

2017

Psi Performance, Belief in Psi, and Competition in a Game-Show Format

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Psi Performance, Belief in Psi, and Competition in a Game-show Format

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BY

Heather L. Warner-Angel

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Arts in Clinical Psychology

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

2017

YEAR

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Psi Performance, Belief in Psi, and Competition in a Game-show Format

Clinical Psychology Master's Thesis 2017

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Acknowledgements

I would first like to extend my deepest gratitude to Dr. Gruber for allowing me the unique experience of exploring his ongoing research on mental telepathy. Thank you for your willingness to dedicate countless hours of work in order to help me complete my thesis and for sharing with me your passion for this field. Above all, I would like to say thank you for your unwavering support and mentorship throughout the years. I would also like to extend my gratitude to all the research assistants who helped gather the data for this research and to my thesis committee for your dedication to this thesis process.

Additionally, I would like to acknowledge my dear friend Haley Micenheimer for being the first to introduce me to the field of parapsychology through her experience as a research assistant in the EIU Parapsychology Lab. Thank you for opening the door to my exploration of psi phenomena, which ultimately instilled in me an unshakeable belief in the unseen. From the bottom of my heart, I would like to say thank you to my family for all your love and support during these past two years. Finally, I would like to extend my gratitude to Juan for his support during a majority of this thesis process and for being a catalyst for needed change and growth in my life. To all of you, I would not be where I am at today without you. I am forever grateful.

Abstract

The current study was designed to explore variables influencing psi performance including gender, belief in psi, and competition between men and women. Features of the experiment involved a methodology using a visual image of the receivers, simple spatial location as targets, and monetary incentive to increase competition in a game-show type of environment. One of the goals of this study was to explore the role of competition between groups of senders and receivers as a facilitator of telepathic communication. Results of a one sample t-test comparing overall hit rate for the sample with expected probability were not significant, $t(98)=1.22, p=.11$ (one-tailed). However, a trend towards above chance hitting was evident. There was also no significant difference found between hit rates for men and women. In addition, all participants completed a belief questionnaire, on which they indicated their belief in mental telepathy on a 7-point-scale. It was hypothesized that belief ratings would correspond with hit rates—specifically that participants with high belief in psi phenomena would score above chance while those with low belief scores would score below chance. The results of an independent samples t-test show that high belief participants ($M = 8.92, SD = 1.75$) scored significantly higher on the telepathy task than low belief participants ($M = 7.67, SD = 1.53$), $t(70) = -3.16, p < .001$ (one-tailed), with a Cohen's D score of .76 for effect size. Given the strength of these findings, it appears that psi phenomena and mental telepathy, specifically, do occur and may be influenced by belief in psi, group setting, and competition. It is noteworthy when the variable of belief is not taken into consideration, the data appears to be random, yet once belief is considered, findings emerge.

Psi Performance, Belief in Psi, and Competition in a Game-show Format

Pre-cognition, mental telepathy, clairvoyance, and psychokinesis all fall under an umbrella term referred to as psi phenomena. Psi phenomena are best defined as organism-environment and organism-organism interactions in which it appears that information or influence has occurred that cannot be explained by means of currently understood sensory-motor channels (Radin, 1997). Psi phenomena are often termed anomalous because they appear to stand outside the mainstream scientific concepts of time, space and force. In an attempt to address psi's anomalous nature, Beyer (2011) suggests that behavior and perception are best understood as being independent of one another, yet interactive, and that psi phenomena result from the increased ability to pick up on the synergy of behavior and perception. Beyer (2011) likens the occurrence of psychic phenomenon to living in a matrix and explains that "every personal action, feeling, and thought is reflected and responded to in the 'whole.'" He adds that an individual is able to encounter psi phenomena when "sufficient perceptual capacity is present (p. 6)." Although Beyer (2011) and other researchers have speculated on the specific factors that affect an individual's ability to experience psi phenomena, these factors still remain unclear. While several theoretical models have been proposed, they are entirely speculative (Alvarado, 1998; Kumar, Pekala, & Cummings, 1992; Parker, 1975; Tobacyk, 1998).

Path Facilitation

Based on Einstein's theory of relativity, path facilitation suggests that space-time and mass-energy are interwoven into one single fabric. Similar to how gravity operates by a distance-related inverse square, it is argued that the intensity of the psychic field (a proposed nonmaterial field of effect) may be influenced by the "experiential" distance between the

sender and receiver (Leder, 2005). Those who are more attuned to an individual tend to be more receptive to that individual's presence, and therefore, may pick up more easily on the thoughts, emotions and energy that the individual is projecting. This effect may be experienced to a greater extent by those who are more involved in an individual's life than by those who are less involved, no matter the physical proximity to the individual (Leder, 2005).

Advocates for path facilitation claim that if this framework for understanding psi phenomena holds true, it would be necessary to incorporate a "fifth field" into the currently recognized fields of physics (i.e., gravitational, electromagnetic, strong and weak nuclear). This "fifth field" would include an informational field encompassing all experiences of consciousness, and psi phenomena such as intuition, telepathy, clairvoyance, and psychokinesis would be considered the byproducts of an individual's ability to tap into this field (Lazlo, 1995). While this idea is still speculative, some research has hinted at the existence of such a field.

In order to study the magnitude or strength of such a field, some researchers have chosen to examine group psychic ability over individual ability. As studies suggest, group psychic phenomena often seem to consist of ordinary individuals functioning in synchrony (Ullman and Krippner, 1989). In fact, research conducted at the Princeton Engineering Anomalous Research lab, studying psychokinesis, found that when groups of participants shared a common emotion or paid attention to the same stimulus, their random event generators (REGs) deviated from expected random output to a significant degree. This deviation is speculated to have been influenced by a field of consciousness and was termed "FieldReg" (Leder, 2005; Schmidt, 1970, 1971).

Building upon this research, Radin (2003) further hypothesized that REG output would differ significantly from chance expectations on days when worldwide events captured the attention of the masses. In 2001, Radin (2003) distributed 50 REGs throughout various countries, and monitored their performance throughout the year. Interestingly, he observed that the largest change in variance in REG data for 2001 occurred on September 11th, the day of the terrorist attacks on the World Trade Center. Radin (2003) suggested that this phenomenon could be conceptualized as a form of path facilitation because space, time, and mind were “curved” by what he refers to as “mass mental coherence.”

Nonlocal Entanglement

Contrary to the notion that all events exist in a spatiotemporal context, proponents of quantum mechanics who view the occurrence of psi phenomena on a subatomic level, suggest that particles that are created collectively can become “entangled”—meaning that what happens to one particle simultaneously affects the other particle—even though no signal is passed between them. As Greene (2004) explains,

As one particle’s spin is actualized by measurement, its partner, even if on the other side of the universe, instantly takes on a correlated spin. The two photons are so intimately bound up that it is justified to consider them—even though spatially separate—as parts of one physical entity (p. 4).

According to this model, psi events are nonlocal phenomena in which the mind is capable of being linked to a distant person, location, or event, similar to how distant particles can often become entangled. Anecdotal evidence suggests that this may be true to an extent as several reports from identical twins describe one twin being able to sense when something is wrong with the other twin, even if separated by a great distance (Parker, 2010). Furthermore, friends

who have lost contact for a period of time often share the uncanny experience of texting or calling each other at the exact same time (Sheldrake, 2009). Similar experiences have also been reported by family members of soldiers who have been sent off to the war, who describe waking up in the middle of the night with extreme pain localized in one part of their body and the overwhelming sensation that something is wrong. Reports of these experiences have often been followed by news from the authorities several days later that the soldiers have either been injured or died in combat, often shot in the very same body location where their family members experienced pain several nights earlier (Brusewitz, Cherkas, Harris, & Parker, 2013).

Like other theoretical frameworks for explaining psi phenomena, nonlocal entanglement has advantages as well as disadvantages. A strong feature of this model is the presumption that consciousness can be viewed as a field that is made up of the nonspatial unity of minds, which is a notion that aligns with the basic tenets of morphic fields theory (the idea that there are fields of habitual patterns that links all people, and influence and are influenced by the habits of all people) and path facilitation. However, as Leder (2005) suggests, one of the major drawbacks of this model is that it is built upon the principles of quantum mechanics, which do not necessarily parallel human experience. For instance, quantum mechanics attempt to explain peculiar events that happen on the subatomic level, but the majority of these phenomena are insignificant on the macroscopic level where classical physics principles still hold true. Another weakness of this model is the fact that nonlocal entanglement cannot account for the seemingly purposeful intent behind some psi phenomena, such as the case of an individual whose intent is to send healing to a distant

relative. Instead, entangled particles do not have the consciousness necessary to accomplish such a task (Leder, 2005).

Morphic Fields Theory

Similar to nonlocal entanglement, morphic fields theory assumes that every mental experience that belongs to an individual is contained within its own field. According to this theory, an individual's morphic field can become intertwined with other fields at various points in the individual's life. The entanglement of these fields appears to connect individuals at great distances by providing channels of communication (Sheldrake, 2006). Interestingly, morphic fields of mental phenomena are not limited to the inner workings of our brains. Instead, they appear to extend far beyond the physical body, similar to how magnetic fields extend beyond the surfaces of magnets. To provide a better understanding of their behavior, Sheldrake (2006) has organized the properties of morphic fields into a comprehensive list: morphic fields 1) are self-organizing wholes, 2) have both a spatial and temporal aspect, 3) organize spatio-temporal patterns of vibratory or rhythmic activity, 4) interrelate morphic units that lie within them and contain other morphic fields within them that are organized in a hierarchy or holarchy, 5) are structures of probability, and 6) contain a cumulative, built-in memory given by self-resonance with a morphic unit's own past and by morphic resonance with all previous similar systems (p. 3).

Moreover, Sheldrake (2001) suggests that morphic fields "underlie our mental activity and our perception" and are able to be tested through the sense of being stared at (p. 5). As surveys in Europe and North America have shown, between 70% and 97% of the population have experienced the sensation of being stared at from behind (Braud, Shafer &

Andrews, 1990; Sheldrake, 1994; Cottrell, Wincer & Smith, 1996). As a result, Sheldrake (1998, 1999, 2000) conducted a series of studies to determine whether individuals could actually distinguish between when they are being stared at and when they are not. In order to test this, he blindfolded one participant and had him sit with his back to another participant. The individual who sat behind the blindfolded participant was given a silent cue on a computer screen that displayed one of two captions: "STARE NOW" and "DO NOT STARE." If the computer screen displayed the caption commanding the participant to stare, that individual would focus intently on the back of the neck of the blind-folded participant. If the participant was instructed not to stare, he would divert his attention to another part of the room and think about something other than the blindfolded participant. Once one of the two captions became visible on the computer screen, a tone would sound, signaling the blindfolded participant to determine whether or not the other participant was staring at him. Results showed an interesting pattern where scores in the staring trials were highly significantly above chance, while in the trials where the participant was instructed not to stare, the scores did not differ significantly from chance (Sheldrake, 1998, 1999, 2000). Sheldrake (2001) concluded that the ability of participants to accurately guess when they were being stared at is indicative of the existence of morphic fields.

Psi and Extraordinary Experiences

Instead of providing an explanation of how psi occurs, as was done in the theoretical models listed above, some researchers have chosen to narrow their focus on the factors that may make an individual more conducive to psi experiences. As research has shown, an encounter with psi phenomenon may be brought about by extraordinary experiences such as substance use, spiritual practices, or even mental illness (Beyer 2011). Beyer (2011) suggests

that a common denominator of these three factors may be an altered state of conscious.

Although certain types of mental illness such as psychotic disorders and spiritual practice are speculated to be factors of psi experience, research has tended to focus more heavily on the connection between psychedelic drug use and psi conduciveness over the years. Perhaps one explanation for this emphasis is the fact that psi phenomena have long been associated with certain psychedelic drugs as research has shown that users of psychedelics tend to express stronger belief in paranormal phenomena than nonusers (Kumar, Pekala, & Cummings, 1992; Tobacyk, 1998). Because psychedelic drugs have documented mind-altering and visionary effects, they naturally lend themselves to be conducive to the subjective experience of psi-phenomena (Alvarado, 1998; Parker, 1975).

Although research has shown a correlation between psychedelic drug use and psi experiences, researchers speculate as to what role psychedelic substances may play in inducing psi phenomena. Several researchers have suggested that exceptional mental phenomena (e.g. psi, out-of-body experiences, alien abduction experiences, etc.), solicit a highly specific neurochemical activity in which psychedelic molecules may play a role (Jansen, 2001; Roney-Dougal, 1986, 1991; Strassman, 2001). Strassman (2001) proposed that the endogenous psychedelic *N, N*-dimethyltryptamine (DMT) and its role in the neurochemical activity of the pineal gland may be the neurochemical foundation for near-death and alien abduction experiences. Jansen (2001), on the other hand, suggests that *N*-methyl-*D*-aspartate (NMDA) antagonists found in psychedelic dissociative substances such as ketamine and phencyclidine (PCP) are instead the key to the neurochemical mediation of near-death experiences.

Because there has been some dispute as to which psychedelic substances may trigger the proposed neurochemical process involved in certain psi experiences, some researchers have chosen to focus on the similarities of these substances in order to better understand how their effects alone might help induce psi phenomena (Blackmore, 1992; Blewett, 1963; Garrett, 1961; Huxley, 1961; Krippner & Ferish, 1970; Millay, 2001; Nicol & Nicol, 1961; Osis, 1961; Panhke, 1998; Parker, 1975; Rogo, 1976; Tart 1968, 1994). Luke (2008) summarizes the shared effects of these different types of psychedelic drugs considered by researchers to be conducive to the production of psi phenomena. These effects include: 1) an increase in vividness and quality of mental image and the dreamlike state, 2) altered perception of self-identity (e.g. unity consciousness), 3) distorted sensory input, 4) sensitivity to subtle changes and intensity of feeling, 5) increased suggestibility, 6) increased optimism toward impossible realities 7) complex distortions and a feeling of transcendence of space and time, and 8) increased empathy, which is considered a key component for telepathic experience (Luke, 2008). Many researchers believe that these effects are the key to understanding how the use of psychedelic substances may elicit a psi experience for users.

Interestingly, several researchers suggest that these effects can be experienced without the help of psychedelic substances (DeGracia, 1995; Naranjo, 1987; Roney-Dougal, 1989; Thalbourne, 2001). For centuries, shamans around the world have used drum circles, chanting, and dancing as a way to bring about a trance-like state necessary for communicating with ancestors, spirits, gods, and other entities. These trances have been described as having similar components (i.e., vivid mental imagery, dreamlike states, intensity of feeling, unity consciousness, and a feeling of transcendence) as psychedelic experiences (Naranjo, 1987). As a result of their similar effects, endogenous plants such as

ayahuasca and psilocybin were gradually incorporated into shamanic practices over time in order to bring about mystical experiences more quickly (Grof, 1980). As a result of this development, advocates for examining the effects of psychedelic substances in order to better understand psi phenomena have reflected upon the connection between trance-induced and drug-induced states of consciousness, often wondering why their effects are so similar.

In order to explore this connection further, Thalbourne (2001) examined the relationship between drug use and Kundalini experiences, which are psychophysiological phenomena associated with yoga and meditation practice that involve bodily energy surges and transpersonal experiences—similar to the trance-like experiences of shamanic practice. His findings suggest that Kundalini and other trance-like experiences may serve as a mediator between drug use and psi phenomena. As Thalbourne (2001) suggests, the use of a psychedelic substance may trigger a Kundalini experience which in turn may make the user more open to experiencing psi phenomena. Interestingly, these findings align with the findings of DeGracia (1995), who surveyed 61 psychedelic users about their experiences and found a large overlap between reported psychedelic experiences and experiences common in spontaneous Kundalini awakenings. In the survey, participants reported a heightened sense of empathy (75%), OBEs (40%), intuition, psychic powers, and the recall of past lives.

Psi and Dreams

In addition to psi phenomena experienced during both drug-induced and trance-like states, studies have shown that 33-68% of reported spontaneous experiences of psi phenomena occur while dreaming (Van de Castle, 1977). As a result, a substantial amount of research has focused on the relationship between dreams and psi phenomena. Most of this

research was carried out at the Maimonides Medical Centre in Brooklyn by Ullman and Krippner (1989) during the 1960s and 70s and yielded significant findings. In a series of studies that spanned across decades, Ullman and Krippner (1989) set out to explore the connection between psi phenomena and dreams—specifically, whether or not psi receptiveness is heightened during the dreaming process. In a typical experiment, participants were separated into one of two groups—senders or receivers—and then paired together to participate in the experiment. Sender and receiver were then introduced at the lab and left to briefly interact before retiring to their own rooms to sleep. Researchers randomly selected one of four pictures to be sealed in an envelope and given to the sender who was not to open it until arriving to his or her room, which was located at a distance from the room of the receiver. Before falling asleep, the sender would try to send a mental image of the picture found inside the envelope to the receiver in the other room. Researchers then proceeded to wake up the receiver at the end of every period of REM sleep to ask for a dream report. Dream reports were transcribed and sent to external judges who determined how closely they depicted the picture sent telepathically by the sender. Results were significant as dream reports matched target pictures at an above chance rate (Ullman and Krippner, 1989).

After receiving significant results from the studies involving pairs of participants, Ullman and Krippner (1991) shifted their focus to studying mental telepathy in groups. One of their most notable studies involved using members and fans of the band The Grateful Dead to serve as sender participants in six different group telepathy experiments. Ullman and Krippner (1991) speculated that the group dynamics of the crowds at The Grateful Dead concerts would create an emotional intensity reflective of the emotional states reported by individuals who had experienced psi phenomena. Researchers randomly selected one of

twelve pictures to be sent by the Grateful Dead members, and gave the print and a set of instructions to the band members before the concert. During intermission, the band projected the image they had been given on a big screen while reading the instructions to members of the audience. Instructions included the name of the receiver, who was staying at the Maimonides Medical Centre 45 miles away, and directions for mentally sending the image to this receiver. Like the previous studies, the receiver was awoken at the end of each REM stage and asked for dream reports, which were transcribed and sent to six external judges (Ullman and Krippner, 1991). The dream reports were then analyzed and determined to be statistically significant. Interestingly, the results of this study supported Ullman and Krippner's (1991) prediction that an individual is conducive to telepathic communication during a dream state and that group settings are favorable for telepathic communication—perhaps a direct result of the emotional intensity involved in group communication. Their research has continued to spark interest in the relationship between dream states and psi phenomena, leading many researchers to speculate as to which processes that underlie dreaming are most conducive to the experience of psi.

Psi and Neurobiology

As a result, many researchers began exploring the neurological factors that underlie the dream process and how they may act as a mediator for psi experiences. Theoretical framework suggests that chemicals made in the pineal gland may mediate psi experience (Callaway, 1988; Luke & Friedman, 2010; Roney-Dougal, 1989). Roney-Dougal (1989, 2001) speculates that the experience of psi phenomena while dreaming may be mediated by pineal gland neurochemicals melatonin and DMT, which are allegedly responsible for inducing sleep and dream states. Some researchers, on the other hand, argue that melatonin is

not involved in inducing psi effects due to its inactivity as a psychoactive substance and lack of visionary qualities (Shulgin and Shulgin, 1997). However, Luke, Zychowicz, Richterova, Tjurina, and Polonnikova (2012) noted that melatonin's circadian cycle in the brain may be associated with the production of DMT—a highly potent, vision-inducing endogenous psychedelic that may serve as neurobiological mediator of psi phenomena. Support for the idea that psi experience may be related to circadian pineal gland activity is apparent from studies that have demonstrated that children tend to score worse on psi tests at 9 pm when melatonin production is low, compared to at 3 am, when melatonin concentration is at its peak (Satyanarayana, Rao & Vijayalakshmi, 1993). Interestingly, 3 am to 4 am has long been thought to be a time for unusual experiences and was referred to in folk terms as “the witching hour” and the “graveyard shift.”

Due to the difficult nature of directly measuring and researching DMT production, Luke et al. (2012) conducted a study that indirectly tested the connection between DMT made in the pineal gland and psi experience by testing ESP performance between 3 am and 8 am, when melatonin (and possibly DMT) levels differ markedly—predicting that precognition scores would be higher at 3 am. Prior to falling asleep at home, participants were instructed to set an alarm for 3 am and 8 am, and take a few moments to focus on their intent to dream of the target clip that had been randomly selected by researchers in the lab. When the first alarm went off, participants booted up their computers and selected one of four fractal clips that most closely resembled the image they had dreamed of, via a computer program provided by researchers. After completing the task, they were instructed to focus on their intent to dream of the next target clip before once again falling asleep. Once the second alarm sounded, participants again selected one of four fractal clips. Feedback was not

immediately given to participants and all responses were submitted directly to the researchers through an online server. Although task scores were not significant overall, psi scoring at 3 am was significantly higher than at 8 am as predicted (Luke et al., 2012). Consequently, researchers concluded that dream states may not be as conducive to precognition as to other forms of psi phenomena, such as telepathy or clairvoyance. To support this claim, Luke et al. (2012) noted that the majority of studies involving telepathy conducted by Ullman and Krippner (1989, 1991) at the Maimonides research lab were largely significant whereas the findings of the three precognition studies were non-significant.

Psi-Elusiveness

The study of psi phenomena has simultaneously captivated and eluded its seekers for centuries, as significant findings in psi research often remain unable to be replicated. For years researchers have made attempts to explain this discrepancy. Several critics of psi research have suggested that the significant findings obtained in psi experiments are merely due to methodological errors and oversights. On the opposite end of the spectrum, there are advocates who propose that psi phenomena are so prevalent that they frequently go unnoticed. As a result, these individuals speculate that psi phenomena are often mistakenly attributed to other phenomena that abide by the classical laws of physics (Kennedy, 2001.). However, there seems to be a discrepancy between the ideas that (1) psi ability is widely available and (2) psi is guided by individual motivation, and the consequent predictions made in research that psi effects should be more prevalent. In order to address this concern, it has been suggested by numerous researchers that the field of parapsychology may benefit from adapting the "correspondence principle" that helped guide the development of quantum physics.

The correspondence principle requires that predictions made in quantum physics must agree with classical physics in those areas in which classical physics was developed and works well. In essence, the correspondence principle helps to prevent any inconsistencies between the quantum predictions and reality as we know it. Since other concepts from quantum physics such as nonlocality and the observer effect (changes that the act of observation may make on an event that is being observed) have been integrated into parapsychology research, incorporating the correspondence principle could prove to be a natural course of action that may benefit subsequent research in the field (Kennedy, 2001).

In addition to the hypothesis that psi phenomena may be unable to be replicated due to methodological error, several other models have been proposed to explain psi elusiveness. One prevailing hypothesis for psi elusiveness is the idea that psi phenomena are dependent on certain psychological conditions or altered levels of consciousness (Beyer, 2011). Researchers have found evidence suggesting that specific conditions like increased motivation and high expectations by participants and experimenters, attention to psi tasks without distraction, and an atmosphere of spontaneity are all conducive to psi effects. Interestingly, some of the most significant results were obtained in psi experiments where the experimenters and participants were convinced they were working together on research that was of great significance to science and humanity (J.B. Rhine, 1973; J.B. Rhine & Pratt, 1957; Targ, Braud, Stanford, Schlitz & Honorton, 1991). However, after nearly 70 years of research on psi-conducive conditions, there is still little evidence that psi phenomena can be demonstrated more reliably now as a result of these conditions. In fact, the trend throughout the history of parapsychology research has been for replication rates for specific

methodologies to decline, especially as more experimenters become involved in the replication process (Beloff, 1994; Pratt, 1978).

Other research has shifted focus from psi-conducive conditions to the role of individual ability in psi elusiveness. Many researchers propose that the reason psi is so elusive is because few people actually have psi ability. According to Utts (1996), roughly 1% of participants who took part in remote viewing (a form of clairvoyance that involves determining what is at a distant or unseen location) exercises were consistently successful. Moreover, research conducted by Broughton (1991) determined that despite survey results suggesting that more than half of the population have experienced psi phenomena, only 10% to 15% of the population have had experiences that are consistent with psi effects. However, the notion that psi elusiveness stems mainly from the rarity of individual psi ability is still somewhat lacking as researchers such as Rhine et al. (1965) and Radin (1997) have found that psi is able to be demonstrated within a wide variety of participants and settings. As Kennedy (2001) summarizes, psi distribution may be a contributing factor to psi elusiveness, but other factors seem to play a much larger role.

Another explanation for psi elusiveness is the idea that psi phenomena occur regularly without notice. Because of the elusive quality of observed psi, proponents of this hypothesis assert that the occurrence of noticed psi phenomena must be inhibited in comparison to unnoticed psi. Researchers such as Broughton (1988) have proposed that psi actually works best when it goes unnoticed by the individual it is serving, perhaps a function that is necessary for the individual's protection. Eisenbud (1992), on the other hand, suggests that psi is commonplace, underlying all probabilistic processes in nature. In this line of reasoning, examples of observed psi are considered rare because they oppose the basic principles of

complex, unobserved psi. Although the notion that psi phenomena are pervasive and constantly occurring has received considerable support, evidence has yet to follow suit. Some non-intentional psi studies have been attempted, but they failed to provide the evidence needed for unobserved psi for the sole fact that experimenters intend for a psi effect to occur and therefore take on the conscious role of the observer. Consequently, psi that is unable to be observed lies outside the realm of scientific study. As advocates of this hypothesis have noted, these ideas pose a challenge to the commonplace research approaches in parapsychology, and may require evaluation outside of the traditional experimental setting (Braun, 1982; Broughton, 1988; Eisenbud, 1992).

Another hypothesis, rooted in the tradition of a deeply ingrained fear of psi, suggests that resistance to psi actually suppresses its occurrence. Not surprisingly, the fact that many people are skeptical about the existence of psi phenomena is the most widely discussed evidence for psi resistance. Kennedy (2001) provides common reasons for resistance to psi that include (1) an individual's fear of loss of privacy for inner thoughts, hopes, and intentions, (2) fear of information overload from psychic information, (3) personal distress from awareness of other's negative thoughts and emotions, and (4) fear of inadvertently harming others through paranormal expression. Interestingly, Eisenbud (1992) suggests that the occurrence of misplaced psi efforts, such as psi missing (performance on psi-related tasks that is far below chance expectations), may be a manifestation of a participant's resistance to psi phenomena. Moreover, flawed methodology that jeopardizes the conclusions of psi research may also be an expression of the researcher's resistance to psi. A counter argument to the idea that psi elusiveness is due to resistance or fear is the fact that psi ability seems to be of interest to many people, as evidenced by the lasting popularity of books and courses on

psychic development (Kennedy, 2001). Even though resistance to psi may hinder its effects in some instances, again, there is little evidence to suggest that this explanation is the primary contributing factor to psi elusiveness.

It has long been thought that psi may serve a bigger purpose than satisfying individualistic motives. In fact, many who claim to experience psi phenomena, especially shamans, spiritual gurus, and healing practitioners, believe that the fundamental purpose of psi experience is to promote a worldview that is more interconnected, goal-oriented, and spiritually driven. Perhaps, as Kennedy (2001) explains, psi continually accomplishes this purpose and is only considered elusive by researchers because it does not routinely conform to the self-serving wishes of the individual.

In research, there are noted correlations between psi experience, worldview, and spirituality. A study conducted by Kennedy and Kanthamani (1995) that examined the effects of psi experience found that the most common effects of psi related to spirituality, and that reporting a paranormal experience was correlated with spirituality being an important aspect of life. Moreover, a community survey carried out by Palmer (1979) that assessed spontaneous psi experiences found that they frequently influenced attitudes toward the self, beliefs regarding meaning in life, and spirituality. Kennedy (2001) notes that under the umbrella of this hypothesis for psi elusiveness, psi effects are intended to be noticed as extraordinary, and the inconsistent nature of psi may even be necessary for psi to have its effect. If psi effects were consistent instead of elusive, they would no longer seem as laden with insight regarding life meaning and purpose. Furthermore, if psi phenomena were predictable and reliable, they would likely seem commonplace and be viewed as a everyday

occurrence instead of the mysterious force that many believe helps guide the spiritual evolution of our species (Kennedy, 2001).

Similar to the notion that psi elusiveness serves a bigger purpose for our species, Eisenbud (1992) proposes that psi is intentionally elusive in order to be able to routinely carry out its ecological purposes. Moreover, psi involves an interconnectedness that encompasses sacrifice for the benefit of the overall ecological system. This hypothesis seems most logical when considering what the world would be like if psi were readily available to every organism. As Kennedy (2001) elaborates, “a cat could use psi to catch a mouse, but the mouse could use psi to avoid the cat.” Consequently, psi seems to be elusive because it satisfies purposes that pertain to the ecological system rather than to the individual, as is traditionally assumed in research. However, some researchers argue that the extinction of many species over time is inconsistent with the idea that psi is elusive because of its role in promoting interconnectedness and the well being of the overall ecological system (Levin, 1996).

Belief in Psi

Belief in psi phenomena has proven to be another important variable in parapsychology research. In 2002, a gallop opinion poll showed that approximately 40% of the U.S. population believes in the existence of psi phenomena. Of the four types of psi phenomena, it was found that roughly 50% of Americans believe in precognition, 36% in telepathy, 32% in clairvoyance, and 17% in psychokinesis. Interestingly, 25% had also claimed to experience mental telepathy (Shmicker, 2002). Despite the stigma often associated with belief in psi, many continue to believe in it and reportedly experience it. As a

result, a number of researchers have chosen to focus on the role belief plays in yielding psi effects. Over the years a substantial amount of research has been conducted exploring the relationship between belief in psi phenomena and performance on psi tasks (Haraldsson and Houtkooper, 1995; Luke, Delanoy, and Sherwood, 2008; Hitchman, Roe, and Sherwood, 2013; Watts and Baker, 2002;).

Smiedler (1942) pioneered the exploration of the relationship between belief in psi and psi performance in a series of studies conducted at Harvard from 1942-1945. In these studies, Smiedler (1942) examined what she termed the sheep-goat effect. The sheep-goat effect refers to the idea that individuals who believe in psi or “sheep” tend to perform better than chance in psi tasks whereas individuals who do not believe in psi—referred to as “goats”—tend to score below chance (Varvoglis, 1997). Participants of the study were asked to complete a questionnaire assessing their belief in psi phenomena to complete a clairvoyance task that involved ESP cards. Each card was printed with a symbol (i.e., circle, cross, wavy lines, star and square) and was face down in a deck. Participants were asked to predict which card would be drawn. Results show that the participants who had high belief ratings (sheep) outperformed those with low belief ratings (goats) in the series of studies, $p < .005$.

Haraldsson and Houtkooper (1995) also explored the relationship between belief in psi phenomena and psi performance. Before the psi task was introduced, participants were asked to fill out a three-item Sheep-Goat Scale that was designed to assess belief in psi phenomena in addition to a questionnaire that assessed how religious participants considered themselves to be. The psi task consisted of 80 trials completed on the computer. Forty of the trials were part of a clairvoyance task in which participants were asked to guess which one of

the four targets shown on their screen had been selected at random by the computer. The remaining 40 trials were considered a part of a precognition task in which the participants were asked to guess which of four letters (B, N, O, V) the computer would select before the computer selected one. Interestingly, results showed a significant correlation between belief ratings and psi performance for participants who had reported low religiosity, $p < .05$. In essence, participants who had high belief in psi and a low level of religiosity tended to perform significantly above chance in the experiment.

Luke et al. (2008) conducted a study examining how psi belief and belief in luck influence performance on a non-intentional psi task. It was predicted that because psi may serve an evolutionary function that does not require conscious intent, psi effects should be found even though participants were not aware they were completing a psi task. It was also assumed that belief in personal luck may to some extent be synonymous with belief in one's own psychic ability, and therefore, may play a similar role in yielding psi effects. A Sheep-Goat questionnaire was administered in the study to assess both psi belief and belief in personal luck. Participants completed a series of computer tasks in which they were told to select one of four fractal images that they thought was the most visually pleasing. Without their knowledge, the computer had been randomly programmed with a "hit" image for each task and it was considered a "miss" if they did not select the chosen "hit" image. Results showed a strong correlation between general belief in luck and performance on the psi task, $p < .008$, with a trend showing that participants who had high belief in their own personal luck performed significantly above chance on the psi task. Moreover, a correlation was also found between overall belief in psi and scores on the psi task, $p < .02$. Participants with high belief

in psi performed significantly above chance and those with low belief in psi tended to perform significantly below chance.

The Experimenter Effect

An issue that continues to arise in psi research is why certain experimenters are able to consistently obtain significant results in psi experiments while others are not. In order to further explore this phenomenon, several researchers shifted their focus from the participant's belief in psi to the experimenter's belief in psi (Kennedy and Taddonio, 1976; Wiseman and Schlitz, 1997; Schneider, Binder, and Walach, 2000; Watt and Baker, 2002; Watt and Brady, 2002). In addition to the role that the participant's belief in psi plays in yielding psi results, it has been hypothesized that the experimenter's belief in psi may also influence psi performance. This phenomenon is known as the experimenter effect, and refers to unintentional psi which affects experimental outcomes in ways that are directly linked to the experimenter's needs, wishes, expectancies or moods (Kennedy and Taddonio, 1976).

Wiseman and Schlitz (1997) conducted a study exploring the experimenter effect in remote staring psi tasks. Wiseman, a skeptic of psi, simply wished to see whether or not he could replicate the effect of individuals being able to sense when someone is staring at them from behind, as previous researchers had done. Schlitz, on the other hand, was a psi advocate who had conducted several psi experiments that yielded significant psi results. Wiseman and Schlitz (1997) served as separate experimenters for two different sets of trials that were conducted at the same time and in the same location. Participants were randomly assigned to either Wiseman's or Schlitz' study and individually led to the receiver room to prepare for the psi task. The designated experimenter then proceeded to attach electrodes to the first and

third fingers of the participant's hand and made sure their EDA was being monitored successfully. Afterward, the experimenters headed to separate sender rooms where they were able to view the participants via a one-way closed circuit TV system. In randomized order, the experimenters performed 30-second trials of staring at the participant on the monitor screen (stare trial) and 30-second trials of diverting their gaze from the participant on the monitor (nonstare trial) for a total of 32 trials. During this time, the participant filled out a psi belief questionnaire and spent the remaining time reading magazines. Results comparing EDA readings to stare and nonstare trials showed that Wiseman's participants did not respond differently to the two different types of trials. However, Schlitz' participants were significantly more activated in stare trials than nonstare trials. Consistent with the original hypothesis, Wiseman, a psi skeptic, did not obtain significant results in the remote staring task, while Schlitz, a psi proponent, did.

Building on the findings of Wiseman and Schlitz (1997) and other previous research, Watt and Baker (2013) conducted a study examining the experimenter effect in remote facilitation of attention focusing tasks. Previous studies conducted by Watt and Brady (2002) had shown that participants' perceptions of the experimenter could be affected by how the experimenter is portrayed prior to actually meeting the experimenter. Drawing from this finding, Watt and Baker (2013) decided to investigate how varied psi supportiveness of the suggestions made by the experimenter to the participants during the experiment would affect psi performance. In the study, half of the participants were randomly assigned to the positive condition and half to the negative condition. In the positive condition, the experimenter explicitly expressed his belief in psi and encouraged participants to contemplate and discuss possible psi phenomena they may have experienced at some point in their lives. The

experimenter also referenced previous successful psi research involving the same remote facilitation task, and made positive suggestions regarding the outcome of the session. In the negative condition, the same experimenter expressed his disbelief in psi and encouraged participants to consider and discuss “normal” interpretations of their potential psi experiences. He made further negative suggestions regarding previous psi research involving the remote facilitation task and its lack of success in yielding significant results. Overall psi performance was not found to be significant, however, the helpee’s perceived ability to focus marginally improved after pressing the handheld button and the helper intervened.

Previous Findings from EIU’s Parapsychology Laboratory

Gruber and colleagues (Gruber, personal communication, April, 2015) have long speculated that groups of individuals form social fields that can facilitate or interfere with the telepathic transfer of information. Together they have developed an experimental methodology to test this hypothesis in group settings. This methodology includes the use of groups of participant senders, a participant receiver, video and audio feed, and use of spatial location as targets. Over the years, a series of studies have been conducted in the parapsychology laboratory at Eastern Illinois University in order to test the social fields hypothesis.

Several studies conducted by Gruber and colleagues (Bunfill, 2006; Connor, 2009; McWhorter, 2005; Parker, 2006; Yarnall, 2003) have used similar procedures to test mental telepathy in groups, and seem to demonstrate that this methodology is capable of strongly and predictably encouraging telepathic effects. An example of a typical methodology is as follows: A receiver, picked at random from a group of senders, sits in an isolated room in

front of a foam board marked with four target circles (one in each corner). Three red discs with strips of Velcro adhered to the backs are used as target markers. The receiver is viewed via closed video feed by a group of senders who are facing an identical foam board in a separate room with only two red discs, one marked (+\$) and the other marked (-\$). Target locations for the (+\$) and (-\$) discs are selected in the sender room by using random numbers. The receiver is signaled by a bell tone that the target locations have been chosen. The senders try to transmit the (+\$) target location to the receiver telepathically and the receiver attempts to locate it marking it on the foam board with one of the discs. The receiver continues to place discs on the board until either the (+\$) or (-\$) target is found. If the (+\$) is selected by the third attempt, a bell is sounded to indicate that the receiver has scored a "hit." If the (-\$) target is chosen, a buzzer is sounded to indicate that the receiver has scored a "miss." Several trials (usually 16) are run. The receiver is returned to the sender room and another receiver is randomly selected from the group. A single response is referred to as a trial, a set of trials constitutes a run, a series of runs constitutes a session, and several sessions comprise an experiment.

Yarnall (2003) reported on an experiment from the lab in which participants were divided into an "in-group" and an "out-group." The materials used in this study included two foam boards containing four circles and five red foam discs with Velcro adhered to the backs. Senders were able to view the receiver, who sat in a separate room, via video feed. The first three receivers were separated from the others prior to the experiment to ensure that they had never met the participants who served as senders. These three receivers constituted the out-group. The next three receivers were selected from the remaining participants who were considered to be the in-group simply because they were exposed to the senders as well as the

research assistants, who attempted to create a warm and friendly atmosphere by joking around with participants and making enthusiastic comments about the study to facilitate group communication and comfort level. Each receiver attempted to telepathically receive the correct location of the target and place the foam disc on the corresponding target. It was hypothesized that in-group members would score above chance due to the psi-conduciveness created by the collective group while out-group members would score below chance due to a natural tendency of being psi-defensiveness since the research assistants did not warm them up to the experiment beforehand. Results of a t-test indicate that the in-group achieved significantly more direct hits than the out-group ($M_{\text{ingroup}} = 4.53$; $M_{\text{outgroup}} = 3.03$), $t(72) = 3.84$, $p < .001$. The initial hypothesis was supported in that in-group members scored significantly more direct hits (163 direct hits) on the first attempt than the out-group (109 direct hits). With 144 hits expected by chance, the in-group scored significantly above chance ($p < .05$) while the out-group scored significantly below chance ($p < .001$), showing a very strong psi-missing effect. Data was collected over 12 sessions during which the in-group scored higher than the out-group for all sessions ($p < .0002$). Of noteworthy consideration, we would expect to get a finding this extreme once in every 5,000 sets of 12 sessions.

Using a similar methodology, a study reported on by McWhorter (2005) explored the relationship between mental telepathy and belief in psi. It was hypothesized that participants' belief scores would correlate with their telepathy performance. To test this, a group of researchers attempted to telepathically transmit target locations to groups of subjects (multiple receivers simultaneously). Two runs were conducted (sets A and B) of 16 trials each, during which each receiver completed a record form on which they recorded where they believed the correct targets were located. In set A, significant results were found when

examining the relationship between psi belief and telepathic ability ($p < .01$). Results showed that as belief scores increased, hit rates also increased with every step up in belief score corresponding to a step up in hit rate. These findings support the hypothesis that belief is a major factor in telepathy scoring.

Bunfill (2006) reported on a study that explored the relationship between psi belief and decline effects. This study examined the effect of experience in a psi experiment since participants of the study had previously participated in a telepathy study. It was hypothesized that subjects would score above chance at the beginning of the experiment due to previous experience, but scores would start to drop as the study went on due to boredom or fatigue. A significant decline effect was found. Results were not significant for the relationship between psi belief and telepathy scores. However, it was speculated that belief in psi may have served a mediating role in the decline effect since subjects with a high belief score had less of a decline in scoring than subjects with low belief in psi.

Parker (2006) reported on a two-part study that explored how telepathy is influenced by multiple variables including belief, within session order, past experience, and instructions to attempt to miss targets. Part I of the study consisted of groups of senders attempting to telepathically send a target location to a receiver selected at random. It was hypothesized that an order effect would be evident with greater missing occurring during the first run (due to a lack of warm-up or acclimation effect) and last run of each session (due to fatigue). Significant differences were found when comparing the first and last positions in a run with the middle sessions of a run $p = .026$. In addition, participants who indicated a high belief in telepathy obtained scores significantly below chance, contrary to what one would expect based on results from previous studies. Part II consisted of three sets (sets A, B, and C) in

which groups of research assistants attempted to transmit target locations to groups of participants. During set C, the participants were instructed to purposely “miss” the target. Results indicated that scores for sets A and C were significantly below chance probability. In addition, it was hypothesized that participants who had participated in both Part I and Part II of the study would score higher than participants who participated only in Part II. Results showed a tendency for participants with prior experience to have higher hit rates than novice participants in all three sets.

Conner (2009) examined data involving the role of psi-defensiveness and psi-conduciveness in telepathy performance within groups of participants in three separate experiments. In Part I it was hypothesized that as friendliness and enthusiasm ratings increased or decreased for a session, hit rates would act accordingly. Results showed that as friendliness levels (rated by the research team prior to data collection) increased for a session, overall hit rates for that session also increased. It was hypothesized in Part II that participants who rated their belief in psi as low would hit targets when instructed to miss and miss targets when instructed to hit ($M = 34.37\%$, $SD = .1519$). Interestingly, results showed that low belief participants scored significantly higher when told to miss and significantly lower when told to hit. In Part III it was hypothesized a difference in hit rates would be found between groups of male and female participants. Results indicated that women scored significantly higher than men in all sets. Moreover, men scored significantly below chance when women served as senders.

Current Study

The current study focuses on data from an experiment that investigated mental telepathy in groups by using participant senders and receivers to pick target locations. All data was collected during the Spring 2011 semester at Eastern Illinois University. The methodology implemented in this study is similar to previous studies conducted by Gruber and colleagues. As is indicated in prior studies, a hit refers to a participant choosing the (+\$) target while a miss refers to a participant choosing the (-\$) target. The probability of obtaining a hit is 50% as is the probability of a miss. With the four choice format, one or two blank spaces may be chosen prior to a hit or a miss. A more detailed explanation can be found in the procedure section.

Building on previous psi research, it was hypothesized that mind-to-mind communication exists, is able to be observed, and is facilitated by groups of people. As previous research suggests, the finding that motivation helps facilitate telepathic communication was explored. It was decided that imitating a game show format that encouraged competition between groups of men and women and provided monetary incentive would be conducive for yielding psi results. It was also hypothesized that monetary incentive and competition within the sender room would increase psi hitting or missing by increasing attentiveness and motivation or enthusiasm. Finally, as a multitude of research has demonstrated, it was predicted that participants' belief in psi phenomena would influence their scores on the psi task, with participants who have a strong belief in psi performing better than those who do not believe in psi.

Another important variable in this study was the fact that all participants were members of the lead researcher's introductory psychology course and had already been introduced to the topic of psi phenomena prior to their participation in the study.

Method

Participants

Participants consisted of 98 undergraduate students (48 men and 50 women) enrolled in an introductory psychology course taught at Eastern Illinois University. Participants volunteered to partake in the study that fulfilled a requirement for the introductory psychology course they were enrolled in. All participants in this experiment were enrolled in the lead researcher's introductory course.

Materials

Materials for this study consisted of two white foam boards (20" x 30") and five seven-inch red foam discs, which served as target markers. Each of the two boards, one placed in the sender room and one placed in the receiver room, was marked with four seven-inch circles (one in each corner), and three strips of Velcro was adhered to the middle of each circle as well as to the backs of the five discs. Two of the discs were used in the sender room, one marked with the symbol (+\$) and the other marked with the symbol (-\$). The other three discs had no markings and were used in the receiver room. Materials also included a stopwatch for establishing ten-second intervals between trials, a standard doorbell, a buzzer, a video projector and a screen for the projector, a video camera, a video monitor, an

amplifier, and 300 feet of speaker wire and coaxial cable. Data record sheets for scoring 16 trials, lead researcher script, telepathy instructions sheets, and forms for debriefing, informed consent, and rating psi belief were all used in the study (see Appendix A).

Procedure

A group of between 5-7 research assistants set up the equipment, served as record keepers, and assisted with all other aspects of the experiment. Three rooms in the physical science building, located on the Eastern Illinois University campus, were used. One room designated the “sender room” was used for senders, one designated the “receiver room”, was used for receivers, and the other, designated the “monitor room”, was used for a separate record keeper and participant escort. The sender room was a classroom located at the end of the hall on the first floor of the building. The receiver room was a small room located on the third floor of the building, at the opposite end of the hallway, inside a suite of rooms with no direct access to windows or hallways. The video feed first went to a small TV located in the monitor room on the third floor. The receiver room was furnished with couches, chairs, and a table, and included a video camera mounted in one corner of the room. The receiver sat with his or her back to the camera facing the target board, which was placed in an upright position. In this way, the senders were able to view the receiver and the placement of discs. From the monitor room, the video signal was sent through an amplifier to the sender room to a video projector that displayed the image on a big screen in the sender room. To accomplish this, 300 feet of coaxial cable was run under doors, down a staircase, and down the hallway to the sender room. The bell and buzzer were located in the receiver room and attached by speaker wire to a box with switches located in the sender room. This arrangement allowed the senders to see and hear the receiver and to signal the receiver with a bell tone or buzzer.

The receivers were unable to see or hear the senders. Multiple record keepers were employed with two located in the sender room, and one isolated from the others in the monitor room. One of the target boards and three discs were placed in the receiver room while the other target board and the remaining two discs were placed in the sender room.

A total of ten separate data collection sessions, one per week, were conducted with small groups. With the goal of running five participants of each sex for each session, fourteen participants (7 men and 7 women) were invited to each session in order to account for no-shows. During two of the sessions only nine participants (4 men and 5 women) showed up, necessitating prorated scores on these nights. Upon their arrival, participants were greeted by the research team and instructed to sit in two rows of desks arranged at a 45° angle, allowing them to see each other and the image projected at the front of the room. Men were seated in one row and women in the other. The researchers struck up a friendly, casual conversation with one another and the participants in an attempt to generate a psi-conducive atmosphere. The lead researcher read the script providing participants with a brief overview of the study and explanation of the experimental procedure. The overview included a brief description of mental telepathy, the competition between men and women, and the monetary incentive. Participants were told that the winning team with the highest target hit rate for the evening would be paid. For every hit, \$2 was added to the group's total while for each miss, \$2 was subtracted from the group's total. On nights when there were only four men, a fixed score equaling the average of the men's scores was added to their total to allow for equal competition.

The research team then proceeded to hand out consent forms for participants to sign. The consent forms detailed the experimental procedure, explained that participation was

completely voluntary, and informed participants that all information provided would be kept confidential. The belief rating forms were then passed out, and participants were asked to rate their belief in mental telepathy on a single likert-scale that ranged from 1 to 7, with a rating of 1 indicating that they believed mental telepathy was “very unlikely to exist” and a rating of 7 indicating that mental telepathy was “very likely to exist”. If participants chose a rating of 4, which indicated a neutral stance on the existence of mental telepathy, they were then asked to draw an arrow toward the end of the scale they were most likely to choose if forced to take a stance on their belief in mental telepathy. Next, the lead researcher distributed instruction sheets that detailed the tasks that were to be performed by the senders and receivers in addition to providing brief tips on how to send and receive telepathic information. The use of the target boards, the bell, the buzzer, and random target selection were all demonstrated. Participants were given a chance to ask questions, and the lead researcher clarified anything that was not understood. The lead researcher then departed, and the research assistants began collecting data.

The data collection procedure involved a number of tasks. The task of recording hits and misses was delegated to three research assistants who were located in separate locations, two on opposite sides of the sender room, and the other in the monitor room where receivers were visible on a TV monitor. This arrangement helped to eliminate the chance of recording errors. The random number procedure (described below) was assigned to another researcher who selected the targets and then placed two of the red discs on the target board, indicating the chosen (+\$) and (-\$) target locations for each trial. Another researcher was assigned the task of using a stopwatch to time each trial and providing signals (using the bell) to begin each trial and to indicate when the receiver hit the (+\$) target, and a buzzer when the (-\$)

target was chosen. Another task involved keeping track of hits and misses and money earned or lost on the blackboard for the men's team and the women's team. Each participant's score and a running total was kept on a blackboard in front of the screen, so at the end of the night it was clear which team had won. Finally, a researcher escorted participants between the sender room and receiver room, and also stayed in the monitor room during each run. To begin the collection process, consent forms were separated into two piles (for men and women) and kept face down. The research team randomly selected the first receiver by shuffling consent forms and choosing a form from one of the two piles. The chosen participant was then escorted upstairs to the receiver room by one of the research assistants. Men and women were alternated as receivers thereafter. The first receiver (man or woman) was also alternated week to week.

Two pages of random numbers were generated using the website www.random.org and were printed by the lead research prior to the start of each session. Each page included numbers 1,2,3, and 4 divided into twelve columns. "Random.org" generates random numbers by using white noise, a sound that contains every frequency within the range of human hearing (generally from 20 hertz to 20 kHz) in equal amounts, which is considered to be more random than pseudo-random numbers generated by computer programs. A coin was flipped to determine which sheet of numbers to use. A second coin flip determined the starting location on the page, which would either be at the top or the bottom of a column. A third coin flip determined whether the research assistants would use the right side or the left side of the sheet of numbers. After three coin flips, the research team then rolled two dice to determine the column (2-12) that would be used. Two locations on the target board were randomly selected, one for the location of the (+\$) target and one for the location of the (-\$)

target, via the process described above (upper left were 1's, upper right were 2's, lower left were 3's, and lower right were 4's). The first random number arrived at indicated the location of the (+\$) while the second random number indicated the location of the (-\$). If the second of the two random numbers chosen was the same as the first number, additional random numbers were chosen until a different number was arrived at for the placement of the (-\$) target. The research assistant then placed the two red discs on the foam board in the sender room, according to the designated (+\$) and (-\$) target locations. After the target locations were determined, the bell was sounded in order to signal the receiver that the targets had been selected and the senders had begun focusing on the (+\$) target. The receiver proceeded to place a red disc on one of the four circles located on the target board, depending on where the receiver believed the (+\$) target been placed in the sender room. If the (+\$) target was successfully found, a bell was sounded to indicate a hit. If the (-\$) target was found, a buzzer was sounded to indicate a miss, ending that particular trial. If the receiver placed the red disc on one of the circles where neither the (+\$) or (-\$) targets were located, no sound was issued and the receiver tried again to hit the (+\$) target location. In this way, after a maximum of three attempts, the (+\$) or (-\$) would be found. After each trial, the receiver removed the disc or discs from the target board and waited for the signal tone to indicate the beginning of the next trial. A ten-second interval, which was measured using a stopwatch, followed the removal of the disc(s) from the target board and the start of the next trial. This ten-second interval allowed for the placement of the next target in the sender room as well as provided time for the senders to focus their attention on the target. A strict adherence to the ten-second interval was crucial in eliminating the possibility of any temporal-sensory information being conveyed from the senders to the receiver.

Following the completion of the sixteenth trial, the bell was sounded three times to alert the receiver that the run was over. The receiver was then escorted back to the sender room where the next receiver was randomly chosen via the method described above. After the final run, the lead researcher returned to the sender room to review the results on the blackboard. The running total kept on the blackboard presented a clear indication of which team had won and how much money would be awarded. Money was distributed to the winning team unless both teams' final scores were negative. All participants were then thanked and given a debriefing statement.

Results

It was hypothesized that monetary incentive, competition, and positive expectancies for outcome would facilitate telepathy, yielding above chance hit rates. In the current study, there were ten sessions, during which five men and five women were run. Each run consisted of 16 trials. In regard to probability, the chance of a hit is 0.5 and the expected mean is 8. All participants ($n=98$) combined had an overall hit rate mean of 8.22, $SD=1.81$, across ten sessions. The results of a one sample t-test comparing overall hit rate for the sample with expected probability were not significant, $t(98)=1.22$, $p=.11$ (one-tailed). While results were not significant, a trend towards above chance hitting is evident. Whether men and women would have different hit rates was also of interest in the current study. Results showed that women had an overall hit rate mean of 8.22 and men had an overall hit rate of 8.23 hitting. Not only was there no difference found, but the hit rates were almost identical, separated by one hundredth of a point. While not directly relevant to the study, it can be noted that this is very unlikely to happen by chance.

Relationship between belief and telepathy

Participants were asked to rate their belief in psi phenomena on a 7 point likert-type scale with a rating of 1 indicating very low belief. Those who reported 1-3 on this scale were considered to have low belief ($n=33$) in psi phenomena while those who reported 5-7 on this scale were considered to have high belief ($n=37$). Those who reported a 4 on this scale was considered to neither have high or low belief ($n=28$). For a frequency distribution of participant belief scores and mean hit rates by belief score, see Table 1.

It was hypothesized that participants with high belief ratings would score better on the telepathy task than participants with low belief scores. Results of an independent samples t-test show that high belief participants ($M = 8.92$, $SD = 1.75$) indeed scored significantly higher on the telepathy task than low belief participants ($M = 7.67$, $SD = 1.53$), $t(70) = -3.16$, $p < .001$ (one-tailed), with a Cohen's D score of .76 for effect size.

The scores of the participants who rated their belief in psi as 4 (the center of the scale) were not included in this analysis because their ratings did not place them in the high belief or low belief groups. However, an independent samples t-test that included the scores of medium belief participants was still conducted in order to better understand how their scores affected the data. Participants who had rated their belief in psi phenomena as a 4 and drew an arrow pointing to the lower end of the belief scale were included with low belief participants (1-3 in belief score) while those participants who had also rated their belief in psi as a 4 but drew their arrow toward the higher end of the belief scale were included with high belief participants. The results of this independent samples t-test showed that high belief participants ($M = 8.64$, $SD = 1.91$) still scored significantly higher than low belief participants

($M = 7.73$, $SD = 1.57$) when the scores of medium belief participants were included, $t(98) = -2.54$, $p = .007$ (one-tailed).

To further explore the effects of belief on hit rates, an analysis was done separating men from women. Results of an independent samples t-test show significant differences between men with high belief scores ($M = 9.00$, $SD = 1.51$) and men with low belief scores ($M = 7.47$, $SD = 1.69$), $t(37) = -2.89$, $p = .002$ (one-tailed). While differences between women with high belief scores ($M = 8.80$, $SD = 2.11$) and women with low belief scores were marginally significant, ($M = 7.83$, $SD = 1.43$), $t(33) = -1.56$, $p = .06$, refer to Table 1. For a distribution of belief scores and hit rates for men and women respectively, see Figure 2 and Figure 3.

A Pearson product-moment correlation coefficient was performed to further explore the relationship between hit rates and belief scores. Results indicated that as belief scores increased, overall hit rates increased accordingly, $r(96) = 0.29$, $p = .002$. See graph 1. For men, a Pearson product-moment correlation coefficient $r(96) = 0.38$, $p = .004$, indicating that as belief scores increased for men overall hit rates increased. For women, a Pearson product-moment correlation coefficient $r(96) = 0.21$, $p = .07$.

To further examine the relationship between belief and hit rate, the data was examined categorically. A chi-square test of independence was conducted to examine four groups: participants with high belief and above chance hit rates ($N = 21$), participants with high belief and below chance hit rates ($N = 7$), participants with low belief and above chance hit rates ($N = 8$), and participants with low belief and below chance hit rates ($N = 15$). With 8 out of 16 being chance, participants who scored hit rates of 9 or above are categorized as

above chance and those scoring 7 or below as categorized as scoring below chance. A chi-square test of independence was performed to examine the relationship between belief and psi performance. The relation between these variables was found to be significant, $\chi^2(2, N=51) = 8.33, p < .004$, see Figure 4. For a distribution of frequencies that includes medium belief and performance, see Figure 5.

A Pearson product-moment correlation coefficient was also conducted to test for a decline effect by examining the relationship between order of participation in the experiment and overall hit rate. No significant relationship was found between participation order and overall hit rate. While it was not hypothesized that a decline effect would take place, we should note that no decline effect was found.

Discussion

A multitude of research spanning almost a century has shown evidence for psi phenomena and telepathic communication, specifically. As a result, several theoretical models for explaining psi phenomena have been proposed, and studies exploring the conditions necessary for yielding psi results have produced some interesting findings. Certain conditions have been demonstrated to be conducive for facilitating psi phenomena. Goals of the current study were to explore the role of competition between groups of senders and receivers and belief in psi as facilitators of telepathic communication. Features of the experiment involved a methodology using a combination of groups of senders, a visual image of the receivers, simple spatial location as targets, a game-show type of environment and monetary incentive to increase competition.

In the current study, the participants ($n=98$) combined had an overall mean hit rate of 8.22 across ten sessions, which is barely above chance expectation. The results of a one sample t-test comparing overall hit rate for the sample with expected probability were not significant, $p=.11$ (one-tailed). Based on these findings alone, it appears as though the competitive group environment was not effective in facilitating telepathic communication and psi-hitting.

It is only when hit rates are separated by belief that the results of the current study become clear. It was hypothesized that participants with high belief ratings would score better on a telepathy task than participants with low belief ratings. Results of an independent samples t-test show that high belief participants scored significantly higher on the telepathy task than low belief participants, $p < .001$ (one-tailed), with a Cohen's D score of .76 for effect size. Furthermore, those participants with belief scores of 4, directly in the middle of the belief scale, scored very close to chance, $M = 7.96$. These findings are intriguing considering that not only does it appear that high belief participants were able to telepathically receive target locations, but so were low belief participants since missing below chance implies knowing on some level, perhaps subconsciously, where the target location is but choosing not to act upon this knowledge. When examining the data categorically, we find that participants with above chance hit rates were far more likely to have high belief scores, while those with below chance hit rates were more likely to have low scores, $p < .004$.

These findings support previous research, which has shown that belief in psi phenomena plays an important role in yielding telepathic results (Haraldsson and Houtkooper, 1995; Schmiedler 1942; Varvoglis, 1997; Watt and Brady, 2002; Watt and

Baker, 2013; Wiseman and Schlitz, 1997;). In a series of studies spanning from 1942-1945 at Harvard, Smiedler (1942) examined what she termed the sheep-goat effect by having participants complete a questionnaire assessing their belief and then performing a clairvoyance task with ESP cards. The sheep-goat effect refers to the idea that individuals who believe in psi or “sheep” tend to perform better than chance in psi tasks whereas individuals who do not believe in psi—referred to as “goats”—tend to score below chance (Varvoglis, 1997). Results showed that the participants who had high belief ratings (sheep) outperformed those with low belief ratings (goats) in the series of studies. It is unclear whether belief in psi causes an individual to perform better or whether an individual’s own ability makes them more likely to believe in psi.

In their study, Haraldsson and Houtkooper (1995) examined the relationship between participant belief in psi phenomena and psi performance. A significant correlation was found between high belief in psi phenomena with a low level of religiosity and psi performance. Luke (2008) conducted a similar experiment and found a strong correlation between overall belief in psi and psi performance, with a trend showing that participants who had high belief in their own personal luck performed significantly above chance on the psi task. In regard to findings from the EIU lab, McWhorter (2005) examined the relationship between mental telepathy and belief in psi, and found that high belief participants outscored low belief participants. The current study confirms and extends these findings on group settings and belief in psi.

Although no directional hypothesis was made about hit rates and the role of the participants’ sex, results for men and women were examined. Previous research on sex differences and psi performance has shown mixed results. Some studies have shown that

women score higher than men on psi tasks (Clarke, 1991; Haraldsson 1981; Tobacyk & Milford, 1983) while others have not been able to demonstrate a significant difference between men and women (Blackmore, 1984; Murphy & Lester, 1976). When comparing hit rates between men and women in the current study, no significant difference was found. The mean hit rate for men equaled 8.23 and the mean hit rate for women equaled 8.22. Not only was no significant difference found, the mean hit rates were almost identical, separated by one hundredth of a point difference, which would seem unlikely to happen by chance.

In addition to belief in psi, group settings, in particular, have been shown to be conducive for yielding telepathic effects, as demonstrated by studies from the EIU Parapsychology Lab as well as studies from other parapsychology labs (Bunfill, 2006; Connor, 2009; McWhorter, 2005; Parker, 2006; Ullman and Krippner, 1989; Ullman and Krippner, 1991; Yarnall, 2003,). Specifically in regard to group effects, Ullman and Krippner (1989, 1991) found that group settings were more conducive for eliciting telepathic communication than just an individual alone, while Yarnall's (2003) findings from the EIU lab (2003) show that in-groups performed higher than out-groups.

The current study builds upon the use of group settings as a facilitator of psi phenomena by exploring the role of a game show format. Although the game-show format did not appear to influence the overall mean score, it appears to have strongly affected differences in scores for high belief and low belief participants. It appears likely that competition and monetary incentive made high belief participants' more conducive to telepathic communication. On the other hand, another explanation might be that high belief participants are naturally more conducive to telepathic communication because they trust more in their ability to bring about good outcomes in their lives, more so than low belief

participants. Even though these explanations are speculative at this point, they may prove to be a noteworthy direction to explore in the future.

One of the most consistent findings in psi literature involves the effect of the environment in which the experiment takes place and the experimenter's belief in psi phenomena. A psi-conducive atmosphere has been shown to yield better psi performance than a non-conducive setting (Schmeidler, 1997, Ullman and Krippner, 1989; Ullman and Krippner, 1991). Studies have suggested that the role belief in psi plays in yielding psi effects is not limited just to participant belief, but is also encompassed by the researcher's belief in psi phenomena, in what is referred to as the experimenter effect (Wiseman and Schlitz, 1997; Watt and Brady, 2002; Watt and Baker, 2013). Researchers who believe in psi phenomena tend to elicit better psi performance from their participants than those who do not (Wiseman and Schlitz, 1997; Watt and Brady, 2002; Watt and Baker, 2013).

In the present study, it was hypothesized that the fact that all participants were previously exposed to the topic of psi phenomena in the lead researcher's class and aware of his belief in psi might increase the influence of belief scores. There are several important factors to consider when interpreting the above results. All participants, as students in the lead researcher's class, had been introduced to the topic of psi phenomena in class lectures, and were aware of the lead researchers' psi-supportive beliefs. As a result, it is very likely that exposure to these factors polarized beliefs among participants, and it is unlikely that such polarization would have occurred with people who were unexposed to these factors in the experiment. It is important to consider the role of experimenter in this study and the impact on belief scores and psi performance. In their study, Wiseman and Schlitz (1997) examined the experimenter effect and found that the participants in a remote staring study that was led

by a psi-supportive researcher performed significantly above chance in than participants in a separate remote staring study that was led by a psi-skeptic. Studies conducted by Watt and Brady (2002) also confirmed that participants' performance could be affected by their overall perception of the experimenter and his or her belief in psi. Watt and Baker (2013) also examined the experimenter effect and found that in conditions where the experimenter made psi supportive statements, participants scored significantly above chance expectation.

Central to this discussion, we can conclude that it is especially important to note that when the variable of belief is not taken into consideration, the data of the current study appears to be random. However, once belief is separated out, it becomes evident that psi phenomena and telepathic communication may have occurred. Although the current study produced strong evidence for the existence of psi phenomena, there will undoubtedly be skeptics who claim that the data may be the result of various factors including errors in record keeping, sensory leaks, or a lack of true randomization. However, extremely careful measures were taken to control for these potential confounds. In regard to recordkeeping, multiple record keepers located in different locations tracked the receivers' hits and misses. In order to eliminate the possibility of sensory leaks, the receiver participant and group of senders were separated by two flights of stairs, an interior room, and opposite ends of the hallway of a concrete building. This eliminated the possibility of a leak in sound or sight. In regard to potential problems in randomization or possible patterns in random placements, a website that uses atmospheric noise to generate random numbers, along with coin flips and dice rolls were all used to determine where the (+\$) and (-\$) targets were placed, creating a triple layer of randomization. This was performed for each run after the receiver had left the room. Despite such careful controls, skeptics may still attribute such strong findings to an

unspecified, unidentified error (e.g., a conceptual error in understanding probability or flaws with the scientific method itself) or possibly even fraudulent data. Skeptics admit “if the evidence for the data is not compelling, that it is dominated by prior skepticism; if the evidence from the data is compelling, the findings are deemed to be a result of deception.” (Wagenmakers, Wetzels, Borsboom, Kievit, & van der Maas, 2015, p. 167)

We can assert that the data were not faked and all statistics and procedures were checked multiple times. This leaves the only other explanation, other than psi, to be an unlikely random event. Given the strength of findings, we can conclude that this would occur less than one experiment in one thousand.

Figure 1. Mean Hit Rate from Chance By Belief for Men and Women Combined



Figure 2. Mean Hit Rate from Chance By Belief for Women

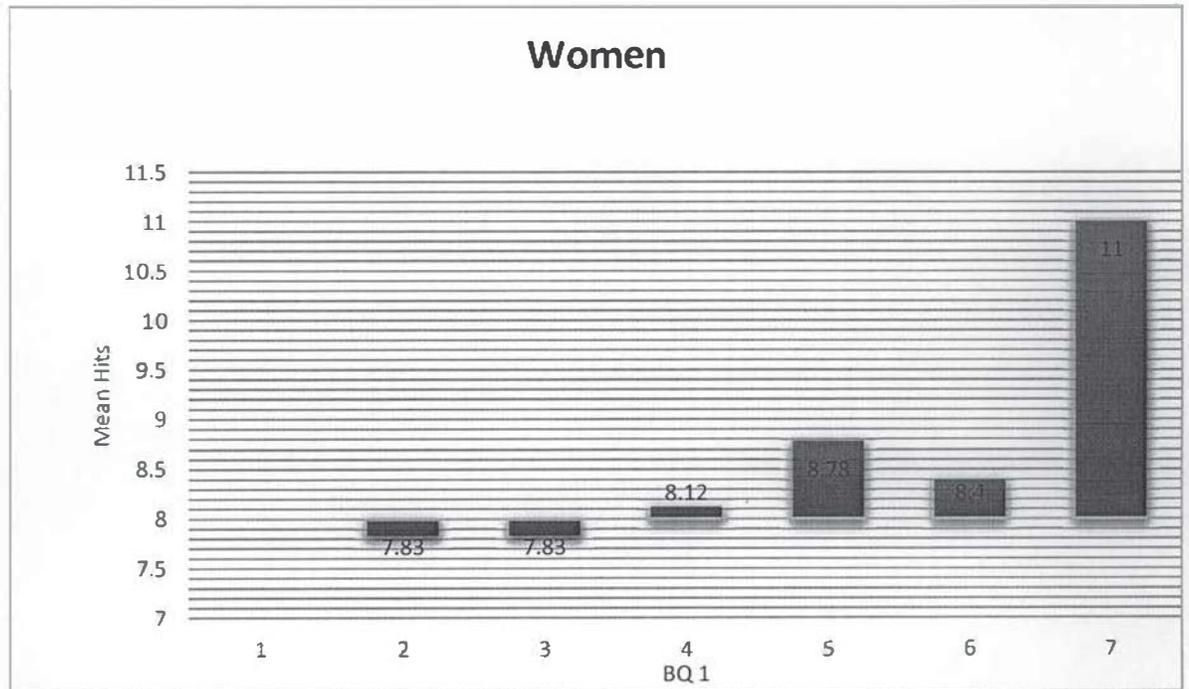


Figure 3. Mean Hit Rate from Chance By Belief for Men

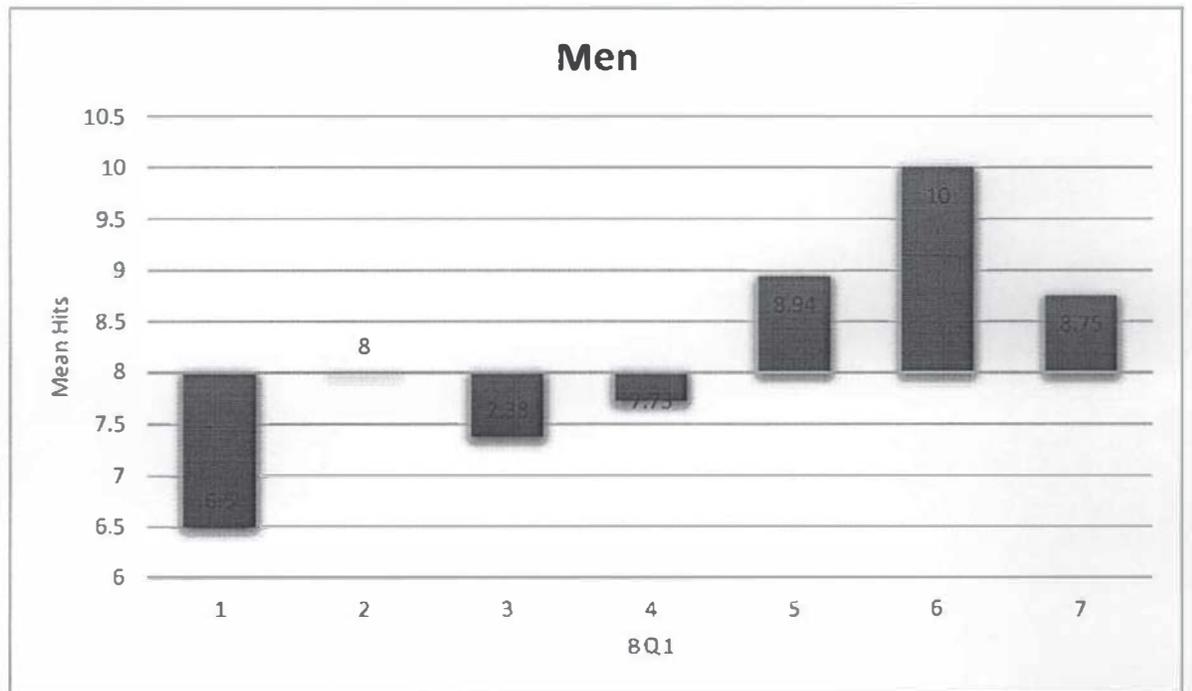


Figure 4. Frequencies of Above Chance and Below Chance Hits for Low Belief and High Belief Groups

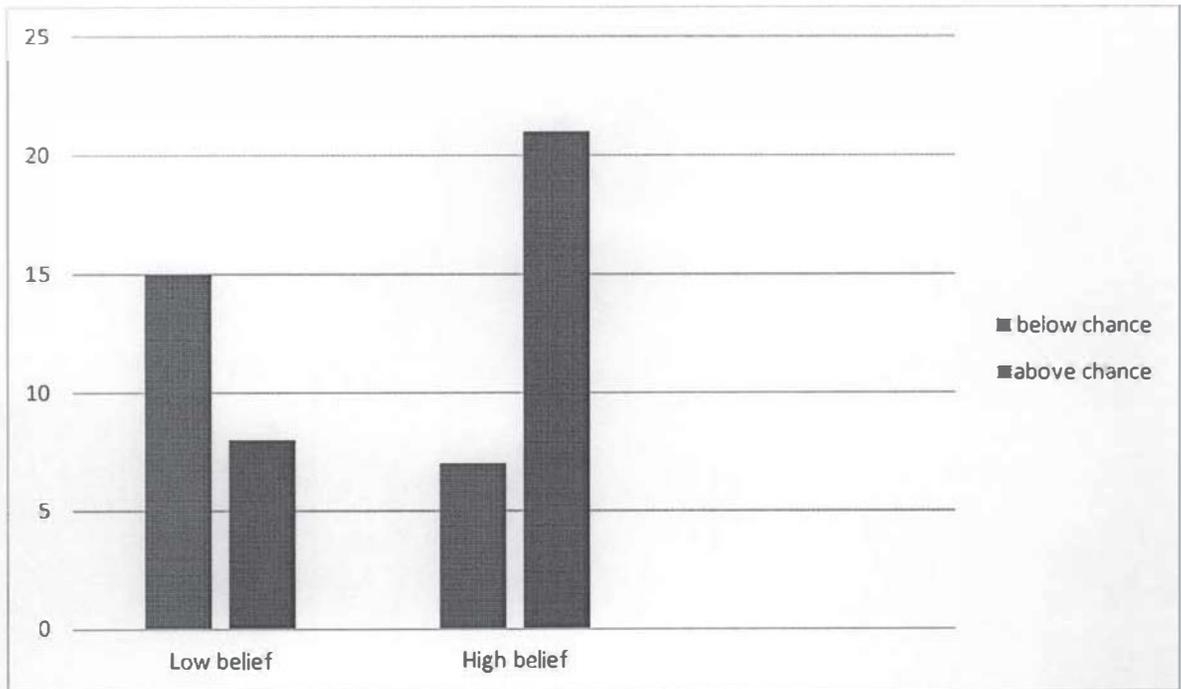


Figure 5. Frequencies of Above Chance and Below Chance Hits for Low, Medium, and High Belief Groups

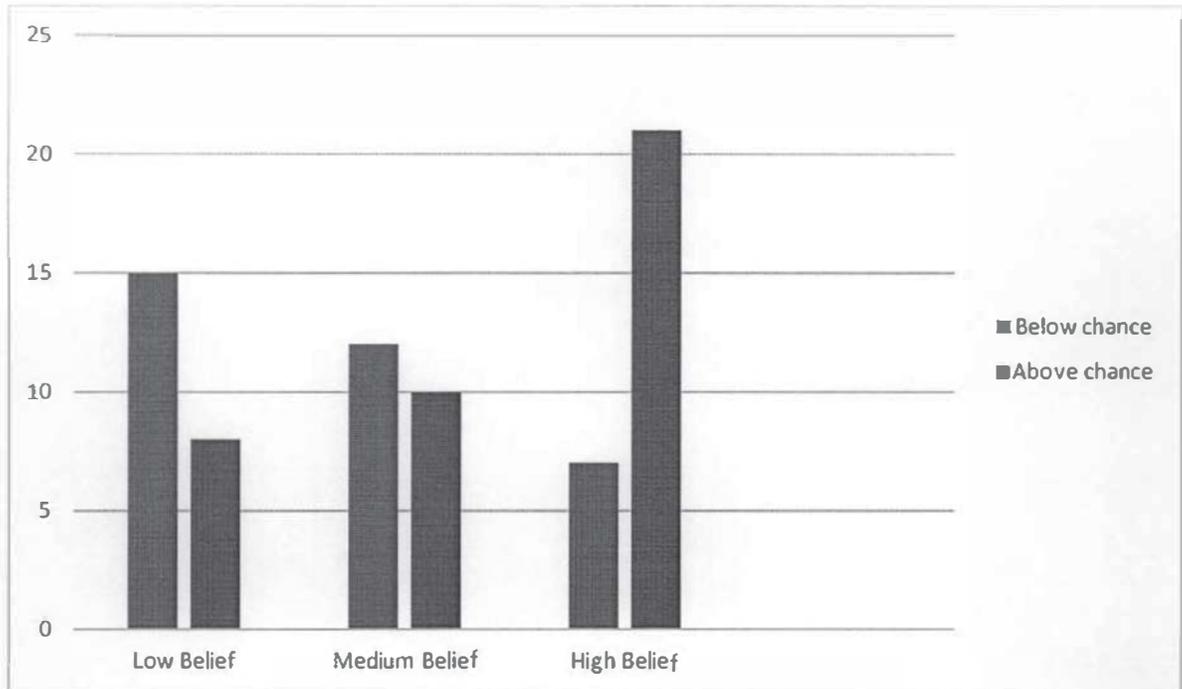


Table 1. Frequency Distribution by Belief Score and Mean Hit Rates by Belief

<u>Belief</u>	<u>All</u>	<u>Men</u>	<u>Women</u>	<u>All</u>	<u>Men</u>	<u>Women</u>
1	2	2	0	6.50	6.50	0
2	11	5	6	7.91	8.00	7.83
3	20	8	12	7.65	7.38	7.83
4	28	11	17	7.96	7.73	8.12
5	25	16	9	8.88	8.94	8.78
6	7	2	5	8.86	10.00	8.40
7	5	4	1	9.20	8.75	11.00

Consent Form for Mental telepathy Experiment

This experiment involves the study of Mental Telepathy. A group of “senders” will attempt to telepathically convey the location of a target to a “receiver.” Receivers will be asked to sit in a room in front of a foam board marked with four target circles. Through closed circuit TV this image will be transmitted to a room where a group of people will be seated in front of a second foam board. They will be the senders in the experiment and will be able to see and hear the receiver. In this study the participants (you) will act as both senders and receivers.

For each trial, two of the four circles will be randomly selected as target locations. An experimenter will place one “+” target and one “-” target on a foam board (using velcro), to mark the randomly selected locations. The senders will then attempt to transmit the “+” target location telepathically.

The receivers will be asked to try to find the “+” and to avoid the “-” target, and to mark their choice by placing a disc (using Velcro), on their board. Sixteen trials will be conducted for each receiver. The total time for the experiment will be about two hours.

For this study the participants will be divided into two teams that will compete agents each other for money. One team will be comprised of all the women (including the women researchers) – the other team will be comprised of the men (participants and researchers). Five men and five women will be run (taking turns as the receiver) in alternating order. Every time a receiver hits the “+” target, the receiver’s team will win \$2, but every time the receiver hits the “-” target, the team will loose \$2. At the end of the session the winning team (the team with the most money) will get paid. The money will be divided equally among them. While the losing team will not get paid, everyone will receive full credit for participating in the study. If both teams finish with negative scores nether team will earn money.

No matter what your score, you will never owe any money. All money awarded will be divided equally between everyone on the winning team $\frac{3}{4}$ regardless of individual scores.

We do not foresee any risk or discomfort from the above procedure, and would like to remind you that your participation is completely voluntary, that all personal information collected will be kept strictly confidential, and that you may withdraw your participation at any time without penalty. Expected benefits from participation may include an increased understanding of research in Psychology as well as learning about and furthering progress in an interesting field of Psychology.

Print Name _____ Date _____

Signature _____ M / F

Script — Spring 2011

- Hi — Lets get started!
- Are you here for the psychology experiment called “Mental Telepathy”?
- This is not a survey — we are actually going to do mental telepathy
- You will get 2 hours of experiment credit and you have the chance to win money, depending on how everyone does on the telepathy task
- I need to ask you to turn off cell phones
- First, we need for you to read and sign the consent form — it provides an overview of the experiment — we will then explain the exact procedure and answer any questions you may have — and we will provide you with a page of mental telepathy tips
- (Hand out consent forms)
- (Hand out BQ form)
- (Hand out tips sheet)
- Now — this is what we are going to do.....
- You have been divided into two teams – Men Vs Women – This includes the research team! The two teams will be competing against each other Men against Women
- We will select one participant at a time, randomly (by shuffling your consent forms) and will escort you to the receiver room on the third floor – We will alternate between men and women
- You will be seated in front of a foam board like this one
(point to board) and given 3 red disks (with velcro)
- We will randomly select the locations for the “+ \$” and the “- \$” disks and place them on this board

- You will then get a signal bell indicating that the targets are in place and your team is focusing on the location of the “+ \$” target

- Wait for the bell to begin. After the bell your task is to try to hit the “+ \$” and avoid the “- \$”

- If you hit the “+ \$” you will hear a bell tone (indicating a hit) and your team will be awarded \$2

- If you hit the “- \$” you will hear a buzzer and your team will lose \$2

- If you hit a blank space will not hear a signal, and will continue to place disks on the board until you hit the “+ \$” or “- \$” and get signaled with the bell or buzzer

- When you hear the signal, take the disk or disks down and wait for the next bell indicating the start of the next trial

- We will run 16 trials per person — after the 16th trial you will come back to this room and another participant will be chosen

- We will try to run each of you but may run out of time and may not get to everyone

- At the end of the session the winning team (the team with the most money) will get paid. The money will be divided equally among all team members – including the researchers

- While the losing team will not get paid, everyone will receive full credit for participating in the study. If both teams finish with negative scores neither team will earn money

- You will never be asked to pay anything— you can only win

- We will keep track of hits and misses and money totals on the board -- so you will always know your scores and who is winning

- One more thing – and this is important – try to win – stay focused and try to encourage those on your team – but, when members of the opposing team are sending please remain quiet

- Any questions?

Tips for Mental Telepathy — Senders and Receivers

- wait for a signal before you begin each trial
- carefully examine each of the four spaces for each trial for a *feeling* or *sense of the target location*
- remember, each trial is completely random, and separate, and has nothing at all to do with the previous trials
- make your choice by placing a disc on the board — wait for feedback
 - (“+ \$” — signal bell — “- \$” — buzzer — blank space — no response
- remove the disc or discs — wait for another signal tone to begin the next trial
- keep the *goal* in mind — *others are trying to send you the target location*
- between trials try to clear your mind and wait for the signal to begin the next trial
- mental telepathy is very subtle information — and may even be subconscious, so, before each trial you may want to take a deep breath, relax, and try your best to quiet your mind
- try your best, and try to win money for your team — this is a scientific investigation of an interesting phenomenon!

Mental Telepathy Experiment Debriefing

Thank you for participating in the Mental Telepathy Experiment. We have been trying different approaches to sending and receiving telepathic information using groups. The existence of mental telepathy is a very controversial subject and your participation may help us to better understand the complex issues involved. Your help is truly appreciated.

If you would like further information concerning this study or have any other questions, please feel free to contact me.

Russell Gruber, Ph.D.
Professor
Department of Psychology
Eastern Illinois University
Charleston, IL 61920
e-mail - cfreg@eiu.edu
phone - (217) 581-6614

Mental Telepathy Belief Question

I believe that mental telepathy is

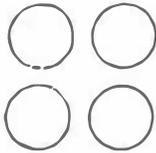
(circle one)

1	2	3	4	5	6	7
Very unlikely to exist						Very likely to exist

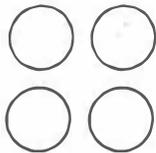
Name (print) _____

Name (please print) _____ (M) (F) Date _____

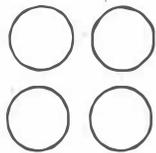
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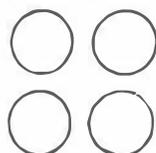
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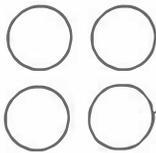
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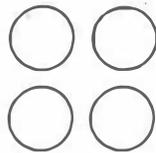
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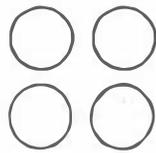
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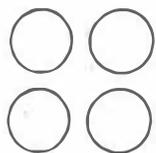
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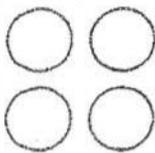
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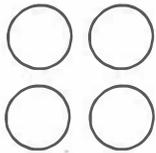
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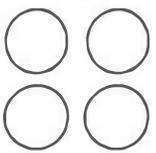
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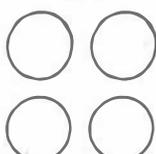
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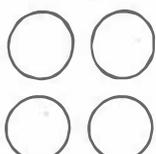
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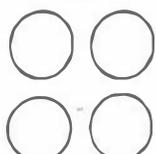
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