, if we were willing in such cases to look longer and harder for objective situational factors and subjective construals that could account for such divergence in responses... we might find it easier to resolve conflict and communicate with our opponents (Griffin & Ross, 1991, p. 345).

However, in later studies, Ross and Ward (1996) found that when a perceiver understood that a target perceived a situation differently, it did not lead to increased understanding and a reduction in social conflict, but an attribution of a target’s bias. This result did not fit well with their original argument. In part, it was operationalization of understanding others as measured by the perception of bias in others that tied their hands. This is because it is possible to perceive a target as biased, yet understand why a target behaved the way he or she did. More to the point, it is possible that a perceiver may rate a target as biased, yet rational. For example, a perceiver may
understand that, due to a target’s ideological bias, he or she may perceive a situation differently. A perceiver who is a conservative farmer may understand that a target perceives a chicken hatchery as abusive due to her (as the perceiver sees it) bleeding-heart liberal bias. In this case, if the target pays five dollars more for a dozen eggs or pickets outside the hatchery, the perceiver may think the target is biased in her perception of the situation, but the perceiver can still understand that based on how the target views the situation, she is rational in her actions (or less irrational than when not understanding the difference in construal). Instead of assessing bias, or in addition to, Robinson et al. (1995) could have asked participants to rate the rationality of their partisan rivals in terms of a Panglossian definition such that all decisions are rational when “in light of the agent’s own beliefs and desires, the intended action is for the agent a reasonable thing to do” (Malle, 1999, p. 36). If so, Robinson et al. (1995) might have found that, upon realizing that a target construed the situation differently, perceivers increased in their understanding of the target via an assessment of rationality.

Thus, by assessing the relationship between naïve realism and the judgment of rationality, I aimed to provide support for the central thesis of naïve realism, that people expect that others view the situation in the same way, and that increasing awareness that people view things differently leads to an increase in understanding. Thus, in a second test of the assumption of naïve realism (study 6), I manipulated participants’ interpretation of an ambiguous situation and examined the causal impact of the perceivers’ situation interpretation on the judgment of a target’s rationality. In this study, participants watched a video of a target driving away from a gas station while another person was pumping the target’s gas. Participants were randomly assigned to read a description of the gas station attendant as stable or unstable. The contextual information provided to participants in the unstable condition was designed to show that the driver’s
behaviour was rational in accordance with their perception of the situation. Thus, I hypothesized that participants who perceived an actor in a vignette as unstable would perceive the target’s behaviour in the vignette as more rational than participants who perceived the actor as stable. Thus demonstrating that people judge a target’s behaviour in terms of how the perceiver (and not the target) construes the situation. This study was designed to assess both the judgment of epistemic rationality (the target’s beliefs and inferences) and the judgment of instrumental rationality (whether or not the target’s behaviour aligned with the target’s goal).

Finally, in a third test of the assumption of naïve realism (study 7), I aimed to experimentally manipulate naïve realism to directly examine the causal impact of naïve realism on the judgment of rationality. There are at least two ways to decrease naïve realism. One can attempt to decrease the perceiver’s assumption that his or her interpretation of a situation is valid. One can also attempt to decrease the perceiver’s assumption that his or her interpretation is shared by others. However, the decrease of one may or may not lead to a decrease in the other. A perceiver can recognize that his or her construal of a situation is potentially invalid because it is only one of a variety of interpretations (e.g., Keysar & Bly, 1995) or because it is, in fact, invalid (e.g., misinterpreting a date as a job interview). Recognizing that one’s interpretation is invalid will more likely lead to a decrease in the assumption of shared understanding than when the perceiver realizes that there exist alternative interpretations because the perceiver might still believe that those alternative interpretations are rare. Although recognizing that one’s interpretation is absolutely invalid might be more likely to lead to a decrease in the assumption of a shared understanding, it is not necessarily so. A perceiver might think they are among many who were tricked. Thus, realizing the invalidity of one’s interpretation may not always lead to a decrease in the egocentric component of the assumption of naïve realism. Further, in the reverse
direction, recognizing that others do not share one’s perceptions may likely decrease the assumption of validity, it also may not if the perceiver thinks that all other interpretations, but his or hers, are invalid.

The impact that a change in these assumptions will have on the judgment of rationality will depend upon the type of rationality assessed. If a perceiver is judging the epistemic rationality of a target, then the perceiver needs to either realize that his or her interpretation is wrong and the target’s interpretation is correct, or the perceiver needs to realize that there are multiple, yet valid ways, of interpreting the situation in order for their judgment of the target’s rationality to increase. In contrast, if a perceiver is judging the instrumental rationality of the target, then the perceiver may only need to realize that the target does not share the perceiver’s interpretation of the situation in order to understand that the target is rationally behaving in alignment with their alternative interpretation of the situation.

In sum, in the face of feedback that suggests that a perceiver’s interpretation is invalid and/or not shared by others, there are many ways that he or she can ignore or refute this feedback. Thus, naïve realism may be a difficult bias to break. Nonetheless, I designed a manipulation that addresses both components of naïve realism: the assumption of validity and the assumption of shared interpretation. I hypothesized that if perceivers could understand the relative nature of perception then they would be less likely to assume that their interpretation is absolutely valid and less likely to assume that their interpretation is shared by others. I posited that the easiest way to demonstrate the relative nature of perception was to subject participants to a number of optical illusions and a brief oral presentation on the topic. Thus, I randomly assigned participants to a relativity condition or a control. I hypothesized that participants in the relativity
condition would be less likely to attribute epistemic irrationality to an alternative interpretation of an ambiguous stimulus than participants in the control condition.

Overview of Studies

In seven studies, I examined the impact of three egocentric assumptions on a perceiver’s judgment of a target’s rationality. The first three experiments examined whether people assume that their reasoning is accurate and use it as a standard to judge others’ reasoning by measuring perceivers’ reasoning ability and presenting participants with a (correct or incorrect) completed test of their partner (study 1), a group (study 2) or their ingroup/outgroup (study 3). The fourth study assessed whether people assume that others have the same goals as them and the impact this has on their judgment of rationality of their partner. To do this, participants completed a building blocks task together where they were provided different instructions and then rated their partner’s rationality. Studies five, six and seven examined the assumption of naïve realism, such that people assume a situation is objective, their interpretation accurate and shared by others, by examining the conditions (exposure and alternative interpretations) that increase and decrease naïve realism (study 5) and the impact of naïve realism on the judgment of targets’ rationality (studies 6 and 7). Below is a summary of each assumption, its corresponding specific research question and hypotheses and a description of each study.

**Assumption of Valid and Shared Reasoning:** Perceivers assume that their reasoning is accurate and should be used as a standard to judge how targets reason.

**Research Question 1.1:** Does the assumption of valid and shared reasoning affect the judgment of rationality?
**Study 1:** In the lab, participants sat across from another participant (the target) and completed a logic test. Next, participants viewed what they thought were the targets’ completed tests. In reality, participants were randomly assigned to view a completely correct or incorrect completed test. Participants then rated the rationality of the target.

**Hypothesis A:** Low scoring participants will rate the high scoring target (correct condition) as less rational than the low scoring target (incorrect condition).

**Hypothesis B:** High scoring participants will rate the high scoring target as more rational than the low scoring target.

**Research Question 1.2:** How does the assumption of valid and shared reasoning fare when the target is a group of people, instead of just one person? Do high scoring and low scoring participants process the information differently (peripheral/heuristic versus central/systematic route processing)?

**Study 2:** This study is the same as study one, except participants judged a group of targets.

**Hypothesis A:** High scoring participants will rate the high scoring target group as more rational than the low scoring target group.

**Hypothesis B:** Low scoring participants will rate the high scoring target group as slightly less rational than the low scoring target group, but the difference will be less than the difference between high scoring participants’ rating of the low and high scoring target group.

**Research Question 1.3:** How does the assumption of valid and shared reasoning fare when the target is the perceiver’s ingroup or outgroup? Do high scoring and low scoring participants process the information differently (peripheral versus central route processing)?

**Study 3:** This study is the same as study two, except the target group was either their ingroup or outgroup.
**Hypothesis A**: In the outgroup condition, low scoring participants will rate their high scoring target group as less rational than their low scoring target group; whereas, high scoring participants will rate their high scoring target group as more rational than their low scoring target group (like study one).

**Hypothesis B**: In the ingroup condition, high scoring participants will rate the high scoring target group as more rational than the low scoring target group. On the other hand, low scoring participants will rate the high scoring target group as slightly less rational than the low scoring target group, but the difference will be less than the difference between high scoring participants’ rating of the low and high scoring target ingroup (like study two).

**Assumption of Valid and Shared Goals**: Perceivers assume that targets have the same goals.

**Research Question 2**: Does this affect the perceivers’ judgment of the targets’ rationality?

**Study 4**: In the lab, participants constructed a structure out of building blocks with a partner without being able to speak to each other, not knowing that one participant was instructed to build a skyscraper and the other was instructed to build a bridge. They then rated the rationality of their partner. In one condition, participants were debriefed about the deception before they rate their partner; in the other condition they were not debriefed until the end of the study.

**Hypothesis A**: Participants who are not informed that their partner was provided different instructions will rate their partner as more irrational than those who were informed.

**Assumption of Naïve Realism**: Perceivers assume that targets perceive situations as they do.

**Research Question 3.1**: What conditions increase or decrease naïve realism?
**Study 5:** In the lab, participants watched an ambiguous video and were asked to write what they thought was happening. Participants were randomly assigned to a low or high exposure condition (film shown one or five times) and an alternative interpretation condition (learn about an alternative interpretation of the video or do not). Then participants completed a measure of naïve realism.

**Hypothesis A:** Participants in the high exposure condition will exhibit more naïve realism than participants in the low exposure condition.

**Hypothesis B:** Participants in the alternative interpretation condition will exhibit less naïve realism than participants in the control condition.

**Hypothesis C:** Participants in the high exposure condition will exhibit less of a decrease in naïve realism in the alternative interpretation condition compared to the control than participants in the low exposure condition.

**Research Question 3.2:** Does a perceiver’s understanding of a situation affect his or her judgment of rationality of a target?

**Study 6:** In this study, participants’ perception of a situation was manipulated. Participants read a vignette (online) about the events preceding an incident at a gas station where the target speeds away with the gas nozzle still attached and then watched a video depicting the incident. Participants were randomly assigned to a condition where the gas station attendant who approaches the target in the car was described as stable or unstable. Participant then rated the rationality of the target.

**Hypothesis A:** Participants in the stable condition will judge the target as more irrational than participants in the unstable condition.

**Research Question 3.3:** Is naïve realism a causal factor in the judgment of rationality?
Study 7: In this study, participants’ sense of naïve realism is manipulated. In the lab, participants were randomly assigned to a relativity condition or a control. In the relativity condition, participants were taught through a series of videos and activities, the subjective nature of the perception of reality. In the control condition, they watched a series of control videos about sensation and perception. Next, participants then watched an ambiguous video and wrote out their interpretation (see study five). Finally, participants rated the rationality of a target who had an alternative interpretation of the video.

Hypothesis A: Participants in the relativity condition will rate the target with the alternative interpretation as more rational than participants in the control condition.

Study One

The purpose of this first study was to test whether perceivers use their reasoning as a standard to judge a target’s reasoning. This study was the ultimate test of the assumption of valid and shared reasoning because, in most situations, when people are thinking retrospectively about whether they made a good decision and what reasons they had, there is more room for self-justification, counterfactual reasoning, and self-serving biases to come into play. By focusing on propositional logic, the potential subjectivity of defining good reasoning was removed.

The primary interest of this study was whether or not perceivers with poor reasoning abilities would judge targets with similarly poor reasoning abilities as rational. This was tested by having participants complete a test of logic and then having them view the completed logic test of the target seated across from them. Then participants rated the rationality and logicality of the target. It was hypothesized that high scoring participants would rate the high scoring target (in the correct condition) as more rational than the low scoring target (in the incorrect condition).
However, and more importantly, it was hypothesized that low scoring participants would rate the high scoring target as less rational than the low scoring target.

Methods

Participants

Participants ($n = 94$) were recruited from the University of Guelph participant pool in the fall semester of 2011. A power analysis indicated that a sample size of 77 was required to detect a medium effect size with 80% power; therefore, sufficient power was achieved. Participants’ ages ranged from 17 to 22 ($M = 18.31, SD = .99$). Seventy-eight percent of participants were female and twenty-two percent were male. Seventy-five participants were White (79.8%), eight were Southeast Asian, two were South Asian, one was Black and eight specified “other.” Participants were compensated with one credit for their introductory psychology class equaling one percent of their grade. One participant was excluded from the original sample ($n = 95$) because he/she did not sign the post-debrief consent form.

Procedures

For each session, ten participants were scheduled. If ten participants did not sign up or did not show up, a confederate or two were used in their place. Participants came to a boardroom and were seated at the boardroom table divided up by partitions. Each participant was partially able to see the person in front of him or her, but not the person(s) seated beside when they were writing. Participants were asked to read and sign the consent form if they wished to participate. After filling out the consent form, participants were introduced to the study and were provided basic instructions on how to read logical arguments. Then participants were handed a logic worksheet that included ten logical arguments including syllogisms and other forms of propositional logic (i.e., modus ponens) (see Appendix A). Participants were given one minute to
rate each argument as either valid or invalid. Their logic test score was the sum (out of 10) of the
number of questions they answered correctly on the worksheet ($M = 5.16$, $Median = 5.00$, $Mode$
$= 6.00$, $SD = 1.76$, Minimum $= 2$, Maximum $= 10$). Next, participants indicated their confidence
in their answers from 0% (not at all confident) to 100% (completely confident). Then,
participants transferred their answers to an answer sheet. The research assistant (RA) collected
the answer sheets, but left participants with their original worksheets. The RA then handed an
answer sheet to each participant, ostensibly from the person seated across from them; however,
the RA actually handed them back a worksheet that was either all correct or all incorrect
(depending upon the condition to which they were randomly assigned). On a questionnaire,
participants rated the rationality and logicality of each of the target’s answers, “How rational is
this person’s answer?” on a six-point scale from 1 (very irrational) to 6 (very rational) and “How
logical is this person’s answer?” on a six-point scale from 1 (very illogical) to 6 (very logical).
Participants also rated the rationality and logicality of the target overall, “How rational is the
person seated across from you” and “How logical is the person seated across from you” on the
same six-point rationality and logicality scales. These 22 items were averaged to create a
composite measure of rationality ($\alpha = .71$, $n = 94$). Other measures included Rosenberg’s Self-
Esteem scale (Rosenberg, 1965), the Right-Wing Authoritarianism scale (Altemeyer, 1981), the
Need for Cognition Scale (Cacioppo, Petty, Feinstein, & Jarvis, 1996), the Uncertainty Response
Scale (Emotional subscale, Greco & Roger, 2001), the revised 15-item Need for Closure Scale
(Roets & van Hiel, 2011) and Personal Need for Structure (Neuberg, & Newsom, 1993). After
participants completed the questionnaire and before they left (or if they left part way through)
they were provided a debriefing form and an annotated correct answer sheet. Participants were

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1 The moderating effects of these variables are beyond the scope of this dissertation and are not reported in the results section.
asked to consider signing a post-debrief consent form before leaving. The confederates usually excused themselves part way through the study, once they had discerned that most participants had completed the ratings of rationality and were filling out the individual difference variables in the last half of the questionnaire.

Results

A moderated multiple regression analysis was conducted. The composite measure of perceivers’ ratings of targets’ rationality was regressed onto the dummy coded target condition (low scoring target/incorrect condition = 0 vs. high scoring target/correct condition = 1), participants’ centered logic test score (low scoring participant = -1SD; high scoring participant = +1SD) and the target condition by logic test score product term. The regression model was significant, $R^2 = .32, F(3, 90) = 6.23, p < .001, f^2 = .47$.²

There was a significant interaction between condition and participants’ logic test score on the targets’ rationality, $\beta = .84, B = .50, t(90) = 6.25, p < .001, 95\% \text{ CI } [.34, .65], sr^2 = .29$ (see Figure 1). High scoring participants rated the high scoring target (correct condition) as significantly more rational than the low scoring target (incorrect condition), $\beta = .68, B = 1.08, t(90) = 5.46, p < .001, 95\% \text{ CI } [.69, 1.48], sr^2 = .22$. In contrast, low scoring participants rated low scoring targets (incorrect condition) as significantly more rational than high scoring targets (correct condition), $\beta = -.42, B = -.66, t(90) = 3.40, p < .01, 95\% \text{ CI } [-1.05, -.28], sr^2 = .09$.

Looked at another way, in the incorrect condition, low scoring participants rated the low scoring target as significantly more rational than did high scoring participants, $B = -.33, t(90) = 5.53, p < .001, 95\% \text{ CI } [-.45, -.21], sr^2 = .23$. In the correct condition, low scoring participants

² Cohen’s $f^2$ (Cohen, 1988) measures the local effect size of a variable within a multivariate regression model (Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). Cohen (1988) suggests the following ranges: .02, .15, .35, for small, medium, and large effect sizes, respectively.
rated the high scoring target as significantly less rational than did high scoring participants, $B = .16$, $t(90) = 3.15$, $p < .01$, 95% CI [.06, .26], $sr^2 = .08$.

![Graph of rationality/logicality](image)

Figure 1. Participants’ assessments of the targets’ rationality.

**Confidence**

Participants’ logic test total score significantly correlated with their level of confidence in their own responses, $r(93) = .25$, $p < .05$. However, the lowest confidence score was still fairly high at 50% (scores ranged from 50% to 100%). By dichotomizing logic test scores (low: 0-4; high: 5-10) there was no significant correlation between total score and confidence for low scorers, $r(38) = .04$, $p = .831$, but there was a significant correlation for high scorers, $r(55) = .32$, $p < .05$. Thus, it seems that although participants’ logic test scores correlates with confidence, it is largely driven by the high scorers as low scorers are still quite confident (minimum = 50%, $M = 74.03$). Confidence did not significantly moderate the target condition by logic test score interaction, $\beta = 1.27$, $B = .08$, $t(85) = 1.63$, $p = .108$. 
Discussion

In accordance with the hypotheses, high scoring participants rated the high scoring target (in the correct condition) as more rational than the low scoring target (in the incorrect condition) and low scoring participants rated the high scoring target as less rational than the low scoring target. These results imply that perceivers use their own reasoning to judge a target’s rationality, regardless of objective accuracy. From these results one can infer that when judging a target’s rationality, participants assumed they reasoned accurately and applied it (improperly in the case of the low scorers) to how the target should reason.

In alignment with the Dunning-Kruger effect (Kruger & Dunning, 1999), low scorers were very confident after completing the logic test (and before viewing the targets’ results); the lowest confidence score was 50%, even though there were participants who scored 0 out of 10 on the logic test. In other words, incompetent participants did not recognize their incompetence. These data extend the findings of Kruger and Dunning (1999) by demonstrating a consequence of not recognizing one’s own incompetence, such that one uses one’s own incompetence as the standard by which to judge others. As a result, an irrational person will judge another irrational person as rational. Furthermore, because low scoring participants did not have the ability to assess the core logic of the targets’ responses and high scorers did, it is possible that two different mechanisms produced the similar effects in high scorers and low scorers. It is likely that high scorers evaluated the targets’ responses via central route processing (Elaboration Likelihood Model, Petty & Cacioppo, 1986) and assessed the core logic of the targets’ responses. However, low scorers did not have the ability to assess logic because they did not understand logic (Kruger & Dunning, 1999), so they likely evaluated the targets’ responses via peripheral route processing. On the one hand, low scorers may have used their own answers as a basis to judge
the targets’ responses because that may have been the only tool at their disposal. On the other hand, low scorers may have evaluated low scoring targets positively due to an ingroup bias; a pervasive tendency to think that like others are better than different others (Brewer, 1979; Diehl, 1990; Tajfel, 1970; Tajfel, Billig, Bundy, & Flament, 1971).

Although consistent with the dual mechanism hypothesis, this first study does not provide direct evidence. In fact, these data cannot rule out an explanation of motivated reasoning; an account with a long history of rivalry with cognitive explanations (Kunda, 1990). In other words, it is unknown whether high scorers egocentrically projected their reasoning onto targets because they used central/systematic route processing and realized that the low scoring targets were irrational or because they were motivated to derogate targets that opposed them. Furthermore, it is unknown whether low scorers egocentrically projected their reasoning onto targets because they were ignorant (that was all they knew) and unable to use central/systematic route processing or because they were also motivated to derogate targets that opposed them.

In order to rule out a motivational account, a subsequent study could have had participants rate a target on a variety of traits (e.g., attractiveness, laziness, friendliness) to see if participants rate the target who responded differently than them as unattractive, lazy and unfriendly as well as irrational. However, even if high scorers were examining the core logic of the targets’ responses through central/systematic route processing, their negative assessment of the targets’ rationality may have carried over onto other ratings (e.g., laziness). Thus, a better way to assess this dual mechanism hypothesis is to have participants rate a group of targets. For high scorers, assessing a group of participants who responded differently than them may reduce their confidence, but once they centrally process the target group’s responses, high scorers should still rate a low scoring target group as less rational than a high scoring target group.
However, low scorers who lack in logical ability cannot adjust from that drop in confidence. Further, in the current study, low scorers were extrapolating from an $n$ of one and were only met with an opposition of one. In that case, low scorers assumed that that the chance they were right and the target was wrong seemed more likely than the opposite. When comparing their response against a larger $n$ (e.g., $n = 10$) low scorers may go with the majority because they do not have the ability to refute the majority’s responses. For these reasons, participants rated a group of ten targets in study two.

**Study Two**

Early social psychological research on conformity and group processes demonstrated the impact of group pressure on people’s decision making (Asch, 1951; Bond & Smith, 1996; Sherif, 1936). Although social influence is a strong effect, it is hypothesized to have more of an effect on low scorers than high scorers, who have the metacognitive skill to refute incorrect responses. In other words, if high scorers have the ability to evaluate the core logic of a target’s response, then they should be less swayed by a group of ten targets who responded differently than them, than low scoring participants. Therefore, it was hypothesized that high scorers would rate a low scoring target group as less rational than a high scoring target group. It was also hypothesized that low scoring participants will rate the high scoring target group as less rational than the low scoring target group, but the difference would be less than the difference between high scoring participants’ rating of the low and high scoring target group.
Method

Participants

Participants ($n = 84$) were recruited from the University of Guelph participant pool in the fall semester of 2011. A power analysis indicated that a sample size of 77 was required to detect a medium effect size with 80% power; therefore, sufficient power was achieved. Participants’ ages ranged from 18 to 23 ($M = 18.76$, $SD = 1.18$). Seventy percent of participants were female and thirty percent were male. Sixty-four participants were White (76.2%), seven were Southeast Asian, four were South Asian, three were Latin American, two were Black, two were West Asian and two specified “other.” Participants were compensated with one credit for their introductory psychology class equaling one percent of their grade.

Procedure

The procedure only differed from study one in terms of how the participants viewed the rigged results. In study one, participants ostensibly viewed the results of the person seated across from them. In this study, participants viewed the ostensible results of the entire group. The RA collected the answer sheets from each participant and told them that she was tallying everybody’s answers. She asked a participant to write on the board the tally for each question. For example, for the first question, the participant would write how many people rated the logical arguments as valid and how many people rated it as invalid. However, in reality, the tallies on the board were fixed; there was a mostly correct condition and a mostly incorrect condition$^4$ (see Appendix B). The reason the tallies were mostly correct or incorrect as opposed to fully correct or incorrect was to increase the believability of the tally. Previous research has suggested that people still make correspondent inferences from a group’s decision to all group

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3 With 84 participants, there was sufficient power to conduct the moderated multiple regression with two predictors.
4 The ostensible group average score was 81% for the mostly correct condition and 19% for the mostly incorrect condition; however, these averages were not directly provided to participants.
members, even if there is an absence of unanimity (Allison & Messick, 1985; Mackie & Allison, 1987).

The only difference in measures from study one was that after participants completed the logic test ($M = 5.19$, $Median = 5.00$, $Mode = 4.00$, $SD = 1.74$, $Minimum = 2.00$, $Maximum = 9.00$), the participants rated the rationality of the answers of the target group and the rationality of the target group as a whole as opposed to just the person seated across from them ($\alpha = .86$, $n = 84$).

**Results**

A moderated multiple regression analysis was conducted. The composite measure of participants’ rating of the target group’s rationality was regressed onto the dummy coded target condition (low scoring target group/incorrect = 0 vs. high scoring target group/correct = 1), participants’ centered logic test score (low scoring participant = -1SD; high scoring participant = +1SD) and the target condition by logic test score product term. The regression model was significant, $R^2 = .26$, $F(3,80) = 4.06$, $p < .001$, $\eta^2 = .35$.

There was a significant interaction between condition and participants’ logic test score and the target group’s rationality, $\beta = .61$, $B = .36$, $t(80) = 4.42$, $p < .001$, 95% CI [.20, .53], $sr^2 = .18$ (see Figure 2). Similar to study one, high scoring participants rated the high scoring target group (correct condition) as significantly more rational than the low scoring target group (incorrect condition), $\beta = .69$, $B = 1.02$, $t(80) = 5.04$, $p < .001$, 95% CI [.62, 1.42], $sr^2 = .23$.

However, there was no significant difference in low scoring participants’ ratings of rationality of the low scoring target group (incorrect condition) as compared to the high scoring target group (correct condition; see Figure 2), $\beta = -.17$, $B = -.25$, $t(80) = 1.22$, $p = .225$, 95% CI [-.65, .16], $sr^2$.
Thus, unlike study one, low scoring participants did not rate a target that responded differently than them as significantly less rational than a target who responded similarly.

Looked at another way, in the incorrect condition, low scoring participants rated the target group as significantly more rational than high scoring participants did, $\beta = -.57, B = -.24, t(80) = 4.12, p < .001, sr^2 = .16$. In the correct condition, high scoring participants rated the target group as significantly more rational than low scoring participants did, $\beta = .28, B = .12, t(80) = 2.09, p < .05, 95\% \text{ CI } [0.1, 2.3], sr^2 = .04$.

![Figure 2. Participants’ assessments of the target groups’ rationality.](image)

Confidence

Confidence was not significantly correlated with participants’ logic test score, $r(83) = .16, p = .158$ and did not significantly moderate the interaction, $\beta = .34, B = .00, t(75) = .34, p = .663$. Confidence ranged from 5\% to 100\% ($M = 74.59, SD = 16.82$); however, only five participants had scores lower than 50\% and all, but one, of these five participants were “high
scorers” (5-10). The participant who had the lowest confidence rating of 5% had a logic test score of 5/10.

**Discussion**

In accordance with the hypotheses, there was no significant difference in low scoring participants’ assessments of the low scoring target group and the high scoring target group. On the other hand, high scorers were not influenced by the target group’s responses and deemed the low scoring target group, once again, as less rational than the high scoring target group. In alignment with the dual mechanism hypothesis, this suggests that something was occurring for high scorers that was not occurring for low scorers. It seems likely that high scorers were able to discount the low scoring target group’s responses and see them as irrational. This is because high scorers were competent in the domain of logic and they have the strong reasoning ability necessary to know that the low scoring target group in the incorrect condition was wrong. Low scorers, however, did not have this ability and were unable to competently assess their own or the target group’s responses. Because the feedback was ambiguous, low scoring participants had to decide whether that feedback placed them in the upper or lower percentile. Even though low scoring participants were highly confident after completing the logic test, it seems that a group of ten targets was enough to make low scoring participants second-guess themselves and realize that it was likely that they were in the bottom quartile. Low scoring participants likely viewed an \( n \) of ten as a better bet than an \( n \) of one.

In alignment with Kruger and Dunning (1999), participants were not provided with direct feedback. Kruger and Dunning (1999) suggested that their not providing feedback was reflective of everyday life. First, they argued that people rarely receive direct feedback from others because others know that it is considered rude, in most cases, to criticize another. Second, they argued
that people may not perceive direct negative feedback as an indication of their incompetence. For example, if one fails a test, one may attribute his or her failure to reasons other than incompetence, such as effort or test fairness, that were perceived necessary for success on the test (i.e., multiple necessary causes, Kelley, 1973). Third, they argued that it is difficult to recognize failure in some tasks and settings (unlike games such as chess). I argue that, particularly in the context of direct tests of logic, it can be difficult to catch oneself in a logical fallacy. Even though there are objective standards for reasoning, they are unavailable to the incompetent. Furthermore, a person with poor reasoning skills could still convince him/herself that he/she reasons well depending upon the example that they chose to illustrate their reasoning (whether in their own mind or when defending their reasoning to another person). For example, when denying the antecedent a person might think, “If it’s raining, the streets are wet. It is not raining. Therefore, the streets are not wet.” In making this mistake, the person likely assumed that the first statement was actually, “If and only if it’s raining, the streets are wet.” In reality, streets are most often wet because it rains; however, streets can be wet for other reasons such as street cleaning or sprinklers, but these reasons are less likely to come to mind. Further, even if they were considered, the person might have excluded them because street cleaners and sprinklers only wet the streets in patches and this might not have matched the visualization in their mind of streets being wet. In other words, it is easy to fall victim to logical fallacies if the person focuses more on the example they used than on the propositions contained in their reasoning. Furthermore, a person might have not realized it was a deductive argument and, instead, thought that it was a good inductive argument (i.e., it’s not raining, therefore, it is highly likely that the streets are not wet), thus, satisfying their evaluation of the logic argument.
However, unlike Kruger and Dunning’s (1999) study, participants in study two received indirect feedback, such that participants were in the minority, either the upper or lower quartile. This type of feedback does seem to impact low scoring participants. It is possible that people may have an inkling of their incompetence, but that they need some form of feedback, even subtle, to come to a full realization. The results of study two may provide a more nuanced perspective to the Dunning-Kruger effect (Kruger & Dunning, 1999), because it seems unlikely that incompetent people are completely oblivious to their incompetence; people do know that they are bad at some things. Although rare, people do receive this type of indirect feedback in everyday life. For example, when a teacher sternly asks a student to stay after class to discuss their test, the student may realize that it is not because he did okay, but either because he did so well the teacher thinks he cheated or because he failed. After a period of reflection, the student will probably realize that it is more likely that he performed poorly. Unfortunately, the confidence data was only measured after the logic test and before participants viewed the targets’ responses. Therefore, it is unknown whether participants’ confidence ratings changed upon viewing the targets’ responses.

If high and low scoring participants use different processing systems then they should also differ in the extent to which their ratings of rationality of the target group are impacted when the target group is their ingroup or outgroup. High scorers who adopt central or systematic route processing should be able to discount the influence of the ingroup or outgroup, whereas, low scorers who are unable to use central route processing, may be more swayed by peripheral cues or heuristics such as ingroup or outgroup status. Therefore, in study three, I manipulated ingroup versus outgroup status to examine its impact on participants’ judgments of rationality.
Study Three

Tajfel’s social identity theory (Tajfel, 1987; Tajfel & Turner, 1979) and Turner’s (1987) self-categorization theory suggest that people are more likely to be influenced by their ingroup versus an outgroup. People expect disagreement from an outgroup and agreement from their ingroup (Turner, 1987) and when disagreement occurs from their ingroup, people are more motivated to change their opinion than when disagreement occurs from an outgroup (Turner, 1987). Further, people perceive more source credibility, a peripheral/heuristic cue (Kiesler & Mathog, 1968; Wood & Kallgren, 1988), in their ingroup than an outgroup even when their ingroup is the minority (Clark & Maass, 1988). Research on the minimal group experiment has consistently demonstrated that people who are simply categorized into one of two groups are likely to “discriminate in favor of their group, show evaluative in-group bias (ethnocentrism), and indicate that they feel a sense of belonging to their group, and similarity to and liking for their anonymous fellow in-group members” (Hogg & Abrams, 2001, p. 339). Thus, it was considered likely that rigged ingroup results provided to participants would be perceived as more credible and would decrease the attribution of irrationality for one’s ingroup. For these reasons, it was hypothesized that the outgroup condition (by itself) was expected to match the results of study one and the ingroup condition (by itself) was expected to match the results of study two. Specifically, in the outgroup condition, low scoring participants would rate their high scoring target group as less rational than their low scoring target group; whereas, high scoring participants would rate their high scoring target group as more rational than their low scoring target group (like study one). It was also hypothesized that in the ingroup condition, high scoring participants would rate the high scoring target group as more rational than the low scoring target group. On the other hand, low scoring participants would rate the high scoring target group as
slightly less rational than the low scoring target group, but the difference would be less than the
difference between high scoring participants’ rating of the low and high scoring target ingroup
(like study two).

Method

Participants

Participants \((n = 264)\) were recruited from the University of Guelph participant pool in the winter and fall semester of 2013. A power analysis indicated that a sample size of 103 was required to detect a medium effect size with 80\% power; therefore, sufficient power was achieved. Participants’ ages ranged from 17 to 37 \((M = 18.66, SD = 1.77)\). Seventy-five percent of participants were female and 25\% were male. Two hundred and eleven were White \((79.9\%)\), 15 were Southeast Asian, 12 were South Asian, seven were Black, two were Latin American, one was Arab, one was West Asian, nine specified “other” and six did not specify. Five participants were excluded from the original sample \((n = 269)\) because they did not complete the logic test and one participant did not sign the post-debrief consent form. Participants were compensated with one credit for their introductory psychology class equaling one percent of their grade.

Procedure

This study was similar to study two except that it was on a larger scale and there was an added ingroup versus outgroup manipulation. The study was held in a large room with four banquet tables and one head table. To create an ingroup and an outgroup the research assistant assigned ten\(^5\) participants in the first half of the alphabet to one group and ten participants in the

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\(^5\) For most sessions, 20 people participated in each session \((10 \text{ participants were assigned to separate groups})\). There were a few sessions with fewer than 20 participants \((\text{confederates were not used})\). When this occurred one group had 10 participants and the other group had 6-9 participants and the coin flip was rigged so that the group with 10 participants had their “answers” tallied and presented.
other half to the other group (Brewer, 1979; Diehl, 1990; Tajfel, 1970; Tajfel, Billig, Bundy, Flament, 1971). Each group sat at a separate partitioned banquet table. Once participants completed a consent form, the RA reminded participants that they had been assigned to Group A versus B due to where their last name fell in the alphabet. In order to boost the minimal group design, the RA quickly explained the Name-Letter effect (Nuttin, 1985). Participants were informed that people are more likely to like the letters in their names more than other letters and, further, that people tend to like things (and possibly people) more with similar letters in their names (Pelham, Mirenberg, & Jones, 2002). Then each group was asked to move to the banquet table behind them and start the team building exercise. The RA told participants that they would have five minutes to build a castle out of Styrofoam cups by using elastic bands or paper clips, but without touching the cups. They were asked to name their castle and write three things that the members of their group have in common. Next, as a manipulation check of the minimal group manipulation, participants rated their own castle and the other group’s castle in terms of aesthetic appeal, structural integrity, creativity, awesomeness, and overall quality on a five-point scale from 1 (poor) to 5 (excellent). A composite score was created for their rating of their ingroup’s castle ($\alpha = .79$, $n = 269$) and their rating of their outgroup’s castle ($\alpha = .85$, $n = 269$). Next, like in studies one and two, participants were then given a brief lesson on how to read logical arguments and were given one minute to complete each of the ten logic questions ($M = 5.30$, Median = 5.00, Mode = 5.00, $SD = 1.94$, Minimum = 1, Maximum = 10). However, when presenting the group results, the RA only presented the supposed results of one group. The RA said that for “simplicity’s sake” only one group’s answers would be posted. The RA then flipped a coin to decide which group’s answers would supposedly be posted. Thus, participants in one group were looking at their ingroup’s (rigged) responses and the other group would be looking at
their outgroup’s (rigged) responses. Like study two, participants then completed the questionnaire and rated the rationality of the target group whose responses were ostensibly posted (α = .89, n = 269). After participants completed the questionnaire they were asked to consider signing a debriefing form and picked up the answer sheet on their way out the door.

**Results**

**Manipulation Check**

Participants rated their ingroup’s castle (£M = 3.74, SD = .78) as significantly better than their outgroup’s castle (£M = 3.59, SD = .83), $t(263) = 2.74, p < .01$, $d = .18$.

**Main Analysis**

A moderated multiple regression was conducted. The composite measure of perceivers’ rating of targets’ rationality was regressed onto the dummy coded target condition (low scoring target/incorrect condition = 0 vs. high scoring target/correct condition = 1), the dummy coded group condition (ingroup = 0 vs. outgroup = 1), participants’ centered logic test score (low scoring participant = -1SD; high scoring participant = +1SD), the target condition by logic test score product term, the target condition by group condition product term, the group condition by logic test score product term and the three-way target condition by group condition by logic test score product term. The regression model was significant, $R^2 = .22$, $F(7, 256) = 10.26, p < .001$, $f^2 = .28$. There was a significant 3-way interaction among target condition, group condition and logic test score on the rationality of the group’s answers, $\beta = .20$, $B = .18$, $t(256) = 1.99, p < .05$, $sr^2 = .01$, 95% CI $[.00, .37]$ (see Figure 3).

**Outgroup Condition.** In the outgroup condition, there was a significant simple 2-way interaction between logic test score and target condition, $\beta = .72$, $B = .42$, $t(256) = 6.10, p < .001$, 95% CI $[.29, .56]$, $sr^2 = .11$. High scoring participants rated the answers of the low scoring target
group (incorrect condition) as significantly less rational than answers of the high scoring target group (correct condition), $\beta = .63$, $B = 1.01$, $t(256) = 5.45$, $p < .001$, 95% CI [.64, 1.37], $sr^2 = .09$. On the other hand, low scoring participants rated the answers of the low scoring target group (incorrect condition) as significantly more rational than the answers of the high scoring target group, $\beta = -.39$, $B = -.63$, $t(256) = 3.38$, $p < .001$, 95% CI [-1.00, -.26], $sr^2 = .03$.

Looked at another way, in the incorrect condition, low scoring participants rated the low scoring target as significantly more rational than did high scoring participants, $\beta = -.57$, $B = -.23$, $t(256) = 5.16$, $p < .001$, 95% CI [-.32, -.15], $sr^2 = .08$. Yet, in the correct condition, high scoring participants rated the high scoring target as significantly more rational than did the low scoring participants, $\beta = .46$, $B = .19$, $t(256) = 3.60$, $p < .001$, 95% CI [.09, .29], $sr^2 = .04$.

**Ingroup Condition.** In the ingroup condition, there was a significant simple 2-way interaction between logic test score and target condition, $\beta = .40$, $B = .24$, $t(256) = 3.88$, $p < .001$, 95% CI [.12, .36], $sr^2 = .05$. High scoring participants rated the answers of the high scoring group (correct condition) as significantly more rational than the low scoring group, $\beta = .53$, $B = .84$, $t(256) = 4.92$, $p < .001$, 95% CI [.51, 1.18], $sr^2 = .07$. However, low scoring participants did not rate the answers of the high scoring group (correct condition) significantly differently than the answers of the low scoring group (incorrect condition), $\beta = -.05$, $B = -.08$, $t(256) = -.46$, $p = .646$, 95% CI [-.42, .26], $sr^2 = .00$.

Looked at another way, in the incorrect condition, low scoring participants rated the low scoring target as significantly more rational than did high scoring participants, $\beta = -.32$, $B = -.13$, $t(256) = 2.92$, $p < .01$, 95% CI [-.22, -.04], $sr^2 = .03$. Yet, in the correct condition, high scoring participants rated the high scoring target as significantly more rational than did the low scoring participants, $\beta = .26$, $B = .11$, $t(256) = 2.56$, $p < .05$, 95% CI [.02, .19], $sr^2 = .02$. 
Ingroup versus Outgroup. Finally, in the correct condition, although the low scoring participants rated the high scoring ingroup as significantly more rational than the high scoring outgroup, $\beta = -.28, B = -.45, t(256) = 2.32, p < .05, 95\% \text{ CI } [-.82, .07], s r^2 = .02$, there was no significant difference for high scoring participants between rationality ratings of the low scoring target ingroup versus outgroup, $\beta = -.18, B = -.29, t(256) = 1.67, p = .096, 95\% \text{ CI } [-.64, .05], s r^2 = .01$. 
Figure 3. Participants’ assessments of the rationality of the target ingroup/outgroup.
Confidence

Confidence was not significantly correlated with participants’ logic test score, $r(257) = .09$, $p = .134$ and did not significantly moderate the 3-way interaction, $\beta = .28$, $B = .00$, $t(245) = .81$, $p = .421$. Confidence ranged from 0% to 100% ($M = 73.19$, $SD = 19.55$). Twenty-one participants had scores lower than 50%, but only eight of these participants were “low scorers” (0-4). The lowest five confidence ratings were from “high scorers” (5-10). The participants with a confidence rating of 0% had logic test scores of 5/10 and 7/10.

Discussion

As predicted, as seen in Figure 3, the outgroup figure resembled the dyadic comparison of study one and the ingroup figure resembled the individual versus group comparison of study two. Unlike high scoring participants, low scoring participants were impacted by their ingroup’s influence. Low scoring participants rated the high scoring target ingroup’s responses as more rational than the high scoring target outgroup’s responses. This provides more support for the dual mechanism hypothesis, such that high scoring participants are likely processing the target group’s responses through central/systematic route processing and low scoring participants are not.

However, the question still remains whether low scoring perceivers attributed less irrationality to their high scoring ingroup than outgroup because they view information from their ingroup as more credible (a peripheral/heuristic cue) or because they do not want to derogate their ingroup (a motivated reasoning account). Future research could attempt to disentangle these two mechanisms by measuring confidence in one’s responses before and after viewing the targets’ responses or by retesting participants individually with a monetary incentive for correct answers. However, regardless of whether low scoring participants assessed the high
scoring participants due to a motivated ingroup bias or a realization of their lack in reasoning ability or whether it is multiply determined, the dual mechanism hypothesis is still supported such that high scoring participants are processing the targets’ responses centrally and low scoring participants are not.

Finally, it is also possible that the way the tally was presented could explain differences in the judgment of rationality. Across studies one, two and three, the comparisons between perceivers and targets, in terms of logic test scores, were not exact. This is because in the moderated regression analyses, low or high scorers who ranged in logic test score (with a reference point at plus or minus one standard deviation from the mean) were compared to targets who either scored a zero or ten (study 1) or to target groups with average scores of 81% or 19% (study 2 and 3). Although technically an imprecisely matched comparison, in study one, low scorers, which included participants who received a higher score than zero, still rated the low scoring targets as more rational than high scorers. However, in study two, that low scorers rated the low scoring target group as just as rational as the high scoring target group may be reflective of the closer comparison between the target groups’ scores of 81% to 19% than the targets’ scores of zero or ten in study one. Although in study three, the outgroup comparison returns these results to mimic study one. It is possible that a motivation to derogate the outgroup is needed to drive assessments of irrationality to similar levels as when the targets performed poorer (i.e., 0/10). An additional dyadic comparison study similar to study one could be conducted where the target received a score of zero vs. ten or 8/10 vs. 2/10 to discern if these target scores impact perceivers’ judgments of rationality.

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6 These scores were not directly available to participants.
Summary of Studies One, Two and Three

Perceivers use their own reasoning, even if faulty, as a standard to judge others’ reasoning and rationality, particularly for perceivers with strong reasoning skills. For perceivers who are poor at logical reasoning, seeing that a group of people, particularly one’s ingroup, reasoned differently than them reduces this tendency.

As discussed in the introduction, the assumption of valid and shared reasoning tested in studies one, two and three needs to be qualified. For the high scorer, in the context of propositional reasoning, the assumption of valid reasoning is not an error. In propositional logic there are valid and invalid forms of argument. Thus, high scorers’ egocentric projection of their reasoning onto targets, by assessing the targets’ rationality in terms of how they, high scorers, would reason, is also not an error. These three studies examined epistemic rationality and thus, beliefs and inferences could be objectively assessed in terms of their correctness or how well they map onto reality (Stanovich et al., 2011). However, in many cases, there are no objective truths to targets’ beliefs because reality can be socially constructed (Danziger, 1997) or subjectively construed (Ross, 1987). A target may hold subjective beliefs (e.g., beauty, taste) and subjective perceptions of situations. It is in these situations that a perceiver’s egocentrism is problematic and potentially an error. The issue of subjective situation construal (Ross, 1987) was examined in studies five through seven.

First, however, the issue of instrumental rationality must be addressed. Studies one through three excluded an examination of instrumental rationality, which is arguably, how many decisions are assessed, not only in terms of the target’s beliefs and inferences, but also in terms of how well the target’s behaviour align with the target’s goals. In fact, a narrow focus on syllogistic reasoning or propositional logic as a conceptualization of rationality has been
criticized (Stanovich et al., 2011). Stanovich et al. (2011) suggest that a more complete and robust picture of rationality includes an examination of goals. Thus, study four broadly examined the extent to which goal perception impacts the judgment of rationality.

**Study Four**

In this study, the assumption that perceivers think that targets share their goals, and its impact on the judgment of rationality, were investigated. Pairs of participants completed a building blocks task together, in which they were provided different instructions than their partner. The pairs of participants were either informed that they were provided different instructions or they were not informed and then they rated their partner’s rationality. It was hypothesized that participants who were not informed that their partner was provided different instructions would rate their partner as more irrational than those who were informed.

**Methods**

**Participants**

Participants \((n = 100)\) were recruited from the University of Guelph participant pool in the fall semester of 2014. A power analysis indicated that a sample size of 102 was required to detect a medium effect size with 80% power for a one-tailed t-test. Participants’ ages ranged from 17 to 25 \((M = 18.44, SD = 1.04)\). Sixty-eight participants were female, thirty were male and two did not specify. Seventy-nine participants were White (79%), four were Arab, three were Southeast Asian, three were South Asian, two were Black and eight specified “other” or indicated mixed race. Five participants were excluded from the original sample \((n = 105)\) because one participant guessed the hypothesis before the study started, two accidentally were told to create the same structure and two other participants were excluded from the analysis for
inconsistent responding.\textsuperscript{7} Participants were compensated with a half credit for their introductory psychology class equaling 0.5\% of their grade.

**Procedures**

Participants came to the laboratory and were provided a consent form. Participants were informed that they would complete a building blocks activity with another participant, but that they would not be allowed to talk to their partner during the activity. Then they were given instructions to read. One participant was instructed to build a skyscraper and the other participant was instructed to build a bridge. The study facilitator introduced participants and had them sit across a table with building blocks on it. Participants were given ten minutes to complete the building blocks activity in silence. After the ten minutes the study facilitator either informed them that they were provided different instructions, or the study facilitator said nothing, depending upon the condition to which they were randomly assigned. Participants then completed the questionnaire. Participants rated the rationality and logicality of their partner and how rationally and logically their partner behaved in the building blocks activity on a six-point scale from 1 (very irrational) to 6 (very rational) or from 1 (very illogical) to 6 (very logical). A two-item composite score was created for an assessment of rationality ($r = .85, p < .001$) and another two-item composite score was created for an assessment of logicality ($r = .79, p < .001$). Participants then rated their partner on 14 other dispositional traits (e.g., intelligence, fashionable, disobedient) on a nine-point scale representing the polar opposites of the adjective (e.g., friendly to unfriendly). Participants were also asked to write a written response to the question, “When you were working on the activity without being able to speak to your partner,

\textsuperscript{7} Specifically, they rated their partner as very irrational but this did not correspond to any other rating they provided (e.g., ratings of intelligence, competence, knowledge, and qualitative comments). It is assumed that they perceived the scale in the reverse direction as a rating of very irrational ranged from two to four percent of the responses. These two participants were also the most extreme outliers on both the logicality and rationality scales.
did any tension or conflict arise, even in a minimal sense?” Finally, participants completed the Interpersonal Reactivity Index (IRI, Davis, 1983), Uncertainty Response Scale (Emotional subscale; Greco & Roger, 2001) and Need for Cognition (Cacioppo, Petty, Feinstein, & Jarvis, 1996) scales. After participants completed the questionnaire they were fully debriefed and asked to consider providing post-debrief consent.

**Results**

Participants in the informed condition rated their partner as significantly more logical ($M = 5.29$, $SD = .92$) than participants in the uninformed condition ($M = 4.75$, $SD = 1.16$), $t(98) = 2.57$, $p < .05$, 95% CI [.12, .96], $d = .52$ (see Figure 4). There were no significant differences between the informed ($M = 5.05$, $SD = 1.10$) and uninformed ($M = 4.96$, $SD = 1.10$) conditions in participants’ ratings of their partner’s rationality, $t(98) = .41$, $p = .683$, 95% CI [-.35, .53], $d = .08$.

![Figure 4. Ratings of partners’ logicality in informed and uninformed conditions.](image)

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8 The moderating effects of these variables are beyond the scope of this dissertation and are not reported in the results section.
As expected, participants in the informed condition also rated their partner as significantly more intelligent ($M = 7.71$, $SD = 1.06$) than participants in the uninformed condition ($M = 7.13$, $SD = 1.46$), $t(98) = 2.26$, $p < .05$, 95% CI [.07, 1.08], $d = .45$. All other dispositions were subjected to a Bonferroni correction (.05/13 = .0038) and did not reach statistical significance (only responsibility met traditional markers of significance).

**Qualitative Comments**

A selection of written responses is provided below to exemplify how participants interpreted their partners’ behaviour in the uninformed condition.

Many participants were quite confused by their partner’s behaviour. In the following example, participant 135 was very confused by his or her partner’s behaviour, but participant 136 (the partner) had no sense of any conflict (see their structure in Figure 5).

Participant 135 (instructed to build a bridge): A little conflict because I had an idea in my head, and would try to develop a pattern but she would put a block in the wrong spot. When I tried to follow her patterns, they made no sense. I would try to even out things and she would build up one side further.

Participant 136 (instructed to build a skyscraper): It was weird working on an activity together with someone without any communication. Usually I would know the person I’m working on something with or get to know the person while we’re collaborating. There was not really any tension or conflict but I felt as if I may have been coming off as unfriendly despite both of us knowing that we weren’t allowed to talk and understanding. Interestingly, some participants were quite charitable. In the following excerpts, Participant 164 assumed that the reason participant 163 (the partner) was trying to create a bridge was because he was “reconstructing the base.” Yet, Participant 163 thought that the reason
participant 164 was building a skyscraper was because he was trying to make a “better bridge.”

See their structure in Figure 5.

Participant 164 (instructed to build a skyscraper): No there was not a lot of tension or conflict, he let me do my thing and I let him do his. First, I started to build the base and he followed until we were half way done and he started to take charge to where I followed. After we started to work as a team by reconstructing the base.

Participant 163 (instructed to build a bridge): After the Lego pieces ran out we were unsure of what to do for a while. Then we started to re-use some of the pieces to make a better bridge.

Further, in the following excerpt, although participant 13 was confused about participant 14’s behaviour, participant 14 charitably tried to understand participant 13’s bridge-making behaviour as making the skyscraper stable. See their structure in Figure 5.

Participant 13 (instructed to build a bridge): I was trying to build the bridge and my partner kept adding blocks and I couldn’t tell her not to put them where she did.

Participant 14 (instructed to build a skyscraper): we were worried our skyscraper was going to fall over. So there was tension trying to build it to make it stable.
However, some participants who were not informed that their partner was instructed to construct something different indicated in the comment section that they had figured it out ($n = 19$). For example, participant 104 who was not informed that his or her partner was building something different wrote, “There were no issues. Both my partner and I shared the blocks. I may have used more because I was building a skyscraper and I think hers was a bridge.”

**Discussion**

This study demonstrates that the assumption that perceivers think that targets share their goals impacts the judgment of logicality, such that when the targets acted in opposition to the perceivers’ goal, the targets were deemed more illogical than when the perceivers knew that the targets were working toward a different goal.

The salience of differing goals was manipulated in this experiment to demonstrate the causal relation between goal perception and the judgment of rationality/logicality. However, in everyday life, the judgment of irrationality/logicality is likely decreased when people get only a
sense that a target is working toward a different goal (as opposed to being informed) and the perceiver decides (consciously or not) to be charitable and base their judgment of rationality/logicality on the possibility that the target is working toward a different goal. The qualitative comments from this study are in line with this hypothesis and suggest that some people are more motivated to think about the possibility that a target is working toward opposing goals and may base their judgment of logicality on the target’s goals and not their own. Future research could examine individual differences in seeking to understand others’ goals in a non-experimental research design.

This study was conceptualized as a pilot study to investigate whether or not informing participants that targets hold differing goals will impact their judgment of targets’ rationality. Results supported this hypothesis; however, future research should compare this effect to a control condition where participants are instructed to build the same type of structure.

This was the first study to measure other dispositional ratings. As expected, participants’ ratings of intelligence followed the same pattern as their ratings for logicality, but not their ratings of other dispositions (e.g., disobedient, fashionable) of their partner. This suggests that the manipulation impacted assessments of logicality and not an assessment of their general character.

Finally, the manipulation did not significantly impact assessments of rationality, only logicality. It is possible that participants thought that an assessment of logicality was more relevant to the task due to its similar nature to an intelligence test or skill test. It is possible that participants perceived rationality as more to do with the inhibition of emotions and clear thinking. Future research could examine lay beliefs of rationality versus logicality to clarify this
result. Additionally, future research could define these concepts prior to participants’ target evaluations.

**Study Five**

Studies five through seven investigated the assumption of naïve realism, such that in ambiguous situations, perceivers assume that the situation is objective, their interpretation is correct and shared by others (Ross and Ward, 1996). As a first step, study five examined the conditions that increase or decrease naïve realism.

In uncertain situations, people are likely to “seek out additional information to validate a tentative impression of what is occurring or to develop an explanation of what is occurring” (Fiske & Taylor, 1991, p. 33). Specifically, Kelley (1973) suggested that in uncertain situations perceivers seek information about distinctiveness, consistency, and consensus. However, Kelley’s attribution theory of covariation (1973) has been criticized as being a normative theory (Hilton & Slugoski, 1986). In order to correctly test a hypothesis, Kelley (1973) suggests that people *should* seek information about distinctiveness, consistency, and consensus; however, more often than not, people do not (Hilton & Slugoski, 1986). In fact, more recent research suggests that in uncertain situations, people develop lay hypotheses and test them in a biased way. In particular, research on the confirmation bias suggests that people do have lay social psychological hypotheses and people tend to more often seek, interpret and remember events that support their hypotheses (Nickerson, 1998). It is likely that the more opportunities perceivers have to “test” their hypothesis of their interpretation of an ambiguous situation, the more certain a perceiver will be in their interpretation. Further, perceivers may assume that targets share their interpretation. In other words, I hypothesize that increased exposure to an ambiguous stimulus will increase perceivers’ naïve realism.
Although a confirmation bias can increase perceivers’ confidence in their construal hypotheses, Kelley (1967) suggests that attributions for events can become uncertain when perceivers experience little support from others for their beliefs or opinions and when information is ambiguous. Furthermore, research has shown that when people with inflated confidence in a hypothesis are asked to imagine evidence supporting a counter hypothesis, their confidence is reduced (Arkes et al., 1988; Hoch, 1985; Koriat, Lichtenstein, & Fischhoff, 1980). More to the point, Griffin, Dunning and Ross (1990) tested the impact of imagining alternative construals on perceivers’ construal confidence. Griffin, Dunning and Ross (1990) asked participants to read and picture themselves in four different ambiguous vignettes. The vignettes were ambiguous in that little contextual information was provided. For example, “You are invited to a friend’s birthday party at his or her family home near Stanford” (Griffin, Dunning, & Ross, 1990, p. 1131). Then participants were asked to indicate how much money or time they would spend in each situation (e.g., money spent on gift) and they were asked to specify a 50% confidence interval around each estimate. Then, in the uncertain construal condition, participants were asked to write how the situation looked to them in terms of the people, the setting, the events, and background details. Then they were asked to provide estimates and confidence intervals again. In the certain condition, after writing out their description, participants were asked to provide estimates and confidence intervals again, but were asked to assume that the situation occurred exactly as they described. In the multiple construal condition, after participants had provided their description, they were also asked to write about alternative ways the situations could have occurred. Then they were asked to provide their estimates and confidence intervals as if the details of the actual situation were unknown. In the control condition, participants did not write out their description, instead they reread the vignette and
then provided estimates and confidence intervals a second time. There were no significant differences between the control, certain and uncertain construal conditions in terms of changes in confidence intervals. Only participants in the multiple construal condition increased the width of their confidence interval after considering alternative interpretations of the situations. These findings were replicated in a follow-up study examining trait inferences. Griffin et al. (1990) found that only participants in the multiple construal condition increased the width of their confidence intervals surrounding trait inferences (opinionated, outgoing, dominant) of a target (a person who spoke for 60% of the time allocated for a group discussion). Therefore, if perceivers’ confidence in their construal of an ambiguous stimulus can be decreased through learning of an alternative interpretation, it is likely that their sense of naïve realism can be decreased as well. Thus, I hypothesized that perceivers’ naïve realism about a particular ambiguous stimulus would decrease if they learned of an alternative interpretation. However, I also hypothesized that an alternative interpretation would have an attenuated impact on more solidified interpretations. If a person is able to test their hypotheses (even in a biased way), then their hypothesis or mental model may become more solidified and less open to refutation (Johnson & Seifert, 1994).

To test these hypotheses, participants watched an ambiguous short film developed by Heider and Simmel (1944) either once (low exposure) or five times (high exposure) and either learned of an alternative interpretation of the film (Hansel and Gretel) or did not. Then participants completed a scale measuring the extent to which they thought the film was objective, that their interpretation was correct and shared by others (i.e., naïve realism).

It was hypothesized that there would be a main effect for the alternative interpretation manipulation as well as the exposure manipulation. Specifically, participants in the high exposure condition would exhibit greater naïve realism than participants in the low exposure
condition and participants in the alternative interpretation condition would exhibit less naïve realism than participants in the control condition. However, because participants in the high exposure condition would have more time to fortify their interpretations with biased evidence, I predicted an interaction between the alternative interpretation and exposure manipulations such that the alternative interpretation would decrease participants’ naïve realism more in the low exposure condition than in the high exposure condition.

**Method**

**Participants**

Participants \((n = 195)\) were recruited from the University of Guelph participant pool in the winter and fall semester of 2013. A power analysis indicated that a sample size of 128 was required to detect a medium effect size with 80% power; therefore, sufficient power was achieved. Participants’ ages ranged from 17 to 31 \((M = 19.13, SD = 1.84)\). Eighty-four percent of participants were female and sixteen percent were male. One hundred and fifty-nine participants were White \((81.5\%)\), eight were South Asian, eight were Southeast Asian, four were Black, three were Latin American, two were Arab, one was Aboriginal/First Nations and ten specified “other.” Five participants from the original sample \((n = 200)\) were excluded from analyses because the participants had previously seen the film \((n = 4)\) or did not complete the post debrief consent \((n = 1)\). Participants were compensated with a half credit for their introductory psychology class equaling 0.5% of their grade.

**Procedures**

Participants came to the lab in groups of approximately ten and completed a consent form. The facilitator told the participants that they were about to watch an artist’s short film that was developed in the 1940s. The RA said that the artist had a specific intent and storyline that he
was trying to convey. In reality, an ambiguous short film (1 minute and 33 seconds) developed by Heider and Simmel (1944) was shown. The film depicts three geometrical objects (a circle, a small triangle, and a large triangle) moving in different directions and speeds around a box with a flap that opens and closes (see Figure 6; see also http://tiny.cc/heidersimmel). Heider and Simmel (1944) found that participants anthropomorphized the objects in a variety of ways, with respect to what the objects were and what they were doing (Heider & Simmel, 1944). In the low exposure condition participants watched the film once and then had nine minutes to provide written answers to two questions: “What do you think was the storyline that the artist was trying to convey?” and “What evidence do you have to support your storyline (e.g., explain in actions, the circle “did this” to the triangle)? In other words, what is it that you see in the film that leads you to your storyline?” In the high exposure condition, participants watched the film for the first time and then had five consecutive minutes to write out their storyline and provide evidence. Then participants watched the film four additional times. After each additional viewing they had one minute to update their storyline. Across conditions, all participants had a total of nine minutes of writing time (participants in the high exposure condition were advised not to write while watching the film the 2nd, 3rd, 4th and 5th time). Next, in the alternative interpretation condition, the research assistant handed out a paper with what was ostensibly a previous participant’s interpretation of the storyline as Hansel and Gretel (see Appendix C). Participants in the control condition did not read this interpretation.

Next, participants completed a six-item measure of naïve realism. It consisted of items that measured the participants’ perception of the film’s subjectivity (item one and six; How obvious did the artist’s storyline seem? How subjective was the film?), their confidence in the accuracy of their storyline (item two), the extent, in terms of percentage, that their interpretation
would be shared by other participants in the room (item three and four), and the extent that others would reason like them (item five; see Appendix D). All items (except percentage item) were measured on six-point bipolar scales. All six items were transformed into z-scores and averaged to create a single composite measure. Internal consistency was good ($\alpha = .86$) in this sample of Canadian undergraduate students. Participants also completed the Need for Cognition Scale (Cacioppo, Petty, Feinstein, & Jarvis, 1996), Uncertainty Response Scale (Emotional subscale, Greco & Roger, 2001), Revised Need for Closure (Roets & van Hiel, 2011), Personal Need for Structure (Neuberg, & Newsom, 1993), and Rosenberg’s Self-Esteem scale (Rosenberg, 1965)$^9$. Upon completion of the questionnaire, participants were verbally debriefed together and completed a post-debrief consent form.

![Image](image_url)

*Figure 6. Screenshot from the short film by Heider and Simmel (1944).*

**Results**

A 2(alternative interpretation vs. control) x 2(low exposure vs. high exposure) between-subjects ANOVA$^{10}$ was conducted on the measure of naïve realism. There was a significant main effect of exposure, $F(1,191) = 7.41, p < .05, \omega^2 = .09$, such that naïve realism was significantly

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$^9$ The moderating effects of these variables are beyond the scope of this dissertation and not discussed further.

$^{10}$ Levene’s Test of Equality of Error Variances was significant, $F(3,191) = 6.29, p < .05$. However, the largest variance was only 2.08 times the smallest variance, thus, the ANOVA was deemed robust enough for the current analysis.
greater in the high exposure condition than in the low exposure condition (see Figure 7 and Table 1 for means and standard deviations). There was a significant main effect of alternative interpretation, $F(1,191) = 4.45, p < .05, \omega^2 = .05$, such that naïve realism was significantly decreased in the alternative interpretation condition than the control. The interaction was also significant, $F(1,191) = 4.23, p < .05, \omega^2 = .04$. Pairwise comparisons with a Bonferroni correction revealed that, in the high exposure condition, naïve realism significantly decreased in the alternative interpretation condition compared to the control, $t(96) = 3.64, p < .05, 95\% \text{ CI } [.20, .68], d = .74$. However, there was no significant difference between the alternative interpretation condition and control in the low exposure condition, $t(95) = .03, p = .975, 95\% \text{ CI } [-.34, .35], d = .00$. Participants in the high exposure/control condition had significantly more naïve realism than participants in the low exposure/control condition, $t(73) = 3.18, p < .05, 95\% \text{ CI } [-.83, 0.19], d = .68$; however, participants in the high exposure condition experienced a significant decrease in naïve realism in the alternative interpretation condition so much so that their scores were not significantly different from participants in the low exposure/alternative interpretation condition, $t(98) = .49, p = .626, 95\% \text{ CI } [-.36, .21], d = .10$. 

85
Figure 7. Exposure and alternative interpretation on naïve realism.

Table 1.

Means and Standard Deviations for Exposure and Alternative Interpretation Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Low Exposure</th>
<th>High Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n  M (SD)</td>
<td>n  M (SD)</td>
</tr>
<tr>
<td>Control</td>
<td>45 -.15(.92)</td>
<td>50 .36(.57)</td>
</tr>
<tr>
<td>AI</td>
<td>52 -.15(.80)</td>
<td>48 -.08(.63)</td>
</tr>
</tbody>
</table>

Discussion

As hypothesized, the more a perceiver is exposed to an ambiguous situation, the more she exhibits naïve realism about her interpretation. Learning of an interpretation of an ambiguous
situation that is different than the perceiver’s interpretation decreases the perceiver’s sense of naïve realism. However, it was hypothesized that participants in the high exposure condition would be less impacted by the alternative interpretation such that their naïve realism would not decrease as much as participants in the low exposure condition. This did not occur. Instead, participants in the high exposure condition were greatly impacted by the alternative interpretation and participants in the low exposure condition were not significantly impacted. Two reasons may explain these unexpected results: aspects of the Hansel and Gretel interpretation and a floor effect in the low exposure condition.

Participants in the high exposure condition may have decreased in naïve realism to such a degree because of the fit between the Hansel and Gretel story and the Heider and Simmel (1944) film. The story of Hansel and Gretel was chosen because it would unlikely be an interpretation provided by participants and, therefore, an alternative interpretation for all participants. Furthermore, the story of Hansel and Gretel seemed to fit well with the Heider and Simmel (1944) film. For example, in the beginning and end of the film a lone large triangle was inside what most people interpret as a house (Heider & Simmel, 1944). Two other objects (a small circle and a small triangle) approached the house. The large triangle came out of the house and moved around with the two other objects. At one point, one of these objects (small circle) entered the house and was followed by the triangle. Then the small circle left the house and exited the screen with the other object. In the end, the large triangle was alone in the house and broke it apart. This storyline is similar to the storyline of Hansel and Gretel in many respects. In Hansel and Gretel, two children came upon a house and met a witch and, in the end, the children stuffed the witch into an oven and escaped. However, there are aspects that do not fit. In the Heider and Simmel film (1944), unlike Hansel and Gretel, the two “visiting” objects were never
in the house at the same time. However, although some aspects of the Heider and Simmel (1944) film do not match the story of Hansel and Gretel, many aspects fit well. Thus, a better choice for an alternative interpretation would have been a story that only moderately fit the Heider and Simmel film.

Participants in the low exposure condition were not impacted by the Hansel and Gretel storyline, such that their naïve realism did not decrease. However, it is possible that by only viewing the film once, participants did not have enough time to come up with a storyline and probably had difficulty remembering the film. It was expected that participants would be naïve realists in the low exposure condition because it was assumed that naïve realism is a default state; however, it seems that people need a bit more exposure to a situation to form an interpretation. Their naïve realism may have been at a minimum. One viewing was chosen for the low exposure condition because one view has a distinct quality to it, compared to just a low number of views. With one view, participants had no opportunity to test their hypothesis; with two or more, participants would have had that opportunity. Research suggests that false consensus effects are weak when people have little idea as to how others will respond (Hilton, Smith, & Alicke, 1988) and when this occurs, perceivers seek out consensus information; however, this was not possible in the low exposure condition. This may have created a less realistic low exposure situation.

This study is limited by its lack of external validity. The depiction of an ambiguous situation in this study was an exceptionally ambiguous situation. In everyday life, situations are ambiguous because people lack contextual information. But, in most situations, people have some understanding of what is occurring. For this reason, study six examines a depiction of an everyday event.
Study Six

Where study five demonstrated the conditions under which naïve realism increases or decreases, study six examined naïve realism and the judgment of rationality. Specifically, the purpose of this study was to examine the impact of differential situation construal on the judgment of a target’s rationality via naïve realism. In this study, instead of relying on people’s individual differences in perception (like study five), the contextual information leading up to an ambiguous situation was manipulated to produce differences in participants’ situational construal (Kay, Wheeler, Bargh, & Ross, 2004). This study incorporated a CCTV video of a gas station robbery attempt (see http://tiny.cc/gasrobbery). Without any contextual information, the video does not look like a robbery, but a series of seemingly unrelated events. In the video, a woman is pumping gas and a gas station attendant approaches her with a fire extinguisher, the driver of the car speeds away ripping the hose out of the gas pump and sending the woman who was pumping the gas, flying into the air. The behaviour of the driver is perplexing and seemingly irrational. However, by manipulating the contextual information preceding this event by describing the gas station attendant as mentally unstable or stable, it was predicted that the behaviour of the driver would seem more rational in the unstable condition because participants would think that the driver perceived the gas station attendant as a threat. In other words, it was expected that perceivers would assume that how they perceived the situation would be how the target perceived the situation and the more the target’s behaviour lined up with how the perceiver assumed the target perceived the situation, the more rational the target’s behaviour would seem to the perceiver. Therefore, it was hypothesized that participants who read a description of a gas station attendant as unstable would judge the target’s behaviour as more rational than participants who read a description of the attendant as stable.
Method

Participants

Participants \((n = 152)\) were recruited online through Amazon Mechanical Turk (MTurk). MTurk is an online crowdsourcing marketplace where Requesters (individuals or businesses) hire Workers to complete a range of tasks for monetary payment (Amazon Mechanical Turk, 2015). Many of the popular tasks include transcription, searching websites, or writing product descriptions (Amazon Mechanical Turk, 2015). Researchers have recently started to use Amazon Mechanical Turk as a platform to recruit participants for online questionnaires (Buhrmester, Kwang, & Gosling, 2011). Research has demonstrated that MTurk participants are more demographically diverse than online participants recruited by other means and that the data are as reliable as data obtained through traditional methods (Buhrmester et al., 2011). A power analysis indicated that a sample size of 128 was required to detect a medium effect size with 80% power for a two-tailed test; therefore, sufficient power was achieved.

Participants were from the United States of America and the United Kingdom \((n = 1)\). Participants’ ages ranged from 18 to 75 \((M = 34.62, SD = 12.46)\). Half of participants were female \((n = 70)\) and half were male \((n = 72;\) 10 participants did not report their gender). The majority of participants had some college/university education \((35.5\%)\) or had completed college/university \((31.6\%)\). The data from six participants were removed from the original sample \((n = 158)\) due to missing data \((n = 5)\) or unconscientious responding\(^{11}\) \((n = 1)\). Participants were compensated with one dollar.

\(^{11}\) Participant wrote gibberish in the qualitative comment section.
Procedures

After completing an online consent form, participants were informed that they would be watching a CCTV of an incident at a gas station (see Figure 8 and http://tiny.cc/gasrobbery) and that they should imagine that they are witnessing the event. Before the video was shown, participants were asked to read an excerpt describing the events ostensibly preceding the incident. Participants were randomly assigned to an unstable versus stable description of the female attendant. In the following excerpt the stable condition is in parentheses:

[Imagine] you are in the gas station. The driver comes into the gas station and asks the female attendant for the keys to the washroom. You notice that the attendant looks extremely frustrated(happy) and unstable(easy-going). Screaming(Chuckling), she tells the driver that he has to buy gas first before he can use the washroom. He leaves nervous(happy) and uneasy(carefree). A few minutes later, you see the girl who was with him filling up his car with gas. You notice that his engine is still running. Next, you see the attendant angrily (worriedly) exit out the door. Then you witness what is depicted in the video.

After participants watched the video, participants completed the item, “How rational do you think you would rate the driver’s decision to try and drive away?” on a seven-point Likert scale from 1 (very irrational) to 7 (very rational). Participants were also asked to write a response to the question, “What do you think is going through the driver’s mind when he decides to drive away?”
Results

Participants in the stable condition judged the driver as significantly more irrational ($M = 1.50$, $SD = 1.19$, $n = 86$) than participants in the unstable condition ($M = 2.20$, $SD = 1.71$, $n = 66$), $t(110) = 2.83$, $p < .01$, 95% CI [.23, 1.16], $d = .48$ (see Figure 9).

Figure 9. Stable and unstable conditions on ratings of the targets’ rationality.
Participants’ explanations of what was going through the driver’s mind were coded as threatening or other. Participants were more likely to report that the customer felt threatened by the gas station attendant in the unstable condition than in the stable condition, \( \chi^2(1) = 22.32, p < .001 \).

**Discussion**

By describing the gas station attendant as mentally unstable or stable, it was intended that participants would interpret the gas station attendant’s behaviour (carrying a fire extinguisher) as helpful in the stable condition or as a threat in the unstable condition. In the unstable condition, it was intended that participants would think that the gas station attendant was using the fire extinguisher as a weapon and in the stable condition that she was using it to prevent a fire because the customer was pumping gas with the engine on. In turn, it was expected that the participant would deem the customer’s behaviour irrational in the stable condition because there was no reason to fill one’s car up with gas while running and no reason to speed away, but more rational in the unstable condition because there was at least some good reason to speed away (to avoid harm). Indeed, participants were more likely to report that they thought the target perceived the gas station attendant as a threat in the unstable condition than in the stable condition. More importantly, participants rated the driver as more rational in the unstable condition than in the stable condition. That is, perceivers assumed that the target perceived the situation as they did; therefore, participants thought that the target was more rational in the unstable condition because the target’s actions aligned with the perceivers’ construal of the situation.

Underlying these results is participants’ failure to perspective take. Participants in the stable condition only saw part of the situation, the interaction between the target and the gas
station attendant, but still used how they perceived the situation as a basis to judge the rationality of the target. In fact, the target could have sped away for any number of rational reasons. For example, in the stable condition, the target could have been fearful of an explosion or fire because upon seeing the gas station attendant approaching them with a fire extinguisher, the target realized the dire situation in which they might be. Although driving away with the hose attached may not have been the most rational or safest way to deal with the situation, it could have been judged more rational than when having seemingly no reason to speed away.

Like study five, a limitation to this study is that although the video depicted an everyday situation, participants could only work with the information they had. In an everyday situation, people have the opportunity to discuss their interpretation with others or ask questions to clarify what is occurring.

**Study Seven**

Study six demonstrated that when naïve realism is high, the attribution of the target’s rationality is dependent upon the perceivers’ perception of the situation. What remains untested is the hypothesis that when naïve realism is low, the attribution of rationality is dependent upon the target’s perception of the situation. In other words, the causal relationship between naïve realism and the judgment of rationality has not been explicitly tested.

I hypothesized that the relationship between naïve realism and the judgment of rationality is as follows. When naïve realism is high, the perceiver (unknowingly) assumes that how a target perceives a situation is how the perceiver perceives the situation and consequently, the judgment of the target’s rationality is based on the perceivers’ perception of the situation. In contrast, when naïve realism is low, the perceiver attempts to discern how the target perceives the situation and, consequently, the judgment of the target’s rationality is based on the perceiver’s perception of
how the target may perceive the situation. Finally, a reduction in naïve realism was hypothesized to have an impact on the judgment of rationality when the perceiver and target have different interpretations of a situation, not when they have the same interpretations. Thus, the focus of this study is the impact of naïve realism on the judgment of rationality in cases where the perceiver and target hold different interpretations.

To test these hypotheses, this study manipulated a state of low and high naïve realism by showing participants either a series of videos and demonstrations that depicted the relative and subjective nature of perception or a series of control films. Participants then watched the Heider and Simmel (1944) short film, wrote out their interpretation and then rated the rationality of alternative interpretations of the film. It was hypothesized that participants in the relativity condition would attribute less irrationality to alternative interpretations of the Heider and Simmel (1944) film than participants in the control condition.

**Methods**

**Participants**

Participants ($n = 218$) were recruited from the University of Guelph participant pool in the fall of 2013 and winter of 2014. A power analysis indicated that a sample size of 176 was required to detect a small effect size with 80% power for a two-tailed test; therefore, sufficient power was achieved. Participants’ ages ranged from 17 to 43 ($M = 19.18, SD = 2.62$). Seventy-seven percent of participants were female and twenty-one percent were male (2% did not specify). One hundred and sixty-seven participants were White (76.6%), 17 were Southeast Asian, ten were South Asian, seven were Black, three were Latin American, two were West Asian, one was Arab, five specified “other” and six did not specify. Of the original sample ($n = 226$), seven participants were removed because they indicated that they had seen the film
previously and one was removed because he or she indicated that they knew the purpose of the film. Participants were compensated with a half credit for their introductory psychology class equaling 0.5% of their grade.

Procedure

Participants came to either a classroom (fall 2013) or the laboratory (winter 2014) in groups ranging from 11 to 50 participants. Each session was randomly assigned to the control or relativity condition. Participants viewed four video clips in both the control condition (see http://tiny.cc/control) and the relativity condition (see http://tiny.cc/relativity; these links contain all of the videoclips described below). The first video clip either depicted a spinning dancer (relativity condition) or a spinning mouse (control). The spinning dancer was developed by Kayahara (2003) as an optical illusion such that, depending upon one’s perspective, one can see the dancer pirouetting clockwise or counterclockwise. Participants were asked to try and discern which way the dancer (or mouse) was spinning. The facilitator showed the video clip for ten seconds and then asked participants to close their eyes and to raise their right hand holding a yellow piece of paper up if they saw the dancer/mouse rotating clockwise or their left hand holding a blue piece of paper up if they saw the dancer/mouse rotating counterclockwise. Then the facilitator asked participants to open their eyes and look around. Although unmeasured, it was apparent to the facilitator that there was much more variability in blue to yellow papers raised for the spinning dancer video clip than the mouse video clip. In the relativity condition, the facilitator explained that the spinning dancer was an ambiguous drawing that, depending how one looked at the dancer, could appear as if she was spinning one way or the other. Then the

12 In the control condition, only a few participants indicated that they thought the mouse was spinning in the opposite direction (clockwise). I’ve now realized that the spinning mouse can be perceived as moving in either direction; however, it is more difficult to do because the video is slightly choppy. However, most participants indicated much more variability with respect to differences in perceived rotation of the dancer than the mouse (however, this was unmeasured). A better control should be developed for in the future use of this manipulation.
facilitator explained how one could see the dancer spin the opposite way by following her feet or looking at her from one’s periphery. Then the facilitator asked participants to view the spinning dancer for another 45 seconds and asked participants to raise their hand when they were able to perceive the dancer as switching directions. By 45 seconds many participants had raised their hands. Then the facilitator said, “So as you can see, things that may seem perfectly objective can in fact be subjective or up to interpretation. Just like this gum commercial demonstrates.” The second video was a commercial for “5™ Gum.” In the relativity condition, the commercial started with the narrator saying, “New 5™ React gum, experience may vary.” Then three people appeared strapped to chairs in a dark industrial-like chamber, in the style of the movie, “The Matrix” (Wachowski & Wachowski, 1999). Dark droplets fell from the ceiling and it showed that each person saw a different object (flower, octopus, and a bird) in the droplets, similar to seeing images in the clouds. The commercial ended with the narrator saying, “Everyone experiences it differently.” After the commercial the facilitator said, “As this commercial demonstrates – people can experience the same stimuli differently.” In the control condition, participants viewed a different commercial for “5™ Gum” that was similar in design, but did not provide a relativity message. In the next video, the facilitator either showed a video clip about colour relativity (relativity condition) or about how the eye works (control). In the relativity condition, the facilitator said that colour can be subjective and relative. Then the facilitator explained that simultaneous contrast is an effect where colours are affected by the other colours around them. The facilitator then showed a video clip of a yellow piece of paper held by tweezers placed up against a Rubik’s® Cube with its colours disorganized. The paper was moved from one side of the cube to another. The piece of paper looked like it changed from brown to yellow as it moved from one spot to another. The last video was a YouTube video by Vsauce (a
YouTube blogger) either on the topic of colour relativity (relativity condition) or why things are cute (control). In the relativity condition, Vsauce discusses the conundrum that one may never know how another person experiences colour and how it is possible that two people could see the same strawberry differently (red vs. green), yet never be able to communicate that difference. In the relativity condition, after the video, the facilitator also said that recent research has started to suggest that people do, in fact, perceive colour differently from each other (Mancuso et al., 2009). In the relativity condition, the facilitator ended the presentation with the statement, “What I have tried to demonstrate to you is that the world in itself has subjective qualities to it and, further, how we perceive the world around us may differ from how others perceive the world.” There was no final statement in the control condition.

After the manipulation or control films, participants completed a few questions to determine whether or not they were paying attention. Then the facilitator introduced the Heider and Simmel film (1944). The Heider and Simmel (1944) film was shown three times and tense background music was added to the film (Poledouris, 1993; see either of the links above). Participants had three minutes after the film (as well as during) to write out their interpretation of the storyline and their evidence for their interpretation. Then participants completed the same naïve realism scale ($\alpha = .83, n = 217$) included in study five. Next, participants were asked to imagine that someone else watched the film and thought the storyline was about “children playfully playing on a playground” or “ants fighting over food” or that someone else thought that “the big triangle and the circle were trying to capture the bad small triangle” or that someone else got offended by the film. Most of these interpretations were provided by and rated by Amazon Mechanical Turk participants in order to find the most irrational interpretations that could still conceivably fit the film. For each interpretation, participants rated the extent to which the person
with the alternative interpretation was rational, their interpretation rational, and accurate on a six-point scale ranging from 1 (very irrational) to 6 (very rational) or 1 (very inaccurate) to 6 (very accurate). Participants also completed two items: “How likely is it that you perceive the world differently than others?” and “How likely is that that others perceive the world differently than you?” These two items were placed on separate pages and were counterbalanced. Finally, participants completed the bias blind spot measure (Pronin et al., 2002) by rating the extent to which they or the average Canadian showed eight different biases (e.g., dissonance reduction, self-interest bias) and three control items (fear of public speaking, procrastination and planning fallacy) on a nine-point scale from 1 (not at all) to 9 (strongly).

Results

Manipulation Check

The relativity condition ($M = -.10, SD = .74$) significantly decreased naïve realism compared to the control ($M = .10, SD = .74$), $t(216) = 2.01, p < .05, d = .27, 95\% CI [.00, .39]$.

Rationality

The relativity condition did not significantly impact attributions of rationality of a hypothetical person with an alternate interpretation of the film (playground, $t(216) = .09, p = .928, d = .01, 95\% CI [-.42, .38]$; triangle, $t(216) = .69, p = .494, d = .09, 95\% CI [-.57, .28]$; ants, $t(211) = .78, p = .439, d = .10, 95\% CI [-.55, .24]$) or who got offended, $t(216) = .25, p = .802, d = .04, -.38, .49$ (see Table 2 for means and standard deviations).

The relativity condition did not significantly impact attributions of rationality of a hypothetical person’s alternative interpretation (playground, $t(216) = .92, p = .361, d = .13, 95\% CI [-.20,.55]$; triangle, $t(215) = .99, p = .323, d = .14, 95\% CI [-.67,.22]$; ants, $t(210) = 1.37, p = .172, d = .19, 95\% CI [-.72,.13]$).
The relativity condition did not significantly impact attributions of the accuracy of the hypothetical person’s alternative interpretation, (playground, \( t(210) = .05, p = .962, d = .01, 95\% \text{ CI} [-.37, .38] \); triangle, \( t(216) = 1.33, p = .186, d = .18, 95\% \text{ CI} [-.66, .13] \); ants, \( t(212) = 1.69, p = .092, d = .23, 95\% \text{ CI} [-.71, .05] \).

**Bias**

In the relativity condition, participants indicated that it was more likely that others perceived the world differently from them than in the control condition, \( t(195) = 2.06, p < .05, d = .28, 95\% \text{ CI} [-.44, .17] \). However, the relativity condition did not significantly increase participants’ perceptions that they perceived the world differently from others, \( t(216) = .89, p = .377, d = .12, 95\% \text{ CI} [-.65, .01] \).

For the bias blind spot measure, participants indicated that they were more biased in the relativity condition than participants in the control, \( t(216) = 1.71, p = .089, 95\% \text{ CI} [-.47, .03] \). The relativity condition did not significantly increase the perception of bias in others, \( t(216) = 1.34, p = .180, 95\% \text{ CI} [-.44, .08] \). Overall, there was no significant difference between participants’ perception of bias in themselves compared to the average Canadian, \( t(217) = 1.52, p = .129, 95\% \text{ CI} [-.30, .04] \). A mixed between and within subjects ANOVA did not reveal a significant interaction, \( F(1,216) = .05, p = .823, \eta^2 = .00 \).
Table 2

Means and Standard Deviations for Relativity and Control Conditions

<table>
<thead>
<tr>
<th>Item/Scale</th>
<th>Relativity</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Naïve Realism</td>
<td>109</td>
<td>-.10(.74)</td>
</tr>
<tr>
<td><strong>Person Rating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offense</td>
<td>109</td>
<td>3.22(1.59)</td>
</tr>
<tr>
<td>Playground</td>
<td>109</td>
<td>4.40(1.46)</td>
</tr>
<tr>
<td>Triangles</td>
<td>109</td>
<td>3.71(1.52)</td>
</tr>
<tr>
<td>Ants</td>
<td>109</td>
<td>4.06(1.36)</td>
</tr>
<tr>
<td><strong>Interpretation Rating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playground</td>
<td>109</td>
<td>4.43(1.38)</td>
</tr>
<tr>
<td>Triangle</td>
<td>109</td>
<td>3.80(1.57)</td>
</tr>
<tr>
<td>Ants</td>
<td>109</td>
<td>4.15(1.45)</td>
</tr>
<tr>
<td><strong>Accuracy Rating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playground</td>
<td>109</td>
<td>4.15(1.28)</td>
</tr>
<tr>
<td>Triangle</td>
<td>109</td>
<td>3.45(1.40)</td>
</tr>
<tr>
<td>Ants</td>
<td>109</td>
<td>3.74(1.34)</td>
</tr>
<tr>
<td><strong>Bias</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You perceive differently</td>
<td>109</td>
<td>6.08(1.05)</td>
</tr>
<tr>
<td>Others perceive differently</td>
<td>109</td>
<td>6.19(1.31)</td>
</tr>
<tr>
<td>Bias Blind Spot (Self)</td>
<td>109</td>
<td>6.48(.98)</td>
</tr>
<tr>
<td>Bias Blind Spot (Others)</td>
<td>109</td>
<td>6.59(.93)</td>
</tr>
</tbody>
</table>
Indirect Effect of Manipulation

The relativity condition significantly negatively correlated with naïve realism ($r = -.14, p < .05$) and naïve realism significantly negatively correlated with the rationality of the interpretation that the small triangle was the villain ($r = -.24, p < .001$). Naïve realism correlated most strongly with the rationality of this interpretation, thus, this variable was chosen as a dependent variable to test an indirect effect of condition on the dependent variable through naïve realism.

To test a measurement-of-mediation design (Spencer, Zanna & Fong, 2005), an indirect mediation analysis was conducted using the Preacher and Hayes (2004, 2008) bootstrapping method. The indirect effect of the relativity condition on the rationality of the triangle alternative interpretation through naïve realism was significant (5000 resamples, 95% confidence interval, bias corrected confidence intervals did not contain zero, .0149 - .2806). In other words, the extent to which participants’ naïve realism was impacted by the manipulation mediated the impact of the manipulation on judgments of irrationality.

Discussion

The results of study seven did not demonstrate a direct impact of the relativity condition on the judgment of irrationality; however there was an indirect mediation. Specifically, the extent to which the relativity condition impacted participants’ judgments of irrationality was mediated by the extent to which the relativity condition impacted participants’ scores on a measure of naïve realism. In other words, participants were less likely to make a judgment of irrationality the greater their naïve realism was decreased by the relativity condition.

Although the original intention of this study was to demonstrate a causal relationship between naïve realism and the judgment of rationality, direct evidence was not found. However,
some support for a causal relationship was determined through a measurement-of-mediation design (using a manipulation check as a mediator), recommended by Spencer, Zanna and Fong (2005) for cases where the manipulation of a psychological process is difficult, but measurement easy. Overall, the mediation analyses along with the results from study six bolsters the hypothesis that naïve realism causally impacts the judgment of rationality. Future research can refine this manipulation and assess the full impact on the judgment of rationality. However, it cannot be left unsaid that it is possible that naïve realism may be an exceptionally difficult bias to break.

There is some evidence that the relativity condition decreased the bias blind spot such that participants indicated that they were more biased in the relativity condition compared to the control (marginally significant). However, participants in the relativity condition compared to the control more highly endorsed that others perceive the world differently from them, but not that they see the world differently than others. In the end, it is likely easier to convince people that others are biased, than to convince them that they are. Although understanding that people have alternative perceptions of the world is a first step in decreasing naïve realism, understanding that those interpretations can be equally valid is also necessary in order to decrease the judgment of irrationality.

The major limitation of this study is that the perceiver is rating the rationality of the target’s interpretation and not the behaviour of the target as a result of their alternative interpretation. Due to the use of the Heider and Simmel (1954) film, a behaviour was not likely to result from a target’s interpretation. To get closer to a behaviour, one questionnaire item asked participants to rate the rationality of a target who was offended by the film. Offense was thought to be closer to a reaction to one’s interpretation and not the interpretation itself. However, there
were no significant differences on this item. Further, critics of this study might suggest that this study was a double manipulation check, first in the measure of naïve realism, and second in the measure of the rationality of an alternative interpretation. Measuring the rationality of an alternative interpretation is similar to a measure of attributional charity and, thus, similar to a measure of naïve realism. However, this study does at least demonstrate that naïve realism can be manipulated and how it can be done. Future research should test how this manipulation can impact the judgment of a target’s reaction to a situation to better test the causal nature of naïve realism. For example, a study could construct a vignette about an animal welfare situation pretested so that people vary in whether or not they perceive the situation to be an abusive situation or not. Participants could read the vignette and rate the abusiveness of the situation and then participants could be randomly assigned to a refined relativity or control condition. Participants could then read about how a target who toured the facilities behaved. The description of the target could be manipulated such that the target does not support the facilities in an extreme way (e.g., calls the police, pickets, releases the animals, condemns the building) or supports the facilities in an extreme way (e.g., provides a large donation, authorizes a permit). Then participants could rate the rationality of the target’s behaviour. Thus, this study would be able to test situations where naïve realism is high and low, where the perceiver’s and target’s interpretation of the situation may be similar or different and this study would be able to examine the attribution toward a target’s behavioural reaction to a situation.

**Summary of Studies Five, Six and Seven**

Overall, study five demonstrates that naïve realism increases when perceivers have more exposure to a situation and decreases when perceivers learn of an alternative interpretation of a situation. Study six demonstrates that the attribution of rationality is dependent upon the
perceivers’ perception of the situation. Finally, study seven provides some support for a causal relationship between naïve realism and the judgment of the rationality of a target’s alternative situation construal.

**General Discussion**

Studies one, two and three demonstrated that perceivers use their own reasoning, even if faulty, as a standard to judge others’ reasoning and rationality, particularly for perceivers with strong reasoning skills. For perceivers who are poor at logical reasoning, seeing that a group of people, particularly one’s ingroup, reasoned differently than them reduces this tendency, but not for high scorers. Study four demonstrated that the assumption that others share one’s goals impacts the judgment of rationality, such that when the target acted in opposition to the perceiver’s goal, the target was deemed more irrational than when the perceiver knew that the target was working toward a different goal. Studies five, six and seven demonstrate that 1) naïve realism is increased when perceivers have more exposure to a situation and is decreased when perceivers hear an alternative interpretation to the situation; 2) perceivers’ differential interpretations of a situation impact their judgment of targets’ rationality and 3) naïve realism is a causal factor in the judgment of the rationality of a target’s alternative situation construal.

This research builds on the findings of Pronin et al. (2002; 2004) and Kruger and Dunning (1999). This research suggests that not only do poor reasoners not recognize their poor ability (Kruger & Dunning, 1999), but they use it as a way to judge others’ reasoning, consequently judging other irrational targets as rational. This is likely not domain specific and may apply to all forms of judgments made by incompetent people. In other words, people who are not educated in literary prose likely cannot recognize quality literature and instead would rather read fan fiction. People uneducated in car mechanics likely cannot recognize a quality find
when shopping for a car and instead might purchase a red one. This research also extends Pronin et al.’s (2002; 2004) findings by demonstrating that sometimes the bias blind spot is not always so blind, sometimes people know when they are free of a particular form of bias and can recognize it easily in others. This research shows that it is people with strong abilities in logic who recognize their skills, but it can likely be applied to other forms of bias. For example, Daniel Kahneman may be more careful than most people in avoiding using a representative heuristic and he may full well know when he is using a representative heuristic. He may also recognize it more easily in others. This research also extends Pronin et al.’s (2002; 2004) research by showing that the bias blind spot can vary in terms of the degree of blindness and, further, that those who are most blind to their reasoning difficulties may judge other similarly blind people as very rational.

This research contributes most to the framework of naïve realism. First, study five demonstrates that perceivers do expect others to share their interpretation of an ambiguous stimulus when perceivers have had enough time to develop and test their hypothesis. Second, perceivers assume that targets perceive situations in the same way and consequently judge a target’s behaviour in terms of how the target’s behaviour lines up with how the perceiver views the situation. Third, naïve realism can be decreased in two ways: by informing the perceiver of an alternative interpretation of the situation being perceived or by demonstrating to the perceiver the relative and subjective aspects of perception. Finally, people who experience a decrease in naïve realism are less likely to judge a radically different alternative interpretation of a situation as irrational. These findings also have broader implications for the field of naïve realism by demonstrating that people are able to view alternative situation construals as rational. To date, Ross and colleagues have only been able to demonstrate that people view alternative construals
as biased or as a result of bias (Vallone et al., 1985; Robinson, Keltner, Ward, & Ross, 1995; Robinson & Keltner, 1996). They have not been able to demonstrate an increase in understanding as a result of considering an alternative interpretation. However, future research needs to go beyond this result by demonstrating that understanding an alternative interpretation as different, yet valid, leads to an assessment of rationality of a target’s behaviour.

This research also adds to the current movement in attribution research away from the person versus situation distinction. More recent research has criticized the rigid focus on this dichotomy and suggests that it may not be there to begin with (Malle, 1999). This research on the judgment of irrationality examines the attribution of a trait (or cognitive state) that can move from low to high depending on the extent to which the perceiver weighs both person and situation factors, representing the more complex nature of person and situation factors in the attributional process. Furthermore, the number of social cognitive layers involved in the judgment of rationality is what makes it so compelling. The judgment of rationality is an area ripe for testing the combination of the models of mind perception, person perception, goal perception, metacognition and judgment and decision making.

As discussed in the introduction, in order to fully understand people’s seemingly irrational behaviour as rational, and to do it well, people need to be Panglossians. Perceivers need to understand that a target’s actions are in line with the target’s own goals, beliefs, values, reasoning, and perception of the situation in order to deem that behaviour rational. Perceivers do not need to sanctify that behaviour, but they should understand it as rational (Malle, 1999). The findings from these seven studies suggest that people are not, by default, Panglossians because they judge a target in terms of their own reasoning, their own goals and their own situation perception, not the target’s. Further, I have some data from a pilot study that suggests that many
people have a hard time separating judging someone as rational and sanctifying their behaviour (Baxter & Grossmann, 2014). In this study, participants tended to judge a target, who was about to commit a crime, as irrational, because they reported that breaking the law was irrational in of itself, even though the target was about to commit a crime in order to save animals from harm. Thus, it is more likely that people start out as Apologists and depending upon how much perspective taking they undertake, they move along the continuum from Meliorists, who sometimes excuse a target’s behaviour, to Panglossians, who fully understand a target’s behaviour in the context of the target’s reasoning, goals and perception of the situation, regardless of whether or not they sanctify the behaviour. Future research can help to disentangle the judgment of rationality and people’s acceptance of moral relativity. That is, future research can examine the conditions and the individual difference variables associated with accepting that others may be acting rationally, even when they don’t agree with their actions. This may be where epistemic and instrumental rationality can be most directly contrasted in the study of the judgment of rationality.

**Limitations**

Studies one, two and three were unable to rule out the role of motivated reasoning. In other words, it is not clear whether low scoring perceivers attributed less irrationality to their high scoring ingroup than outgroup because they viewed information from their ingroup as more credible or because they did not want to derogate their ingroup. Future research could attempt to disentangle these two mechanisms by measuring confidence in one’s responses before as well as after viewing the targets’ responses or by retesting participants individually with a monetary incentive for correct answers.
These studies also mostly used a single item (e.g., How rational was the target?) or a composite of similar items to measure the attribution of rationality. This form was chosen because I thought it was important to leave it up to the participants to define rationality for themselves because I was investigating a lay theory of the judgment of rationality. Further, if rationality was previously defined either in a blurb before the item or in a scale, it might have created demand characteristics. By asking, “Did the gas station customer behave rationally given his understanding of the situation?” it could have created perspective taking where it would not have occurred otherwise (Robinson, Keltner, Ward, & Ross, 1995; Langer, 1978). However, rationality could have been measured with a multi-item scale including items that matched a Panglossian definition of rationality (e.g., “Did the target act in his or her best interest?” or “Did the target’s action reflect their knowledge/perception of the situation?”).

Finally, these studies are also limited by their lack of external validity. A less contrived laboratory study could be designed to model a more realistic ambiguous situation and a more common type of irrational behaviour. Further, a study could be conducted after a person in the media demonstrates typically understood irrational behaviour (e.g., Britney Spears’ buzz cutting her hair, a hurricane victim defying a mandatory evacuation order, a celebrity who returned to an abusive relationship) in order to more fully understand judgments of rationality as they occur in everyday life. However, the purpose of these studies was to investigate the theoretical links between factors and not to demonstrate how they bore out in everyday life (Mook, 1983). For example, the importance of study seven was not the relativity manipulation itself, but its impact on the judgment of rationality. In other words, it was not intended that the manipulation be used in everyday life as a way to reduce the judgment of rationality, it was merely used to investigate the causal link between these two variables (Mook, 1983). Overall, by increasing internal
validity by reducing factors to their basic parts, their causal associations can be more clearly identified. Future research can attempt to model and test the factors related to the judgment of rationality in everyday life.

**Future Research**

This dissertation did not cover a number of hypothesized assumptions. First, it did not cover the assumption that perceivers think that a target considers the same factors when making a decision. Second, it did not cover the assumption that perceivers think that a target weighs factors in the same way as the perceiver. Third, this dissertation did not cover the assumption that perceivers think that a target perceives an outcome to have the same probability of occurring as the perceiver.

The factors people use in their decisions can be judged to be irrational factors by their inclusion or exclusion. It is likely that people will judge others to be irrational if they include a perceived negative and unnecessary factor (e.g., a self-serving variable) or if they exclude a perceived positive and necessary factor (e.g., a concern for the well-being of others). Research from Pronin, Gilovich and Ross (2004) suggests that people assume that those who disagree with them consider and weigh more biased/nonnormative factors than objective/normative factors. Further, in an intriguing paper, Graham, Haidt and Nosek (2009) examined the factors people use in moral judgments and found that liberals used and endorsed two main factors: harm/care and fairness/reciprocity; whereas, conservatives used and endorsed those two factors as well as three more: ingroup/loyalty, authority/respect, and purity/sanctity. It is highly likely that liberals would perceive ingroup/loyalty, authority/respect and purity/sanctity as negative and outdated factors to take into consideration. It is also highly likely that conservatives would view these factors as positive and necessary and would perceive liberals as irrational for their exclusion of
these factors in their decision making. In addition, due to the introspection illusion, it is possible that perceivers err in assessing the factors affecting their decisions, yet they assume others also assess the factors that they think they considered when making a decision. It is possible to imagine the situation were one denies the fact that they use self-serving factors in decision-making and deem others irrational for using these factors (e.g., when one uses self-serving factors in making decisions that affect others, such as one’s children). Thus, even though perceivers may not have complete access to their own causal factors, they may still believe that they do and, due to naïve realism, they assume that others are assessing the same factors in their decisions.

The weights people apply to their chosen factors can be judged to be irrational when it is perceived that too much or too little weight has been applied to particular factors. This is similar to the inclusion and exclusion of factors, but it is an assessment of the continuous scale of factor weighting as opposed to an assessment of the dichotomous inclusion versus exclusion of factors. Pronin, Gilovich, and Ross (2004) presented research to provide evidence that attributions of bias develop out of perceptions of disagreement. However, I believe that it also provides support for the idea that people judge others on how they weigh factors in decisions. In this study, participants were asked to choose an opinion that best represented their true opinion, they were then asked to choose an opinion that was the closest position to their opinion, and the opinion furthest away from theirs (Pronin et al., 2004). Next, participants were asked to rate the extent to which they, others with the same opinion as themselves, others with the next closest opinion to themselves and others with the furthest opinion from themselves, considered and weighted objective/normative factors and biased/nonnormative factors. Four examples of objective/normative factors were provided (e.g., knowledge of the culture and conditions of the
area) and four examples of biased/nonnormative factors were provided (e.g., wishful thinking). Participants rated themselves as providing greater weight to objective/normative factors compared to biased/nonnormative factors. This was reversed for participants’ ratings of those with an opinion furthest from themselves. The further others’ opinions were from the participants, the more weight participants thought others gave to biased/nonnormative factors and the less weight participants thought others gave to objective/normative factors. These results are also reflected in an unpublished study by Ross, McGuire and Minson (2004) cited by Pronin et al. (2004). They asked undergraduates to anonymously complete an opinion survey on a wide range of social and political issues. Then they asked participants to hand in their surveys and the surveys were randomly handed back out to different people. Participants were then asked to rate the extent to which their own positions on the issues and their peers’ opinions reflected objective/normative factors or biased/nonnormative factors as well as the degree of similarity to their opinions. Once again, there was a positive correlation between degree of similarity of opinion and the influence of normative as compared to nonnormative factors on their peers’ opinions. Thus, due to research on the introspection illusion, it is likely that these participants are underestimating the weight they actually apply to biasing factors, yet are judging others in terms of the weight they apply to biasing factors.

The third hypothesized assumption that was not investigated in this dissertation was that perceivers assume that the target perceives the probability of an outcome occurring to the same degree as the perceiver. This hypothesis arises out of the decision making literature. Once again, these models suggest that an agent, when deciding how to act in an uncertain environment, thinks of the different outcomes resulting from one’s possible actions and considers how much one values the outcome and the probability of that outcome occurring and chooses the action that
leads to the best choice for himself (Kahneman, 2011). However, when judging a target, a perceiver does not know how probable the target estimated the outcome to be. For example, if one sees someone making an extremely risky bet or stock market decision one might deem him or her irrational; however, that is because one assumes that the target’s perception of the probability of winning is the same as his or hers and that may not always be the case. If one knew that the target had (legal) insider information and perceived the probability of the outcome much greater, one might be less likely to deem the target irrational. Future research could pit two participants in a betting game where they differ in their assessment of the probability of an outcome and examine the extent to which they take subjective probability assessments into account in the judgment of rationality.

Future research could further explore the motivated reasoning component of the judgment of rationality (e.g., to disparage and derogate, to distance oneself from another, to reduce cognitive dissonance, etc.). It is possible that many perceivers attribute irrationality, not due to a lack of perspective taking, but because they are motivated to attribute irrationality to a target, even if they would not otherwise consider the target irrational. Although study three touched on motivated social identity processes, most of these studies focused on the cognitive processes that underlie the attribution.

Future research could also further explore attribution of rationality in an emotional context, such as when a target’s emotions take over and the target makes a decision that is seemingly not in his or her best interest. Study six touched on an emotional context (i.e., driving away in a panic). However, in the context of study six, the target’s emotions could be perceived as rational because the target was rightly afraid of the gas station attendant (in the unstable condition). It is likely more often the case that people make decisions that do not maximize their
utility because their emotions take over. In these cases, it may be harder for a perceiver to attribute rationality to a target because the decision was not in the target’s favour.

Finally, although not explicitly stated, this research has focused on the attribution of rationality of a stranger. Further, the measure of rationality used was both a trait (How rational is the person?) and a state (How rationally did the person complete the task?) combined. It is possible that, for strangers, perceivers are more likely to deem targets irrational in terms of a trait because that is the one data point from which perceivers can extrapolate. For people that perceivers know, they could compare the target’s present behaviour with their past behaviour and make a trait inference if the irrational behaviour is typical of them or a state attribution if their behaviour is nontypical. This is an easily testable hypothesis for a future social psychological experiment.

**Implications**

As stated eloquently by Griffin and Ross (1991), “To ease conflict in our increasingly heterogeneous communities, and in our ever smaller global village, we must struggle to see reality through our neighbors’ and even our adversaries’ eyes, and to make charitable attributions when we cannot” (p. 354). Seeing reality from other people’s eyes is not something that comes easily or as a default (Epley et al., 2004). However, recognizing the barriers to understanding others is the first step to increasing understanding and developing tools to reduce social conflict.

After Hurricane Katrina made landfall on August 29, 2005, more than 70,000 people of New Orleans defied the mandatory evacuation order and stayed in their homes (Select Bipartisan Committee, 2006). Many outsiders, could not understand why. Some blamed the victims for making poor decisions (Napier, Mandisodza, Andersen, & Jost, 2006). Furthermore, then Republican U.S. Senator, Rick Santorum, said that people who evade evacuation orders in the
future should be penalized (Hamill, 2005). Even the Red Cross refused to provide service to “shelters of last resort,” including the Superdome (although this was mostly for logistic reasons; Select Bipartisan Committee, 2006). It was not until there was dialogue in the media about the victims’ situations preceding the hurricane that people started to understand that Katrina victims were not stubborn or negligent people who did not want to leave their homes, but that they “did not have the financial resources to do so” (Barnshaw, 2005, p. 11). Even Santorum later clarified that he did not mean to suggest that those without cars should be penalized for defying evacuation orders (Hamill, 2005). However, the issue was more than just transportation, it was about understanding the victims’ reasoning, their goals and their perception of the situation. For example, while the public was questioning the reasoning of those who defied the evacuation order, some were starting to understand. Margaret Sims, vice president of the Joint Center for Political and Economic Studies, said, “If you don’t hear the message from someone you trust, you tend to be skeptical... If you get conflicting information from people you’re not sure of, then inaction may be, from your perspective, the most prudent form of action” (as cited in Select Bipartisan Committee, 2006, p. 20). Further, as the Brookings Institution, an American think tank, was able to recognize that “blacks and whites were living in quite literally different worlds before the storm hit” (as cited in Select Bipartisan Committee, 2006, p. 20). That is, the Brookings Institution recognized that the Blacks and Whites of New Orleans experienced a different “object of judgment” (Asch, 1940). Finally, the goals that evacuation dodgers held were different in some cases; they had to weigh the goal of survival with the goal of protecting their home. Their home and its contents were all they had to support themselves and their family, so some decided to protect their homes from looters. John Carolan, a New Orleans resident, described this firsthand:
Everything we have is in our homes. With the lawlessness in this town, are you going to walk away from everything you built? A lot of people think we’re stupid. They say, ‘Why did you stay?’ I say, ‘Why didn’t you stay?’ (“Residents Stay,” 2005, para. 21)

In reality, aid for Hurricane Katrina victims was delayed, there was a “failure of initiative” (Select Bipartisan Committee, 2006, p. 97), and the public attitude toward them was, in part, negative. If more people in government and in the public had taken the time to perspective take and tried to understand Hurricane Katrina victims’ reasoning, what their goals were and how they perceived the situation, maybe they would be better off today.
References


# Appendix A

## Logic Test

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
</table>
| 1 | If p then q.  
q.  
Therefore, p. | □ Valid  
□ Invalid |
| 2 | All p are q.  
s is a p.  
Therefore, s is a q. | □ Valid  
□ Invalid |
| 3 | If p then q.  
Not p.  
Therefore, not q. | □ Valid  
□ Invalid |
| 4 | Not both p and q.  
p.  
Therefore, not q. | □ Valid  
□ Invalid |
| 5 | Some q are p.  
Therefore, some q are not p. | □ Valid  
□ Invalid |
| 6 | If p is greater than q.  
q is greater than s.  
Therefore, p is greater than s. | □ Valid  
□ Invalid |
| 7 | Not both p and q.  
Not p.  
Therefore, q. | □ Valid  
□ Invalid |
| 8 | Some q are not p.  
Therefore, some q are p. | □ Valid  
□ Invalid |
| 9 | All p are q.  
Therefore, all q are p. | □ Valid  
□ Invalid |
| 10 | Some p are not q.  
Therefore, some q are not p. | □ Valid  
□ Invalid |
Appendix B

Tally

Correct Condition (High Scoring Target Group)

<table>
<thead>
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<tbody>
<tr>
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</tr>
<tr>
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Incorrect Condition (Low Scoring Target Group)

<table>
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<td>1</td>
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<td>10</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>
I think the story could be Hansel and Gretel.

I'm thinking that the big box could be like the gingerbread house and the small triangle and circle could be Hansel and Gretel and the big triangle the witch trying to lure them in. The small triangle (Gretel) tries to warn the circle not to go in and the big triangle gets angry. Hansel (the circle) goes in anyways. You see the circle get cornered and run around almost like its scared, like when the witch tries to fatten him up to eat him. But then the small triangle (Gretel) comes to the rescue and they both escape. The witch sort of looks trapped for a moment in the end, sort of like when they throw her in the oven and escape.
Appendix D

Naïve Realism Scale

1. How obvious did the artist’s storyline seem?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Unobvious</td>
<td>Moderately Unobvious</td>
<td>Slightly Unobvious</td>
<td>Slightly Obvious</td>
<td>Moderately Obvious</td>
<td>Very Obvious</td>
</tr>
</tbody>
</table>

2. How confident are you in the accuracy of your storyline?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Unconfident</td>
<td>Moderately Unconfident</td>
<td>Slightly Unconfident</td>
<td>Slightly Confident</td>
<td>Moderately Confident</td>
<td>Very Confident</td>
</tr>
</tbody>
</table>

3. To what extent do you think the storyline was obvious to others in the room?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Unobvious</td>
<td>Moderately Unobvious</td>
<td>Slightly Unobvious</td>
<td>Slightly Obvious</td>
<td>Moderately Obvious</td>
<td>Very Obvious</td>
</tr>
</tbody>
</table>

4. Think about the evidence you provided as support of the storyline. Do you think others in the room would have reasoned like you?

<table>
<thead>
<tr>
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<th>4</th>
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<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Slightly Disagree</td>
<td>Slightly Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

5. Imagine that after you leave this study today, this film is shown to 100 people in a movie theatre. If you had to guess, what percentage of people in the movie theatre do you think will guess the same storyline as you? _____ %

6. How subjective was the film?

<table>
<thead>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Subjective</td>
<td>Moderately Subjective</td>
<td>Slightly Subjective</td>
<td>Slightly Objective</td>
<td>Moderately Objective</td>
<td>Very Objective</td>
</tr>
</tbody>
</table>