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# PERCEPTION AND PERSUASION ON-LINE: THE INFLUENCE OF SEX, GENDER AND NONVERBALS IN ON-LINE INTERACTIONS

By

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## ABSTRACT

PERCEPTION AND PERSUASION ON-LINE: THE INFLUENCE OF SEX, GENDER AND NONVERBALS IN ON-LINE INTERACTIONS

By

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The present research explores the extent to which sex, psychological gender, and nonverbal cues influence perception of others and persuasion. Two experiments were conducted that examined a computer-mediated interaction that utilized the desert survival task. The first experiment allowed minimal use of emotional expression, while the second experiment did not allow for emotional expression, but did vary the gender of the confederate script. The results from the two experiments indicated very few differences between subjects in their perception of their partner, however frequency analyses showed interesting changes in subjects' perception of their partner's sex as compared to the perceived psychological gender. In Experiment 1, subjects in low smile conditions were more likely to exhibit higher degrees of persuasion, while subjects in Experiment 2 showed no variance in persuasion levels based on the gendered script.

I would like to dedicate this thesis to my family, my personal cheerleaders.

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BSRI ..... Bem Sex Role Inventory
CMC.....Computer Mediated Communication

# INTRODUCTION

There is considerable debate as to whether or not gender makes a difference in computer mediated communication. As Yates (1997) pointed out, "CMC interactions lack a great deal of the non-verbal information present in face-to-face interactions upon which assessments of social status are built. This has led to a number of conflicting arguments about the role of social status cues such as gender, race and class in CMC interactions" (p. 282).

People make important social judgments about the personalities and capabilities of others based on very limited social cues very quickly (Burgoon, Buller, & Woodall, 1996; Ichheiser, 1970; Reeves & Nass, 1996). Many of the cues that we use to make judgements about others are nonverbal – how they walk, facial expressions, body language – but these cues are not available in cyberspace. It is important to discover how people accommodate for the lack of nonverbal cues in these environments. If people are aware that these nonverbal cues are unavailable, will they change how they interact, or will they attempt to apply the same "rules" in cyberspace as they use in their daily lives? Will the computer, in fact, "afford opportunities that human interaction could, but does not often, afford" (Salomon, 1990, p.41)?

We may attempt to control nonverbal cues in our daily interactions, however, the computer offers a more controlled environment for this purpose, and it can eliminate cues that we may not want to be readily available – such as race, age, and sex. It does offer a more deliberate environment for conveying other cues such as mood, whereas in a face-

to-face interaction, there are some things that are more difficult to control like our eyes and facial muscles.

By eliminating some diffuse characteristics, computers may remove the initial stereotypes that are applied due to the automatic categorization that occurs in interactions. As people become accustomed to the unavailability of these characteristics in on-line interactions, they may as a result start applying a different categorization scheme. These new categorization schemes would translate into our daily interactions, and those that we are currently accustomed to will become secondary.

Additionally, with the proliferation of virtual worlds in cyberspace, the advances being made with virtual environments for use in business and educational settings, and the increase in gender awareness, it is time to take a second look at the concept of psychological gender. The amount of "gender-bending" that is occurring in on-line worlds draws us to the question of whether there are sexual-based behavioral differences beyond the traditional male/female dichotomy. We need to look at psychological gender versus biological sex as an indicator of person perception in on-line environments.

## Literature Review

### CATEGORIZATION SCHEMES

One of the main concepts in social cognition is schema, the organized collection of one's beliefs and feelings about something (Baron & Byrne, 1987). People usually organize information based on logic; thus people of all cultures usually put similar things – things that look alike and things that are alike in function – into the same categories. Categories are also created based on only one or a few attributes of the items being grouped, so a person may be a part of one group but not of another (e.g., same age group but different race). These schemas are used as filters when there is too much information and to fill in gaps when not enough information is present.

In order to make sense of our everyday life, people place things in categories. We come in contact with so many things that we must rely on previous experience to help us process and react appropriately to situations we encounter. Much of this is associated with our survival instinct. Epstein (1988) states that "human reason makes it possible to make categories of discrete things and events in nature and in social life. Developing concepts that group things and events is economical and practical" (p. 11). People often treat these concepts as real, even though they are only representations of real things.

Because people also make value judgments, they organize and create categories and often reorganize them according to these perceptions and interpretations. Not only do stereotypes assist with information processing, they also influence how we perceive

others, how we interpret others' behavior, what we remember about them, and what we infer about them (Heilman, 1995).

While stereotypes are deemed necessary to simplify the volumes of information that we are constantly receiving, Reeves and Nass (1996) point out that they also cause us to miss critical individual differences. "Stereotypes provide a justification for discrimination" (Snizek & Neil, 1992, p.411). When the physical cues that allow us to categorize another person sidetrack us, we overlook key information that may not only be integral to the interaction, it may entirely contradict the stereotypes that we are assigning to that individual. When these individuating characteristics are seen, they may be assimilated into an existing stereotype, rather than being looked at as discrete information. Even when information about an individual is not available, inferences are made about that individual that are consistent with the stereotype.

These interpretations have the power to make categorization real. Categorization can lead to favoritism and discrimination in certain contexts. A study on the minimal intergroup discrimination effect (Locksley, Ortiz, & Hepburn, 1980b) found that simple categorization of persons in-groups is sufficient to reliably induce in-group favoritism.

## Categorization Based on Sex

> "Being a male or female is so important a fact of existence that when our judgement fails – when there just are not enough cues available for us to know the sex of someone – we are truly confused and uncomfortable. Without knowing the sex of someone, we are unable to make a host of important, though probably unconscious, assumptions without which 'normal' interaction is seriously impaired" (Hall, 1984, p. 3)

Ashmore & Del Boca (1979) defined gender stereotypes as "the structured set of beliefs about the personal attributes of women and men" (p. 261). The categorization of

people based on their gender has important ramifications for our everyday interactions. It is widely believed that societies have made men and women different by educating them differently and giving them different job roles. Studies have shown that there are two distinct clusters of traits that distinguish men from women. These traits are bipolar with the male traits typically in the dominant/ competent cluster, and female traits in the submissive/expressive cluster. Specific traits in the dominant/competent cluster for the male include independence, competitiveness, objectivity, dominance, activeness, logicality, ambitiousness and self-confidence. For the female, the traits include dependence, non-competitiveness and subjectivity. The second set of qualities are generally seen as expressive qualities—women are seen as tactful, gentle, and aware of others' feelings, while men are seen as blunt, rough, unaware of others and unable to express their feelings.

These stereotypes reflect cultural values, which include attributing a higher value to the competency cluster than the expressive cluster. Just categorizing the male characteristics as competent and the female characteristics as expressive indicate that the traits associated with males are held to be more important in our society. The status/gender identity model discussed by Unger (1978) further maintains that just being male suggests and confers high status, and as a result of this, the behavioral differences between males and females may actually be due to differences in status rather than differences in sex. Structural theories of status propose that the gender differences related to power are a result of society's status rankings that are attached to gender, which reflect the evaluations of worth and value. Included in these evaluations is the shared belief that those of higher status are more competent and have the right to exercise influence over

those of lower status, who should defer to these attempts to influence (Molm & Hedley, 1992). These stereotypic beliefs have been widely assumed to affect the judgments of individuals.

What makes the study of gender consequential in this area is not just that men and women are perceived as having different attributes, but as Berscheid (1993) stated, "these attributes are differentially valued. Most of the attributes ascribed to males are those that society, both its male and female members, often regard as better, superior, or more admirable for a human being to possess, than are the qualities typically ascribed to females" (p. *ix*).

Sex stereotyping is evident in studies of performance and competence. Foschi (1992) concludes "when there is no objective criteria for performance evaluation, men's contributions to the task solution are often judged to be better than women's" (p. 202). Even in the situations when the objective criteria clearly demonstrates that women's performances are as good as those of men, gender often results in a devaluation of women's performance. Deaux & Emswiller (1974) found that equivalent performance by a male and female on a task was perceived differently by both male and female subjects. It was found that regardless of the task, the males were perceived to be more skillful, whereas the female's performance was attributed to luck. Miller & McReynolds (1973) found that, holding all other source qualifications (i.e., only providing name and eliminating audio/visual cues) and the message constant, receivers will rate a male communicator as more competent than a female communicator. Not only are female successes more likely to be attributed to unstable factors, such as luck or effort, their

performances are usually evaluated lower than those of men, even when the performance is identical.

Reeves and Nass (1996) took this a step further. They gave a computer program a synthesized voice and had subjects evaluate it. Some subjects heard a female sounding voice synthesis and other subjects heard a male sounding synthesis. Subjects were told that it was not a male or a female talking to them, but a synthesis of a voice, but subjects still applied gender stereotypes to their rating of the program. Those who heard the more feminine voice rated it less competent in a tutorial about computers and more competent for a love and relationships tutorial. Subjects rated the male voice more competent on computers and less competent with love and relationships. Prior research by Fulton (1992) offers support relative to the linguistic output of computers influencing the user's attributions of power to the computer.

There are differences in men and women's everyday use of language. Everyday language contains a power variable that links power to the male gender. Women tend to show uncertainty and indefiniteness in their use of language, whereas men tend to be more authoritative and definite. Because the language output of the computer is primarily written by males in a mathematical/logical language, it is often viewed and reacted to as a male (Fulton, 1992).

However, Locksley, Borgida, Brekke, & Hepburn (1980a) found that subjects' judgments were strongly influenced by behavioral information about the target, and not sex stereotypes. They concluded that sex stereotypes might affect judgments of individuals when little else is known except their social category, but these stereotypes

have minimal impact when behavioral characteristics are introduced. This is in line with the theory of status characteristics and expectation states (Berger, Conner, & Fesek, 1974; Berger, Fisek, Norman, & Zelditch, 1977) which proposes that the differences in status characteristics, such as gender, race and age, affect the distribution of participation, prestige, and influence in task oriented groups. Without additional information, groups that are initially undifferentiated in other characteristics will make judgements that members with the more valued status traits are more competent than those with lower status traits are.

## PSYCHOLOGICAL GENDER

It has been argued that gender is socially constructed and, as such, it is better described as a continuum rather than a dichotomy comprised of masculinity and femininity (Bem, 1993; Bergvall, Bing, & Freed, 1996; Talley & Richmond, 1980). The concept of psychological androgyny denotes the integration of masculine and feminine characteristics in the same individual. It implies that it is possible for an individual to be both compassionate and assertive, both expressive and instrumental, both feminine and masculine, depending upon the situational appropriateness of these various modalities (Bem, 1981).

The Bem Sex-Role Inventory (BSRI) was designed to measure psychological androgyny. What distinguishes it from other masculinity-femininity scales is that it treats masculinity and femininity as two separate dimensions, rather than two ends of a single dimension. This enables a person to indicate whether they are high on both dimensions, low on both dimensions, or high on one dimension and low on the other.

> "In addition, the BSRI is based on a conception of the traditionally sex-typed person as someone who is highly attuned to cultural definitions of sex-appropriate behavior and who uses such definitions as the ideal standard against which her or his own behavior is to be evaluated. In this view, the traditionally sex-typed person is motivated to keep her or his behavior consistent with an idealized image of femininity and masculinity, a goal that she or he presumably accomplishes by selecting behaviors and attributes that enhance the image and by avoiding behaviors and attributes that violate the image" (Bem, 1981).

It has been found that there are differences in cognitive performance among groups differentiated by psychological gender (Markus, Crane, Bernstein, & Siladi, 1982). By using the BSRI, we can determine if the concept of androgyny is a relevant variable when studying person perception. We will compare the results by gender (masculinity-femininity-androgynous-undifferentiated) to those results by sex. If there is a significant difference in how subjects perceive others based on gender and sex, it will support the BSRI as a relevant tool in examining person perception.

Little research is found which takes the concept of psychological gender developed in the 1970s and applies it to virtual interactions to determine what influence it has on person perception. While the concept itself has been highly debated through the years (Hall, 1984; Locksley & Colten, 1979; Pedhazur & Tetenbaum, 1979; Spence, 1984; Spence & Helmreich, 1981), it warrants a second look specifically because of the new rules being developed in cyberspace.

## FACIAL EXPRESSIONS

According to Zimbardo and Leippe (1991), powerful people tend to smile less (p. 265). To support the stereotype that women smile more than men (Hall, 1984), there is now an abundance of evidence (Deutsch, 1990; Hall, 1984; Kennedy & Camden, 1983;

Key, 1975). This tendency to smile more has often been linked with the submissiveness of women (Kalbfleisch & Cody, 1995; Key, 1975; Thorne & Henley, 1975) and the associated power of men. One piece of evidence found by Kennedy and Camden (1983) was that women were more likely to be interrupted when smiling. According to Thorne & Henley (1975) "Interruption may also be considered a dominant gesture, and allowing interruption, the corresponding submissive gesture" (p. 197). Deutsch (1990) found that higher status males smiled more than lower status males, whereas females smiling did not significantly differ across condition.

There are several arguments as to why women smile more than men do. Differences in non-verbal behavior may have its origins in status differences between the sexes. The female may be trying to please the male if she is in a weaker position (Hall, 1984). For example, while joke telling by women was for years considered unladylike, it was permissible, in fact expected, for women to laugh at a man's joke (Blumenfeld & Alpern, 1986).

It is generally assumed that because women smile more, they have fewer negative expressions. However, it has been found that women in general exhibit greater general facial expressiveness (Hall, 1984; LaFrance & Banaji, 1992). This evidence suggests that women engage in more facial behavior (both positive and negative) than men, and may further indicate that it is not different norms of pleasantness that distinguish men and women, but rather different norms of expressiveness (Hall, 1984).

## SEX & LANGUAGE

The popular writings by Deborah Tannen (1986) brought renewed interest to the well-established finding that women and men speak differently (Coates, 1993; Key, 1975; Lakoff, 1975). Wolfinger & Rabow (1997) found that not only do men and women speak differently, the listener frequently recognizes these differences in speech.

In her seminal article on women, language and power, Lakoff (1975) argued that women's language is different from that of men. She cites several forms of "women's language": empty adjectives, tag questions, hedges, use of the intensive "so", hypercorrect grammar, super-polite forms, lack of jokes, and speaking in italics (pp. 53 - 57). These forms are, according to Lakoff, indicative of women being subjugated to an inferior position to men, one of powerlessness.

Associated with these differences in communications styles are differences in writing styles. Differences in the way men and women communicate translates into their writing styles (Roen, Peguesse, & Abordonado, 1995). Research by Roulis (1995) suggests that the reader's responses to male and female writers are related to these communication differences.

Women today recognize their unequal status with men and are attempting to change this status discrepancy. Coates (1986) discusses three forms in which this is occurring through women's use of language. The first is assimilation, where women take on the dominant group's speaking traits, such as using deeper voices, displaying more assertiveness in interactions, using taboo language, addressing traditionally male topics, and using prosodic patterns more typical of men. The other two forms involve re-

evaluating characteristics previously described negatively and creating new dimensions for comparison. For example, women's cooperative conversation style, which was perceived as unassertive and weak, is now valued for negotiating conflict and promoting dialogue.

## ELECTRONIC LANGUAGE

Computer mediated communication, or 'electronic language' (Collot & Belmore, 1996), displays features associated with both written and spoken communication (Collot & Belmore, 1996; Condon & Cech, 1996; Werry, 1996; Yates, 1996). Like face-to-face conversations, many electronic conversations take place in real time, but through the medium of written language. This has resulted in the language appearing "more similar to that of spontaneous genres such as interviews, spontaneous speeches, and personal letters" (Collot & Belmore, 1996, p. 22). Participants in CMC can, much like participants in oral communication, partake in emotional, expressive and involved communication (December, 1993).

Despite its similarities with the written and spoken modes of communication, electronic language exhibits some unique characteristics, such as its efficient nature due to the frequent omission of unnecessary linguistic material (Condon & Cech, 1996); its greater use of first and second person personal pronouns; and its ability to combine production and consumption modes, such as being produced 'on the fly' like speech, but being read at any pace the reader chooses (Yates, 1996).

## SEX & COMPUTER MEDIATED COMMUNICATION

Face-to-face interactions provide us with enduring cues which reveal demographic data – age, sex, race, possibly ethnic origins, possibly status or occupation (Harrison, 1975). Researchers predicted that computer mediated communication would help mitigate gender differences and promote social equality by filtering out these social cues. Cultural indicators — of social position, of age and authority, of personal appearance — are relatively weak in the computer-mediated context (Reid, 1994).

The perception that gender equality can be realized in cyberspace because of the lack of social presence cues is questionable. Watson (1997) states that it will take more than technology to erase the stereotypes and distinctions that people use for classifying groups of people. In some instances, women can use gender-neutral or male pseudonyms to overcome social barriers (much the same as female writers in the eighteenth and nineteenth centuries), however, basic differences in communication styles still allow one to determine gender. Hall (1984) also found that rather than neutralizing gender, cyberspace is intensifying it as users exaggerate societal notions of masculinity and femininity in an attempt to gender themselves in the absence of physical cues.

As we begin to experiment with various characters in virtual environments, we develop a fluid sense of self, and a more fluid sense of others may result. If we no longer feel compelled to rank or judge the "elements of our multiplicity," it is possible that stereotypes can be overcome because they become irrelevant (Turkle, 1995). It is no longer beneficial to categorize based on appearance, because appearance may not be a reflection of 'reality'. As people begin to experiment with several identities, making

judgments based on appearance may be inaccurate, since these appearances are fluid. "The lack of actual physical presence, indeed the great physical distances between individual participants, demands that a new set of behavioral codes be invented if the participants in such systems are to make sense to one another" (Reid, 1994, p. 166). This will potentially lead to the use of alternative criteria, such as behavioral actions, rather than appearance-based stereotypes.

Gender-swapping is an opportunity to explore the issues and conflicts that arise because of one's biological gender. It provides the opportunity to experience what it 'feels' like to be the opposite gender or to have no gender at all (Turkle, 1995). Virtual gender swaps give people the ability to explore other roles and greater emotional ranges. Dietrich (1997) however, considers it a myth that sexism against women may be reduced through virtual reality programs that allow men to log on as the female gender and 'take' the woman's point of view. She argues that this ignores the fact that our culture socially constructs our identities in such a way that they are powerfully inscribed onto our bodies. It is simplistic to think that by assuming the role of the other gender for a temporary duration would overturn the sexual hierarchy so deeply embedded in society. However, this freedom to construct gender in more liberal ways than one can in face-to-face interactions may actually assist in disassociating gender with biological sex, and force new gender schemata.

Rodino (1997) concluded from her observational study of an Internet Relay Chat environment that conceptualizing gender as a dichotomy neglects the variety of gender constructions that occur in computer mediated environments. Yet dichotomous perceptions still occur, in that men are perceived as having more power.

Ferris (1996) did an informal study by sitting in on a small newsgroup for one week and observed the differences in communication between men and women participating in the group. Ferris concluded that gender differences continue to show up in the use of CMC. She found that the women appeared to be interested in maintaining interaction through continuous dialogue, while the men were primarily trying to establish control – characteristics apparent in face-to-face dialogue. Men monopolize on-line conversations, and even when women do contribute, they are often driven to silence by the adversarial style of male responses, either ceasing to post messages or withdrawing from the discussion (Collins-Jarvis, 1995; Herring, 1994; Spender, 1996). It appears that while both men and women are interested in information exchange, they interact in gendered ways, with women continuing to be supportive, while men are often critical (Herring, 1996).

We (1993) also found that men and women both feel that it is easier to communicate on-line than face-to-face. The realization that gender differences may be socially constructed could occur to users of CMC given that they can rarely tell whether one is female or male. Perhaps, more importantly, people are realizing that it does not matter. One male respondent stated that without the visual cues, it doesn't occur to him to make gender-oriented speculations that he would make in face-to-face communications. Another man added, "Women get heard more because they can finish a thought without being interrupted. Also men tend to deal with the content of what women say, rather than dismissing it, because it comes from a woman" (We, 1993).

However, Spender (1996) argues that despite electronic networks being theoretically gender-, race-, and class-blind, users are working out ways to identify gender on-line.

Virtual cues are being used to make decisions about gender. "Even when one tries to construct genderless avatars, there is no social, communicative space without gendered speakers" (Spender, 1996, p. 244). Women and men may have recognizably different styles in posting to the Internet and different communicative ethics. As a result, "women are experiencing...the same kinds of trouble they experience in other conversations", and these troubles may actually be intensified on-line (Kramarae & Taylor, 1993, p. 54). Not only do men attempt to continue to dominate communication in cyberspace by interrupting and correcting, they also exhibit more assertive behavior on-line such as 'flaming'[1] and sexual harassment.

## PERSUASION

Persuasion is the process of influencing others. Any persuasive situation can be thought of as consisting of a recipient, the topic, and the persuasive appeal. Of interest is how the two variables, recipient and appeal, influence attitude change. Persuasion is an integral variable in the study of social presence and person perception, because it allows us to quantify how the perception of the communicator influences the receiver. A person's perception of another is related to how much they allow themselves to be influenced. For example, sources perceived as more credible or attractive are more persuasive (McCroskey, Hamilton, & Weiner, 1974).

It has been argued by Chaiken and Eagly (1983) that how one processes persuasive messages depends on the media in which the message was conveyed. The more salient status cues and characteristics are, the more likely the receiver will use those variables in

[1] "Flaming" is sending hot-tempered messages in response to a disliked contribution. This type of message is typically not conveyed

deciding to accept or reject the message. Likewise, the less salient those cues are (e.g., written text), the more likely the receiver will process the message systematically and evaluate the arguments. When persuasion is brought about systematically rather than heuristically, the change is more enduring and may strengthen the connection between opinions and behavior (Chaiken, 1980; Pallak, 1983). Siero & Doosje (1993) take a different approach in arguing that people first make a judgement about the message, and then begin to evaluate it based on arguments.

Does receiver sex make a difference in the effect of persuasion? Cody, Seiter and Montagne-Miller (1995) have summarized the debate in this area, and although the research has shown that statistically women are more influenced on the average than men, they question taking this data at face value. These differences may actually be due to experimental conditions (Cody et al., 1995; Puddifoot, 1996). Yet individual differences do impact the affect of a persuasive message on the recipient, and message persuasiveness can be improved significantly by matching the messages to the recipient's self-schema (Kiesler, Siegel, & McGuire, 1984).

In a computer-mediated environment, heuristic cues are minimized. With that in mind, it would be expected that the fewer cues present, the higher the persuasion effect. In text-based interactions, emoticons and writing styles can be used as cues, when alternative sources of information, such as name, are not available. In such cases, we would expect that people exposed to fewer cues would be more persuaded by the message, and display a greater degree of acceptance of it. In a study by Kiesler et al.,

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in face-to-face interactions because physical presence may act as a deterrent. With the anonymity that the internet affords, this self-control may be relinquished.

(1984) it was found that subjects changed their position more frequently in computer-mediated environments than they did in face-to-face environments.

## Hypotheses

### RESEARCH QUESTIONS

1. How does sex and psychological gender influence person perception and persuasion in on-line interactions?
2. Is psychological gender a better indicator of how one perceives others than biological sex?
3. What is the relationship between sex, psychological gender and persuasion?
4. Why is psychological androgyny important to person perception?

### Hypothesis 1: Psychological gender is a more accurate indicator of how a person will perceive others and how others will be perceived

Subjects will not only be identifying themselves as male or female, they will also be completing the BSRI, which will identify their psychological gender. Cognitive-developmental theory postulates that people develop values consistent with their gender. Social learning theory postulates that sex-typing is a learned behavior. Regardless of how these behaviors are learned, psychological gender allows people to define themselves more accurately than simply male or female. This more descriptive definition will translate into within sex-group differences in person perception. That is, male subjects will perceive others differently based on their psychological gender. This will also be true for female subjects.

Additionally, our research will attempt to determine whether people consciously or unconsciously recognize these differences in others within an interaction. Although people immediately place others in sex-defined groups, at an unconscious level people may perceive the other based on psychological gender characteristics differently. Put simply, we expect that there will be a significant difference in how subjects perceive their partner when asked to rate them as male or female, versus describing their characteristics using the BSRI.

**Hypothesis 2: People who perceive themselves as sex-typed are more likely to make strong attributions of gender in others.**

According to the literature, sex-typed subjects are more attuned to cultural gender stereotypes and more likely to abide by them (Frable & Bem, 1985). People falling into the androgynous category may be more comfortable not knowing the gender of the person they are interacting with, and are thus more comfortable recognizing both masculine and feminine traits in the same person. Markus et al. (1982) found that there are important differences among individuals in how gender-relevant knowledge is organized in memory. Assuming this is true, then subjects who are sex-typed as masculine or feminine would be more likely to recognize those traits as bi-polar attributes and would not rate their partner as high or low on both sets of attributes, but rather as either masculine or feminine.

**Hypothesis 3: People who smile more will be perceived as female or feminine because it is considered feminine to smile a lot.**

While there is considerable discussion as to why women smile more than men do, there is little question in the literature that there is a definite difference in smile frequency between the sexes. This discrepancy is also noted in computer-mediated communications,

where it has been found that women use emoticons with a higher frequency than men (Witmer & Katzman, 1997). We hypothesize that subjects will perceive their interaction partner as female or feminine in the high smile condition.

**Hypothesis 4: People who smile less will be more persuasive.**

Sources perceived as more credible are more persuasive (McCroskey et al., 1974). Because the tendency to smile more has often been linked with the submissiveness of women (Kalbfleisch & Cody, 1995; Key, 1975; Thorne & Henley, 1975), we hypothesize that people who smile less will be perceived as more powerful and credible, and thus, more persuasive.

**Hypothesis 5: People can accurately predict the sex of others based solely on written cues.**

Observatory research has shown that in CMC interactions, even without the provision of cues such as name or sex, people do make judgements about the sex of their interaction partner. Popular literature such as Tannen's *You Just Don't Understand* (1986) and Gray's *Men are from Mars, Women are from Venus* (1992) demonstrate that men and women speak differently. Although CMC is primarily text based, it is often in a conversational form, lending it characteristics from written and verbal based communication. We hypothesize that the combination of these cues will provide enough information for participants to make judgements about the sex and psychological gender of their partner.

**Hypothesis 6: People are more likely to be persuaded when interacting with a confederate using a male-written script rather than a female-written script.**

Men write and converse in a more authoritative style, while women are more likely to include more hedges, etc. The female style may cause the message recipient to feel that the speaker is less credible, and thus less persuasive. While it has been found that men are sometimes more influenced by women who use a less powerful style because they feel less threatened (Booth-Butterfield & Geatz, 1992), we hypothesize that, overall, subjects will be more persuaded when the male-written script is used.

## Method

### DESIGN

Two experiments were conducted to test the hypotheses. Both experiments tested for the subjects' psychological gender and the perceived sex and psychological gender of the partner. Experiment 1 used a between-subjects experimental design with one factor – expression of emotion with three levels. The levels of the independent variable were no expressive ability, high smile and low smile. Experiment 2 was designed with one factor – sex of confederate script. Three male scripts and three female scripts, randomly selected from Experiment 1, were used as the confederate script. Emotion was not a factor in Experiment 2. Independent variables were sex of subject and psychological gender of subject.

## Experiment 1

### SUBJECTS

Fifty-four undergraduates at a large Midwestern university took part in this experiment for class credit. Most participants were freshmen or sophomores; all were members of the psychology subject pool and had participated in other studies throughout the semester. Eighteen participants were in each of the three conditions.

### MATERIALS

**Microsoft Netmeeting**. This interaction took place in a computer-based environment using Microsoft NetMeeting 2.1. This program allows interaction between networked computers. A person types in the window and hits the return key to send the message. The text is immediately readable on the interaction partner's computer screen. NetMeeting also allows people interacting to share files and other programs. This feature allowed us to share the screen that contained the smiley or neutral faces, as described below.

**Director.** Director was used as a shared program. On a program screen that both the participant and confederate could see, there was a small neutral face or a small smiley face[2] that could be seen, depending on which expression was selected. In the bottom

[2] The avatars used here were the generic guest avatars used in the Palace (**http://www.thepalace.com**); this is one of the most popular interactive two-dimensional chat rooms. The yellow smiley face was chosen as a neutral avatar for this study, in concurrence with the reasoning provided by J. Bumgardner on using it for the Palace. "I wanted the users to be able to identify or equate themselves with the avatars, so I chose extremely abstract artwork. The smiley head is about as abstract as you can get" (Bumgardner, 3/30/98)... Why yellow in particular? I think it was an arbitrary choice, probably influenced by the pervasive yellow smiley buttons of the 70s" (Bumgardner, 3/31/98).

corner of this shared portion of the screen were two small faces, one neutral[3] and one smiling, which the confederate and the subject clicked on when selecting an expression during their respective turns.

**Desert Survival Task** (Lafferty & Eady, 1974). This tool was comprised of a list of twelve items[4] which subjects were required to rank in the order of importance they felt these items would be needed if they were stranded in the desert.

**Surveysaid.** All questionnaires were filled out using Surveysaid, a computerized questionnaire software. Subjects point and click the appropriate response and hit the 'next question' button to move on. The data is automatically coded and stored in a database for later statistical analysis. Even during the post-experimental questionnaire subjects put their answers into the computer, allowing them to freely express opinions and suggestions for future research.

## MEASUREMENT INSTRUMENTS

**Psychological Gender.** Subjects completed the Bem Sex Role Inventory (Bem, 1974) prior to beginning the interaction. The BSRI consisted of 60 items, twenty of which were rated as masculine-typed, 20 of which were neutral, and 20 of which were feminine typed. Subjects responded to the 60 descriptive statements using 7-point scales anchored by 'never or almost never true' and 'always or almost always true'. Raw scores were determined by adding the respondents' values of the 20 item numbers for each scale and

[3] There was some question about this being neutral. When selected instead of a smile, it is possible this could have appeared negative, or more like a frown.

[4] The items included a magnetic compass, a 20-by-20 piece of heavy-duty, light blue canvas, the book Edible Plants of the Desert, a rearview mirror, a large knife, a flashlight (four-battery size), one jacket per person, one transparent ground cloth (6 feet by 4 feet) per person, a loaded .38-caliber pistol, one 2-quart plastic canteen per person, full of water, an accurate map of the area, and a large box of kitchen matches.

dividing by 20 to find the average scores. Sex-type was determined on the basis of a median split (Bem, 1981). Normative data was based on that provided by Bem (1981). Subjects whose raw scores for both scales were higher than the medians were ranked androgynous. Subjects whose raw scores were lower than the medians were ranked undifferentiated.

**Persuasion.** Persuasion was a two-fold measure based on frequency of change and degree of change. Frequency of change was determined by counting the number of items that subjects re-ranked after their interaction. Degree of change was the sum of the number of points that each re-ranked item was moved. For example, if a subject initially ranked the compass as number one, and later changed it to number five, the degree change was 4.

## PROCEDURE

Subjects were randomly assigned to one of the three conditions. After subjects signed a consent form indicating their voluntary participation in this experiment, they used Surveysaid to respond to a few demographic questions including their sex, ethnicity, age and year in school. Subjects then completed the BSRI. When the participants completed this initial questionnaire, they were given a one-page instruction sheet, which outlined the Desert Survival scenario and described the protocol for their online interaction. Participants then rank ordered the twelve items listed on the Desert Survival scenario sheet.

When participants finished their rank ordering, the interaction with a confederate began using NetMeeting. In this interaction they discussed their rank of each item and the

reason for their choice. The confederate also gave the rank and reason for each item from the script assigned. The confederate's contribution was completely scripted[5], which meant that each participant had the same text and the same messages during the interaction, the only difference would be whether and to what extent the confederate smiled during the interaction. Participants did not see the confederate at any time during the interaction.

In two of the conditions participants were asked to select an expression prior to sending text-based messages each time that it was their 'turn'. Selecting an expression consisted of clicking with the mouse on the small avatar in the corner of the program, which would cause that face to pop up larger in the shared Director screen. Subjects could not see the expressions they chose, but only the expressions chosen by their interaction partner, who would select the expression assigned prior to sending text comments from the script.

In all conditions, participants saw this screen with either a smile or a neutral face. In one condition, participants interacted with this cartoon-like (unrealistic) avatar (or low level cyberspace embodiment) which maintained a neutral expression throughout the interaction. In this condition, participants could not visually communicate emotion and did not receive this feedback from the confederate. In the second and third conditions, participants interacted with a cartoon-like (unrealistic smiley faced) avatar and could visually communicate emotion. Choices were limited to either the smile or a neutral expression described above. In the second condition, the confederate smiled during 2/3 of

[5] Nass and Reeves (1996) also used this script during much of their research for their book. The subjects were to discuss their ranking of items they would like to have with them if they were stranded in a desert with their interaction partner.

the interactions and had a neutral expression during 1/3 of their 'turns'. In the third condition, the confederate smiled during 1/3 of their 'turns' and had a neutral expression during 2/3 of their 'turns'.

## RESULTS

### Hypothesis 1: Psychological gender is a more accurate indicator of how a person will perceive others and how others will be perceived

The first part of this hypothesis postulates that a person's psychological gender (sex-type) will be a more significant indicator in the perception of others rather than one's biological sex. Using the 60 items on the BSRI, we first determined the subject's psychological gender, and then also determined the perceived psychological gender of the confederate.

Table 1 establishes the baseline for the comparisons through the illustration of subjects' perceptions for their partners' sex. This table illustrates little variance between male and female subject's perception of the sex of their partner.

Table 1: Frequencies of Perceived Partner Sex by Subject Sex

| | Perceived Partner Sex | | | |
|---|---|---|---|---|
| Subject Sex | Male | Female | Undetermined | Total |
| Male | 15 | 11 | 7 | 33 |
| | 45.5% | 33.3% | 21.2% | |
| Female | 11 | 5 | 5 | 21 |
| | 52.4% | 23.8% | 23.8% | |

Looking at the distribution as shown in Table 2, it is evident that female subjects are much more likely to perceive the confederate as masculine (81%), while male subjects are more evenly divided in their perception of the confederate as either masculine (45.5%) or undifferentiated (51.5%).

Table 2: Frequencies of Perceived Psychological Gender by Subject Sex

| | | Perceived Partner Psychological Gender | | | |
|---|---|---|---|---|---|
| Subject Sex | n | Masculine | Feminine | Androgynous | Undifferentiated |
| Male | 33 | 15 | 0 | 1 | 17 |
| | | 45.5% | | 3% | 51.5% |
| Female | 21 | 17 | 0 | 0 | 4 |
| | | 81% | | | 19% |
| Total | 54 | 32 | 0 | 1 | 21 |
| | | 59.3% | | 1.9% | 38.9% |

These differences in perception of the partner's psychological gender are reiterated when looking at the psychological gender of the subject. As shown in Table 3, feminine-typed subjects perceived the confederate as masculine in 92% of the cases, whereas masculine-typed subjects were again more evenly divided in their perception of the confederate as masculine (44%) or undifferentiated (56%). Androgynous and undifferentiated subjects were also more evenly divided in their perception of the confederate as either masculine or undifferentiated.

**Table 3: Frequencies of Perceived Psychological Gender by Subject Psychological Gender**

| Subject Psychological Gender | Perceived Partner Psychological Gender | | | | |
|---|---|---|---|---|---|
| | n | Masculine | Feminine | Androgynous | Undifferentiated |
| Masculine | 16 | 7 | 0 | 0 | 9 |
| | | 43.8% | | | 56.3% |
| Feminine | 12 | 11 | 0 | 0 | 1 |
| | | 91.7% | | | 8.3% |
| Androgynous | 20 | 11 | 0 | 1 | 8 |
| | | 55% | | 5% | 40% |
| Undifferentiated | 6 | 3 | 0 | 0 | 3 |
| | | 50% | | | 50% |
| Total | 54 | 32 | 0 | 1 | 21 |
| | | 59.3% | | 1.9% | 38.9% |

The second part of this hypothesis predicts that people will maintain differing perceptions of others based on the other person's psychological gender rather than on their biological sex. A frequency analysis showed that during 48% of all interactions, the confederate was rated male, and in only 30% was the confederate rated female with 22% undecided.

However, the results of frequency analysis based on the perceived psychological gender of the confederate, tell a different story (Table 4). This showed that when asked to rate the confederate according to various personality traits, 59% of the subjects rated the confederate as masculine, 39% as undifferentiated (low in masculine and feminine traits),

and 2% as androgynous. Zero percent of the subjects rated the confederate as feminine sex-typed.

**Table 4: Frequencies of Perceived Partner Psychological Gender**

| | Perceived Partner Psychological Gender | | | |
|---|---|---|---|---|
| n | Masculine | Feminine | Androgynous | Undifferentiated |
| 54 | 32 | 0 | 1 | 21 |
| | 59.3% | | 1.9% | 38.9% |

**Hypothesis 2: People who perceive themselves as sex-typed are more likely to make strong attributions of gender in others.**

Subjects were classified according to the BSRI as masculine, feminine, androgynous or undifferentiated. For the purpose of this hypothesis, masculine and feminine subjects were grouped as sex-typed, and androgynous and undifferentiated subjects were grouped as non-sex typed. The same grouping technique was applied to the perceived gender of the confederate The results of a chi-square analysis demonstrated that there was not any association between the subjects' sex-type and their perceived sex-type of the confederate ($X^2$ [1, $\underline{N}$ = 54] = 0.609, $p$ = 0.435).

Since none of the subjects ranked the confederate as feminine, sex-typed in this case means masculine. In nearly 60% of the cases, the subjects rated the confederate as masculine, and in nearly 40%, the subjects rated the confederate as low in masculine and low in feminine traits. This is very likely due to the nature of the script, which was very formal. Not only was it dominant in nature, it was also very straightforward, providing few clues as to the personality of the confederate. Several subjects thought that they were

interacting with a computer, which provides insight into the high percentage of subjects that ranked the confederate as undifferentiated.

**Hypothesis 3: People who smile more will be perceived as female or feminine because it is considered feminine to smile a lot.**

This involved a one-item indicator with the confederate rated as female or male, and the 60-item Bem Social Role Inventory (BSRI). Fisher's Exact Test was used to determine if there was an association between the level of smiles and (a) perceived sex and (b) perceived psychological gender. Given the *p*-values associated with perceived sex and perceived gender ($N = 54, p > 0.05$), the hypothesis that there is an association between the independent variable *smile* and the dependent variables *sex* and *gender* was rejected and the analysis did not proceed.

A frequency analysis showed that, overall, the confederate was rated male 48% of the time and as masculine-typed 59% of the time. This results could very well be attributed to the dominant nature of the script, or to the fact that the confederate began the interaction and led the discussion.

**Hypothesis 4: People who smile less will be more persuasive on issues of desert survival.**

An analysis on persuasion effects was conducted by examining both the frequency of change, which was defined as the number of items that were re-ranked, and the degree of change from the subjects' initial rankings to their re-rankings of the desert survival items. The frequency of change can take on the values between 0 and 12, with the exception of 1, and for the initial analysis was classified as High (frequencies >=7) or Low

(frequencies <=6). The conditions were merged to form a smile and no smile condition in order to test for an association between presence of smiles and frequency of change.

The results of a Chi-square analysis ($X^2$ [1, $\underline{N}$ = 51] = 4.194, $p$=0.041) indicate that there is an association between the presence of smiles and the frequency of change.

The Somer's D C|R statistics, which measures the strength of the association, provided a negative value (-0.294) indicating that the frequency of change tends to be higher when smiles are not present.

A value of 0.241 was found for the Estimate of Relative Risk, which means that the odds of high relative frequency of change in the smile group are 0.241 higher than the odds of high relative frequency of change in the no smile group. Put simply, subjects that interact with a non-smiling confederate are 4.15 times more likely to have a higher frequency of change than subjects interacting with a smiling confederate are.

A more detailed analysis was then conducted on the level of smiles (neutral, low, high) and frequency of change, which was classified as High (frequencies >= 9), Medium (frequencies in the range of 5-8) and Low (frequency <= 4).

Fisher's Exact Test was conducted to determine if there was an association between the smile condition and frequency of change. Given the $p$-value associated with Fisher's Exact Test ($\underline{N}$ = 51, $p$ = 0.016), the hypothesis of association is accepted.

The Somers' D C|R statistics provided a negative value (-0.401) indicating that there is a moderate negative association between the smile condition and frequency of change

variable. Negative association means that the lower the smile level is, the higher the frequency of change tends to be.

An initial analysis was then conducted to determine the association between the presence of smiles and the degree of change. Degree of change was classified as Low (for values <=24) or high (for values >=25).

The results of the Chi-Square ($X^2$ [1, $\underline{N}$ = 51] = 8.854, $p$ = 0.003) indicate that there is a significant association between the presence of smiles and degree of change.

The Somer's D C|R statistics provide a negative value (-0.441), indicating there is a negative association between the presence of smiles and the degree of change. This negative association means that the degree of change tends to be higher in the smile condition.

A value of 0.147 was found for the Estimates of Relative Risk, which means that subjects who are in the no smile condition are 6.803 (=1/0.147) more likely than the subjects interacting in the smile conditions to have a higher degree of change.

A more detailed analysis was then conducted to determine the association between the level of smiles (neutral, low, high) and the degree of change. For this analysis, the degree of change can take on values between 0 and 72, and was classified as High (for values >=49), Medium (for values in the range of 25-48), and Low (for values <=24). Fisher's Exact Test was conducted to determine if there was an association between smile condition and degree of change. The results of the analysis (N = 51, $p$ = 0.015) indicate that the probability of the association being due to chance is only a 1.5%.

The results of the Somers' D C|R (-0.334) indicate that there is a moderate negative association between presence of smiles variable and the degree of change variable. This negative association means that the lower the smile level is, the higher the degree of change tends to be.

The next step was to examine any association between the sex of the subjects and level of persuasion. In looking at frequency of change, we found a difference in the means, with a higher frequency of women changing (M = 8.1) than men (M = 5.9). The means again showed a greater degree of change in female subjects (M = 31.8) than in male subjects (18.9). Male subjects showed a greater frequency of change in the no smile condition (M = 8.85) than female subjects (M = 8.6), while female subjects displayed a higher frequency of change in the smile condition. (M = 7.6) than male subjects (M = 5.08). However, a Chi-square analysis revealed that despite these trends, there was not a significant association between the sex of the subject and frequency of change ($X^2$ [2, $\underline{N}$ = 51] = 3.595, $p > 0.05$).or between sex of the subject and degree of change ($X^2$ [2, $\underline{N}$ = 51] = 2.212, $p > 0.05$).

## Experiment 2

### SUBJECTS

Forty-two undergraduates at a large Midwestern university took part in this experiment for class credit. Most participants were freshmen or sophomores; all were

members of an intermediate telecommunications course[6]. Twenty-one participants were in each of the two conditions.

## MATERIALS

This experiment also utilized Microsoft NetMeeting 2.1, Surveysaid and the Desert Survival Task. For the Desert Survival Task, the traditional confederate script was substituted with scripts developed from Experiment 1 chat transcripts. Three scripts were randomly selected from the male subjects and three were randomly selected from the female subjects. These scripts were modified slightly to reflect the role that the confederate had in leading the interaction.

## MEASUREMENT INSTRUMENTS

Psychological gender and persuasion were measured in Experiment 2 using the same instruments from Experiment 1.

## PROCEDURE

The procedure for Experiment 2 was identical to that from Experiment 1 except for the use of emotions. Experiment 2 used a strictly text based interaction. The debriefing occurred via email after all subjects completed the experiment.

[6] TC 201

## RESULTS

**Hypothesis 1: Psychological gender is a more accurate indicator of how a person will perceive others and how others will be perceived.**

The first part of this hypothesis postulates that a person's psychological gender (sex-type) will be a more significant indicator in the perception of others rather than one's biological sex. Using the 60 items on the BSRI, we first determined the subject's psychological gender, and then also determined the perceived psychological gender of the confederate.

Table 5 establishes the baseline for the comparisons through the illustration of subjects' perceptions of partner sex. This table illustrates little variance between male and female subject's perception of the sex of their partner.

Table 5: Frequencies of Perceived Partner Sex by Subject Sex

| | Perceived Partner Sex | | | |
|---|---|---|---|---|
| Subject Sex | Male | Female | Undetermined | Total |
| Male | 10 | 10 | 9 | 29 |
| | 34.5% | 34.5% | 31% | |
| Female | 2 | 5 | 4 | 11 |
| | 18.2% | 45.5% | 36.4% | |

Looking at the distribution as shown in Table 6, it is evident that subjects were overall less likely to make sex-typed attributions. The frequency analysis does not demonstrate any visible differences between male and female subjects in gender attributions.

Table 5: Frequencies of Perceived Psychological Gender by Subject Sex

| | | Perceived Partner Psychological Gender | | | |
|---|---|---|---|---|---|
| Subject Sex | n | Masculine | Feminine | Androgynous | Undifferentiated |
| Male | 29 | 9 | 0 | 1 | 19 |
| | | 31% | | 3.4% | 65.5% |
| Female | 11 | 3 | 1 | 0 | 7 |
| | | 27.3% | 9.1% | | 63.6% |
| Total | 40 | 12 | 1 | 1 | 26 |
| | | 30% | 2.5% | 2.5% | 65% |

This is reiterated when looking at the psychological gender of the subject. As shown in Table 2, regardless of the subject's psychological gender, subjects displayed minimal variance in ranking their partner as either undifferentiated or masculine. The low N for feminine-typed subjects makes it difficult to ascertain any unique distributions for this group.

Table 6: Frequencies of Perceived Psychological Gender by Subject Psychological Gender

| Subject Psychological Gender | | Perceived Partner Psychological Gender | | | |
|---|---|---|---|---|---|
| | n | Masculine | Feminine | Androgynous | Undifferentiated |
| Masculine | 20 | 5 | 1 | 0 | 14 |
| | | 25% | 5% | | 70% |
| Feminine | 3 | 2 | 0 | 0 | 1 |
| | | 66.7% | | | 33.3% |

| | | | | | |
|---|---|---|---|---|---|
| Androgynous | 10 | 3 | 0 | 1 | 6 |
| | | 30% | | 10% | 60% |
| Undifferentiated | 7 | 2 | 0 | 0 | 5 |
| | | 28.6% | | | 71.4% |
| Total | 40 | 12 | 1 | 1 | 26 |
| | | 30% | 2.5% | 2.5% | 65% |

The second part of this hypothesis predicts that people will maintain differing perceptions of others based on the other person's psychological gender rather than on their biological sex. A frequency analysis showed that during 30% of all interactions, the confederate was rated male, and in 37.5% the confederate rated female with 32.5% undecided.

However, the results of frequency analysis, based on the perceived psychological gender of the confederate, again tell a different story (Table 7). This showed that when asked to rate the confederate according to various personality traits, the percentage of masculine-typed partners remained constant with those typed as male, but the percentage of partners ranked as female did not carry over into the feminine-typed category. Rather, the undifferentiated group doubled from the undetermined group.

Table 7: Frequencies of Perceived Partner Psychological Gender

| Perceived Partner Psychological Gender | | | | |
|---|---|---|---|---|
| n | Masculine | Feminine | Androgynous | Undifferentiated |
| 40 | 12 | 1 | 1 | 26 |
| | 30% | 2.5% | 2.5% | 65% |

**Hypothesis 2: People who perceive themselves as sex-typed are more likely to make strong attributions of gender in others.**

Subjects were classified according to the BSRI as masculine, feminine, androgynous or undifferentiated. Masculine and feminine-typed subjects were grouped as sex-typed, and subjects classified as androgynous and undifferentiated were grouped as non-sex typed. The same grouping technique was applied to the perceived gender of the confederate. The results of Fisher's Exact Test ($\underline{N} = 54, p > 0.05$) indicate that there is not an association between the subjects' sex-type and their perceived sex-type of the confederate.

**Hypothesis 5: People can accurately perceive the sex of their partner based on a text-based interaction.**

Six scripts were used in this study, three female and three male. It was expected that subjects could detect the sex of the confederate based on the interaction in which the confederate was using either a male or a female script. However, the non-significant results from a Chi-square analysis demonstrate that there is not a significant association between the script used and the perceived sex ($X^2$ [2, $\underline{N} = 40$] = 0.144, $p > 0.05$) or psychological gender ($X^2$ [3, $\underline{N} = 40$] = 3.487, $p > 0.05$) of the confederate.

**Hypothesis 6: People are more likely to be persuaded when interacting with a confederate using a male-written script than a female-written script.**

The results from Fisher's Exact Test demonstrate that there is no difference between level of persuasion and the script ($\underline{N} = 52, p = 1.0$). In fact, even the means between subject groups are similar, with the frequency of change for male subjects (M=3.9) very

close to that of female subjects (M=4.5), and the degree of change for male subjects (M=8.7) very close to that of female subjects (M=9.5).

## Limitations

The low number of subjects in each experiment ($\underline{N}$ = 54, $\underline{N}$ = 40) may limit the statistical power of some tests. There was also a low number of female subjects in both experiments ($\underline{N}$ = 21, $\underline{N}$ = 11), which would again limit any statistical comparisons between subjects based on sex and psychological gender.

In Experiment 1, some subjects figured out that if they clicked on the smile or neutral icons representing their partner's expression choices, they could change the expression displayed by their partner. In this way, even though the confederate may have selected the neutral expression, some subjects could change this to a smile. The fact that this expression screen was also set off to the side of the screen instead of being directly adjacent to the text may have also limited its effect on subjects.

## Discussion

The frequency analyses for subject perception of sex versus psychological gender of the confederate provide some interesting overall trends. In Experiment 1, when asked to determine the sex of their partner, participants selected male 48% of the time, and female 30% of the time. However, when completing the sex-role inventory for their partner, only 1.9% of the subjects gave the confederate a high ranking on feminine traits, but 59% ranked the confederate as highly masculine. These results were also demonstrated in

Experiment 2, where subjects determined that there partner was male in 30% of the cases, and female in 37.5% of the cases. Yet, while the subjects rated their partner to be masculine in 30% of the cases also, they only rated their partner as high in feminine traits (androgynous and feminine) in 5% of the cases.

This data provides evidence that judgements people make about others based on stereotypical traits may frequently not correspond with the biological sex category that they assign the person to. Put simply, just because a person may perceive a stereotypical feminine trait in another person does not force them to automatically conclude the person they are interacting with is female, and the predominance of masculine traits does not necessarily lead to the conclusion that the person is male.

This may be due to a number of factors. First, the subjects may be attuned to the traits associated with sex stereotypes, and may have avoided classifying their partner according to these traits to appear less judgmental. That is, subjects may have made the connection between the traits and their perception of their partner's sex. There may also be a gradual change in sex-based stereotypes that should be accounted for. That is, traits that were assigned as primarily female and primarily male in the 1970s – when several inventories including the BSRI were created – may not accurately reflect the traits that people two decades later assign as being typical of women and men. This should be further investigated in order to determine if these inventories are accurate for person perception studies.

Leet-Pellegrini (1979) found that male experts were significantly more controlling in openings and closings than female experts were. In Experiment 1, subjects universally

ranked the confederate as being male or masculine-typed across conditions, and several commented either within the interaction transcript or in a post-experiment questionnaire that they believed their partner to be an expert in desert survival. Due to the nature of the script being very rigid in its opening and closing, the lack of differences across conditions is not surprising. In Experiment 2, there were not any significant differences from the use of a female script to that of a male script, which may be due to the fact that the confederate still controlled the opening and closing of the interaction.

Except for Experiment 1 where female subjects displayed a higher frequency ($f$ = 81%) of perceiving their partner as masculine than male subjects ($f$ = 45.5%), there were minimal differences between male and female subjects' perception of their partner's sex across conditions in both experiments. This may indicate that differences in the perception of others in CMC are not all that great between the sexes. Men and women may actually be more similar than different in how they perceive others in CMC. What is different is how they use the information that they received. Although the results were not significant, the trends in Experiment 1 showed that women were more persuaded than men when they received the additional nonverbal cues, however men were more persuaded than women were when these cues were not available. These trends indicate that future research should focus less on differences in how men and women perceive others, and more on how they utilize the information that is received through nonverbal cues.

The fact that the data showed significant differences between smile conditions on persuasion effects is of special interest. Not only did subjects change more items in the no smile condition, they changed these items in significantly greater degrees. These results

support the argument made by Pallack, Muroni and Koch (1983) and Chaiken (1980) that persuasion that is brought about systematically is more enduring and stronger than change based on heuristics. The analysis did provide information on the impact of limited nonverbal on the persuasiveness of the communicator. This information indicates that as people use CMC to convey persuasive messages, fewer nonverbal cues equates with a stronger persuasive message. However, Experiment 2, which eliminated the expression variable, did not demonstrate similar levels of persuasion (Figure 1). This indicates that people may require a minimum number of cues in their interactions, and the second experiment may not have reached this minimum.

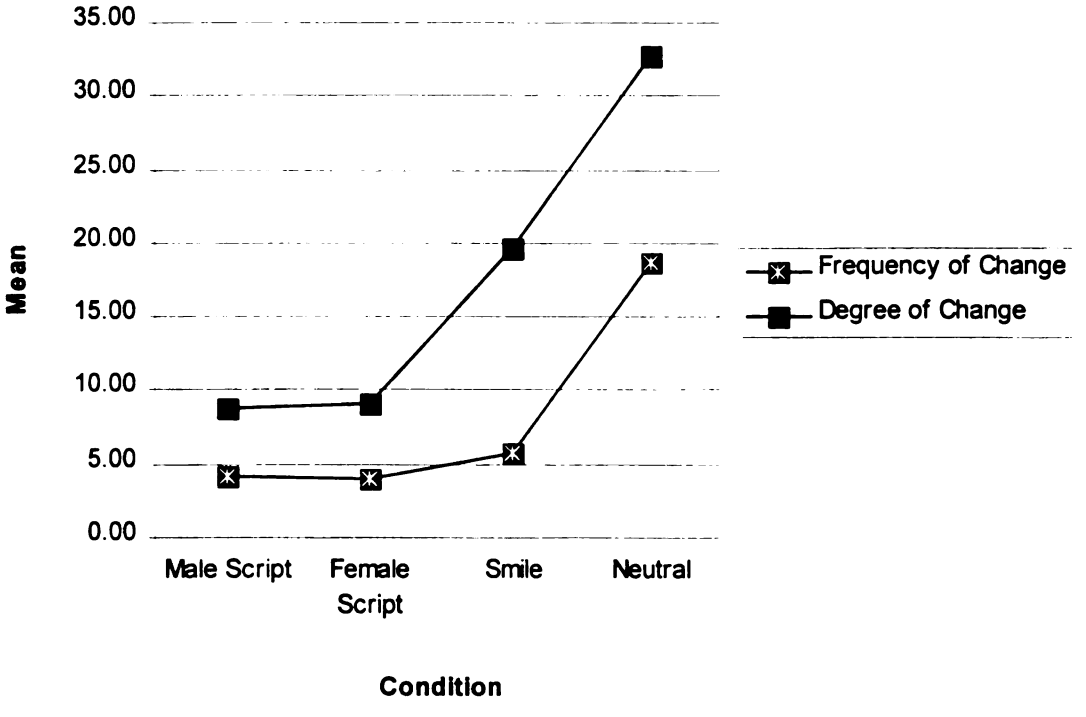


Figure 1: Frequency of change and degree of change comparisons across Experiments 1 and 2 by condition. The 'male script' and 'female script' conditions refer to those in Experiment 2, and 'smile' and 'neutral' conditions refer to the merged conditions in Experiments 1.

The lack of persuasion effects in Experiment 2 could be due to the fact that these scripts were pulled randomly from Experiment 1, in which many of the subjects felt that their partner was an expert. In fact, the post experiment comments by participants indicated suspicion that the interaction partner was in fact a computer[7]. The subjects' scripts used in Experiment 2 may have been more submissive or less authoritative in nature as a result. The subject scripts that were used in Experiment 2, while increasing believability that the interaction partner was another student, may have all been similar in writing style due to the nature of the interaction in Experiment 1.

## Conclusion

The presence of women on-line is growing every year. 1995 demographic reports by (CommerceNet/Nielsen, 1998) found that women comprised 35.5% of the Internet population and 43% in 1998. Graphic, Visualization, & Usability Center's (GVU) WWW User Survey (Graphic) also shows continued growth (38.7% female users in 1998, as compared to 32.32% in 1996) and points out that new users, those who have been on the Net for less that one year, are mostly female (51.7%). New research by Jupiter Communications found that women account for 45 percent of Web users, and are on track to outnumber men within four years. As these numbers continue to grow, the way the Web works will change. As Kaplan and Farrell (1994) found, women are redefining "their relations to the technologies, transforming what the wider culture codes as male into a tool they themselves identify with characteristically female traits and capacities"

[7] This is believed to be because of the language used in the script and the format of the interaction. The language in the script used in Experiment 1 was more that of a desert survival expert, which is where it originated. The scripts in Experiment 2 incorporated language that an undergraduate would use, however the rigid format of the interaction remained.

(39). Women are using the Internet for different purposes than men, and changing the face of it in the process. The Internet can no longer be considered "another male bastion" as stated by Jesse Berst, the Editorial Director at *ZDNet AnchorDesk*[8].

New technology will continue to shape our interactions, as well as create additional confounds. For example, speech recognition software is steadily improving and becoming more accessible to users, as shown by Dragon NaturallySpeaking ™[9], blurring the lines between written and spoken language even further. Future research should look at the implications of this type of technology on person perception and persuasion in electronic interactions.

While people will still want to know if the person they are interacting with on-line is male or female for building mental models of that person, how they interpret that information is bound to change. For example, as more women use the Web, the stereotype that women aren't as good at computers will repeatedly prove inaccurate. The assumptions will change. In fact, in the e-commerce arena this is already changing, as the number of women on-line continues to grow. Investors and internet executives agree that given the ever-growing purchasing power of women, major advertisers and retailers will be driven to the Net (Hoffman, 1998).

As modes of electronic communication proliferate, it will be necessary for e-commerce merchants to know how to model their persuasive messages to reach their target audiences, for the new crop of virtual universities to know the best method to educate their students, and for media designers to know how to design their systems to

[8] ZDNet is a popular shareware site. AnchorDesk offers technology news. http://www.zdnet.com/anchordesk

best accomplish the task without alienating users. While attempting to replicate a face-to-face interaction is not the most efficient use of technology, it is apparent from this study that there is a sufficiency threshold that users require in their interaction. Subjects in the second experiment had fewer nonverbal cues to rely on to make judgements about their interaction partner and the interaction in general, than those in the first experiment did. Future research should explore further at what point a sufficiency threshold is reached, and how much information is enough for users to feel comfortable with their interaction.

[9] http://www.naturalspeak.com

# APPENDICES

# APPENDIX A

## CONSENT FORM

***Consent Form***

As virtual reality and virtual environments continue to proliferate in academic, social and business environments, people will need to interact in this new medium. We are interested in researching how people interact in these virtual environments when they have had no prior face-to-face interactions with their partner.

You are only being asked to participate in this study on this single occasion. You are not being asked to participate in multiple sessions. This single session will last approximately one hour. During this session you will be asked to complete a preliminary questionnaire, participate in a virtual interaction and complete a follow-up questionnaire. You will not be involved with any treatments or incur any risk of physical injury during your participation in this study. At the end of your participation, we will explain in more detail the purpose of this research project and take the time to answer any questions you may have about your participation here.

You are being asked to freely participate in this study. Participation is voluntary, and you can elect to not participate in this study. At any time during this study, you may discontinue your participation.

All results from this study will be treated with strict confidence. This means that your name will not be associated with the answers you provide to questions in any report of research findings. Your name is only requested so that we may inform your instructor of your participation. On request, and within these restrictions, results may be made available to you. If you have any questions or concerns about your participation in this interaction, please contact either Frank Biocca (biocca@tcimet.net) or Trina Anderson (simontri@pilot.msu.edu).

You indicate your voluntary agreement to participate in this study by signing this consent form.

Signed _____ Date: _____

_____

Print Name Here

# APPENDIX B

## PRE-INTERACTION SURVEY

Instructions:
{_} - select ONLY ONE Choice [_] - select ALL that apply.

1 Thank your for agreeing to participate in our experiment. Please take a few minutes to fill out the following questions. When you are finished, please notify your experimenter.

2 With what ethnic background do you most strongly identify yourself?

{_}African-American {_}Chinese {_}Korean {_}Hispanic
{_}Japanese {_}Caucasian {_}Other

3 Are You

{_}Male {_}Female

4 What year in school are you?

{_}Freshman {_}Sophmore {_}Junior {_}Senior {_}Graduate

5 How old are you?

___

6 How often have you chatted on-line?

{_}never {_}one to two times {_}monthly {_}weekly
{_}daily

7 People often use emoticons in on-line text interactions to convey emotion. Do you know what the following emoticon means? :) (If Not Answered Skip to # 9)

{_}Yes (Skip_to_#_8) {_}No (Skip_to_#_9)

8 What does this emoticon mean? :)

_____

9 This emoticon :) is often used in on-line interactions to denote happiness.

10 Do you know what the following emoticon means? :( (If Not Answered Skip to # 12)

{_}Yes (Skip_to_#_11) {_}No (Skip_to_#_12)

11 What does this emoticon mean? :(

_____

12 This emoticon :( is often used in on-line interactions to denote unhappiness.

13 Do you know what the following emoticon means? ;) (If Not Answered Skip to # 15)

{_}Yes (Skip_to_#_14) {_}No (Skip_to_#_15)

14 What does this emoticon mean? ;) (If Not Answered Skip to # 15) (If Answered Skip to # 15)

_____

15 This emoticon ;) is often used in on-line interactions to denote sarcasm.

16 On the following pages, you will find listed a number of personality characteristics. We would like you to use those characteristics to describe yourself, that is, we would like you to indicate, on a scale from 1 to 7, how true of you each of these characteristics is. Please do not leave any characteristic unmarked.

17 Please indicate how true of you the following characteristic is: Defend my own beliefs

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

18 Please indicate how true of you the following characteristic is: Affectionate

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

19 Please indicate how true of you the following characteristic is: Conscientious

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

20 Please indicate how true of you the following characteristic is: Independent

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

21 Please indicate how true of you the following characteristic is: Sympathetic

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

22 Please indicate how true of you the following characteristic is: Moody

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

23 Please indicate how true of you the following characteristic is: Assertive

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

24 Please indicate how true of you the following characteristic is: Sensitive to needs of others

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

25 Please indicate how true of you the following characteristic is: Reliable

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

26 Please indicate how true of you the following characteristic is: Strong personality

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

27 Please indicate how true of you the following characteristic is: Understanding

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

28 Please indicate how true of you the following characteristic is: Jealous

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

29 Please indicate how true of you the following characteristic is: Forceful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

30 Please indicate how true of you the following characteristic is: Compassionate

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

31 Please indicate how true of you the following characteristic is: Truthful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

32 Please indicate how true of you the following characteristic is: Have leadership abilities

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

33 Please indicate how true of you the following characteristic is: Eager to soothe hurt feelings

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

34 Please indicate how true of you the following characteristic is: Secretive

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

35 Please indicate how true of you the following characteristic is: Willing to take risks

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

36 Please indicate how true of you the following characteristic is: Warm

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

37 Please indicate how true of you the following characteristic is: Adaptable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

38 Please indicate how true of you the following characteristic is: Dominant

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

39 Please indicate how true of you the following characteristic is: Tender

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

40 Please indicate how true of you the following characteristic is: Conceited

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

41 Please indicate how true of you the following characteristic is: Willing to take a stand

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

42 Please indicate how true of you the following characteristic is: Love children

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

43 Please indicate how true of you the following characteristic is: Tactful

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

44 Please indicate how true of you the following characteristic is: Aggressive

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

45 Please indicate how true of you the following characteristic is: Gentle

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

46 Please indicate how true of you the following characteristic is: Conventional

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

47 Please indicate how true of you the following characteristic is: Self-reliant

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

48 Please indicate how true of you the following characteristic is: Yielding

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

49 Please indicate how true of you the following characteristic is: Helpful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

50 Please indicate how true of you the following characteristic is: Athletic

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

51 Please indicate how true of you the following characteristic is: Cheerful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

52 Please indicate how true of you the following characteristic is: Unsystematic

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

53 Please indicate how true of you the following characteristic is: Analytical

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

54 Please indicate how true of you the following characteristic is: Shy

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

55 Please indicate how true of you the following characteristic is: Inefficient

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

56 Please indicate how true of you the following characteristic is: Make decisions early

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

57 Please indicate how true of you the following characteristic is: Flatterable

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

58 Please indicate how true of you the following characteristic is: Theatrical

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

59 Please indicate how true of you the following characteristic is: Self-sufficient

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

60 Please indicate how true of you the following characteristic is: Loyal

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

61 Please indicate how true of you the following characteristic is: Happy

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

62 Please indicate how true of you the following characteristic is: Individualistic

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

63 Please indicate how true of you the following characteristic is: Soft-spoken

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

64 Please indicate how true of you the following characteristic is: Unpredictable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

65 Please indicate how true of you the following characteristic is: Masculine

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

66 Please indicate how true of you the following characteristic is: Gullible

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

67 Please indicate how true of you the following characteristic is: Solemn

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

68 Please indicate how true of you the following characteristic is: Competitive

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

69 Please indicate how true of you the following characteristic is: Childlike

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

70 Please indicate how true of you the following characteristic is: Likable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

71 Please indicate how true of you the following characteristic is: Ambitious

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

72 Please indicate how true of you the following characteristic is: Do not use harsh language

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

73 Please indicate how true of you the following characteristic is: Sincere

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

74 Please indicate how true of you the following characteristic is: Act as a leader

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) 7( ) always or almost always true

75 Please indicate how true of you the following characteristic is: Feminine

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) 7( ) always or almost always true

76 Please indicate how true of you the following characteristic is: Friendly

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) 7( ) always or almost always true

77 Please tell the experimenter that you are finished.

# APPENDIX C

## DESERT SURVIVAL TASK MATERIALS



***Thank you for agreeing to participate in this decision-making task and agreeing to have your session recorded.***

You and your partner will be discussing the Desert Survival Problem after which you will answer some questions about the discussion. In today's world, much decision-making no longer takes place face-to-face. Sometimes people interact with others by computer, telephone, or videophone; and sometimes they interact with a computer. In this study, people will be conducting the decision task electronically.

You will be interacting electronically with a student in another lab. You might be interested to know that a group of survival experts have come up with the ideal answer to this problem, using their expertise. Your partner, like yourself, does not have access to this information. You will be evaluated on the quality of your final rankings, as well as those of your partner so you are free to convince your partner to change his/her ranking when you think its incorrect.

You will be discussing all 12 items in order. Due to time constraints, you can't go back to an item or discuss it more than once, which may make the interaction seem a bit disjointed. In other words, after you make your comment about an item, simply go on to the next topic instead of continuing the discussion of that topic. However, you should remember that your partner will use your comments in making his/her final ranking. After you have completed interacting on the 12 topics, you will have a chance to offer any final opinions and thoughts you might have. You will also have a chance to make a final ranking.

**To repeat, you cannot go back and discuss an item more than once. After you've made your comment about an item, please go on to the next topic.**

Use the paper provided to make notes to yourself, then fill out your final rankings. Your chat will begin when you are both ready.

**Stranded in the Desert**

You are on a reconnaissance mission in the Kuwaiti desert when your jeep crashers, killing several members of your group. The rest of you are uninjured.

The nearest outpost is forty-five miles east. When you don't report back for the evening, others will know you are missing, and know generally, but not specifically, where you are. The terrain is dry and rugged. A nearby shallow water hole is contaminated by worms, animal leavings, and dead mice. The temperature will reach 108 degrees, and you are dressed in lightweight summer clothes with hats and sunglasses. The remaining survivors are able to salvage the following items.

Rank these items according to how important they are to your survival, with 1 for the most important to 12 for the least important.

| | |
|---|---|
| | Magnetic compass |
| | 20-by-20 piece of heavy-duty, light blue canvas |
| | Book, Edible Plants of the Desert |
| | Rearview mirror |
| | Large knife |
| | Flashlight (four-battery size) |
| | One jacket per person |
| | One transparent ground cloth (6 feet by 4 feet) per person |
| | Loaded .38-caliber pistol |
| | One 2-quart plastic canteen per person, full of water |
| | Accurate map of the area |
| | Large box of kitchen matches |

# APPENDIX D

## POST-INTERACTION SURVEY

Instructions:
{_} - select ONLY ONE Choice [_] - select ALL that apply.

1 Now that you have had a chance to discuss your rankings with your partner, you may change your rankings, if you wish. Rank these items according to how important they are to your survival, with 1 for the most important to 12 for the least important.

___magnetic compass
___20-by-20 foot of heavy duty, light blue canvass
___book, Plants of the Desert
___rearview mirror
___large knife
___flashlight (four-battery size)
___one jacket per person
___one transparent plastic ground cloth (6 ft by 4 ft) per person
___loaded .38-caliber pistol
___one 2-quart plastic canteen per person, full of water
___accurate map of the area
___large box of kitchen matches
___

2 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner was highly involved.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

3 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner was detached.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

4 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner was cooperative.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

5 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner created a sense of distance.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

6 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner was open to my ideas.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

7 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner expressed opinions that didn't matter to me..

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

8 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner showed me different ways to view situations.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

9 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner knew a great deal about the topic we discussed.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

10 Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner approached the task with professionalism.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

11 Directions: Please indicate how accurate each of these is in describing your experience with your partner. I could rely on my partner not to make my job more difficult.

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

12 **Directions: Please indicate how accurate each of these is in describing your experience with your partner. I am satisfied with the total contribution made by my partner.**

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

13 **Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner promoted a spirit of cooperation between us.**

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

14 **Directions: Please indicate how accurate each of these is in describing your experience with your partner. My partner did not have much influence on me.**

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

15 **Directions: Please indicate how accurate each of these is in describing your experience with your partner. I enjoyed working with my partner.**

Not At All Accurate 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Accurate

16 **On the following pages are a series of adjective pairs that are often used to evaluate partners. Each is on a 1 to 7 scale, with 1 representing a high degree of the adjective on the left and 7 representing a high degree of the adjective on the right. For example, 1 = very intelligent and 7 = very unintelligent.**

17 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very Intelligent 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very Unintelligent

18 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very uninformed 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very informed

19 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very experienced 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very inexperienced

20 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very inexpert 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very expert

21 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very incompetent 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very competent

22 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very dominant 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very submissive

23 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Very confident 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} Very unconfident

24 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very sluggish 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Very energetic

25 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very silent 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Very talkative

26 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very dynamic 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Very passive

27 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very irresponsible 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Very responsible

28 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very sincere 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) very insincere

29 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very trustworthy 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) very untrustworthy

30 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very high character 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Very low character

31 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very insightful 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) lacking in insight

32 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very truthful 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) very deceptive

33 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very tricky 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) very straightfoward

34 Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.

Very similar to me 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) very different from me

35 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

Thinks a lot like me 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) Doesn't think like me at all

36 **Using the adjective pairs, please indicate the number that best reflects your general impressions of YOUR PARTNER'S DISCUSSION OF THE ITEMS. You may select 1, 2, 3, 4, 5, 6, or 7. If you are neutral or unsure, circle a 4. Work quickly, indicating your first response.**

very much like me 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) not like me at all

37 **On the following pages, you will find listed a number of personality characteristics. We would like you to use those characteristics to describe your partner, that is, we would like you to indicate, on a scale from 1 to 7, how true you think each of these characteristics is of your partner. Please do not leave any characteristic unmarked.**

38 **Please indicate how true of your partner the following characteristic is: Defend own beliefs**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

39 **Please indicate how true of your partner the following characteristic is: Affectionate**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

40 **Please indicate how true of your partner the following characteristic is: Conscientious**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

41 **Please indicate how true of your partner the following characteristic is: Independent**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

42 **Please indicate how true of your partner the following characteristic is: Sympathetic**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

43 **Please indicate how true of your partner the following characteristic is: Moody**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

44 **Please indicate how true of your partner the following characteristic is: Assertive**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

45 **Please indicate how true of your partner the following characteristic is: Sensitive to needs of others**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

46 **Please indicate how true of your partner the following characteristic is: Reliable**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

47 **Please indicate how true of your partner the following characteristic is: Strong personality**

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

48 Please indicate how true of your partner the following characteristic is: Understanding

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

49 Please indicate how true of your partner the following characteristic is: Jealous

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

50 Please indicate how true of your partner the following characteristic is: Forceful

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

51 Please indicate how true of your partner the following characteristic is: Compassionate

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

52 Please indicate how true of your partner the following characteristic is: Truthful

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

53 Please indicate how true of your partner the following characteristic is: Has leadership abilities

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

54 Please indicate how true of your partner the following characteristic is: Eager to soothe hurt feelings

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

55 Please indicate how true of your partner the following characteristic is: Secretive

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

56 Please indicate how true of your partner the following characteristic is: Willing to take risks

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

57 Please indicate how true of your partner the following characteristic is: Warm

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

58 Please indicate how true of your partner the following characteristic is: Adaptable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

59 Please indicate how true of your partner the following characteristic is: Dominant

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

60 Please indicate how true of your partner the following characteristic is: Tender

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

61 Please indicate how true of your partner the following characteristic is: Conceited

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) 7(_) always or almost always true

62 Please indicate how true of your partner the following characteristic is: Willing to take a stand

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

63 Please indicate how true of your partner the following characteristic is: Loves children

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

64 Please indicate how true of your partner the following characteristic is: Tactful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

65 Please indicate how true of your partner the following characteristic is: Aggressive

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

66 Please indicate how true of your partner the following characteristic is: Gentle

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

67 Please indicate how true of your partner the following characteristic is: Conventional

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

68 Please indicate how true of your partner the following characteristic is: Self-reliant

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

69 Please indicate how true of your partner the following characteristic is: Yielding

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

70 Please indicate how true of your partner the following characteristic is: Helpful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

71 Please indicate how true of your partner the following characteristic is: Athletic

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

72 Please indicate how true of your partner the following characteristic is: Cheerful

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

73 Please indicate how true of your partner the following characteristic is: Unsystematic

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

74 Please indicate how true of your partner the following characteristic is: Analytical

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

75 Please indicate how true of your partner the following characteristic is: Shy

never or almost never true 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) always or almost always true 7( )

76 Please indicate how true of your partner the following characteristic is: Inefficient

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

77 Please indicate how true of your partner the following characteristic is: Make decisions early

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

78 Please indicate how true of your partner the following characteristic is: Flatterable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

79 Please indicate how true of your partner the following characteristic is: Theatrical

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

80 Please indicate how true of your partner the following characteristic is: Self-sufficient

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

81 Please indicate how true of your partner the following characteristic is: Loyal

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

82 Please indicate how true of your partner the following characteristic is: Happy

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

83 Please indicate how true of your partner the following characteristic is: Individualistic

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

84 Please indicate how true of your partner the following characteristic is: Soft-spoken

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

85 Please indicate how true of your partner the following characteristic is: Unpredictable

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

86 Please indicate how true your partner you the following characteristic is: Masculine

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

87 Please indicate how true of your partner the following characteristic is: Gullible

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

88 Please indicate how true of your partner the following characteristic is: Solemn

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

89 Please indicate how true of your partner the following characteristic is: Competitive

never or almost never true 1(_) 2(_) 3(_) 4(_) 5(_) 6(_) always or almost always true 7(_)

90 Please indicate how true of your partner the following characteristic is: Childlike

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

91 Please indicate how true of your partner the following characteristic is: Likable

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

92 Please indicate how true of your partner the following characteristic is: Ambitious

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

93 Please indicate how true of your partner the following characteristic is: Does not use harsh language

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

94 Please indicate how true of your partner the following characteristic is: Sincere

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

95 Please indicate how true of your partner the following characteristic is: Acts as a leader

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

96 Please indicate how true of your partner the following characteristic is: Feminine

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

97 Please indicate how true of your partner the following characteristic is: Friendly

never or almost never true 1{_} 2{_} 3{_} 4{_} 5{_} 6{_} 7{_} always or almost always true

98 Please indicate what sex you thought your partner was:

{_}Undetermined {_}Male {_}Female

99 Would you say the person you discussed your rankings with was

Impersonal 1{_} 2{_} Personal

100 Would you say the person you discussed your rankings with was

Insensitive 1{_} 2{_} Sensitive

101 Would you say the person you discussed your rankings with was

Cold 1{_} 2{_} Warm

102 Would you say the person you discussed your rankings with was

Unsociable 1{_} 2{_} Sociable

103 To what extent did you feel you got a good enough idea of how people at the other end are reacting.

Very good idea 1{_} 2{_} Not good at all

104 To what extent did you feel you got a "feel" for the person at the other end?

able to get a "feel" 1{_} 2{_} not able to get a "feel"

105 To what extent did you feel you were able to form an impression of personal contact with your partner?

able to form an impression of personal contact 1{_} 2{_} not able to form an impression of personal contact

106 To what extent did you feel you were able to assess your partners reactions to what you said?

able to assess reactions 1{_} 2{_} not able to assess reactions

107 To what extent was this like a face-to-face meeting?

A lot like face to face 1{_} 2{_} not like face to face at all

108 To what extent was this like you were in the same room with your partner?

A lot like being in the same room 1{_} 2{_} not like being in the same room at alll

109 To what extent did your partner seem "real"?

very real 1{_} 2{_} not real at all

110 How likely is it that you would choose to use this system of interaction for a meeting in which you wanted to persuade others of something?

very likely 1{_} 2{_} not likely at all

111 To what extent did you feel you could get to know someone that you met only through this system?

very well 1{_} 2{_} not at all

112 You have now finished the experimental part of your participation. The following few questions are designed to give us an idea of how you felt about this experience. Please be as honest and straightforward as you can. Your comments will be used to help us design better experiments in the future. Thank you!

113 Please take this time to indicate any questions you have about this experiment. Are there things you do not understand? Things that are unclear to you?

_____

_____

_____

114 Do you understand the overall purpose of the experiment?

{_}Yes {_}No

115 If everything is not clear, please explain what is unclear.

_____

_____

_____

116 We find that everyone reacts differently to different situations. It would help us conduct future research if you would tell us about your feelings and reactions to the experiment. How did you feel about the proceedure? Was it a pleasant experience? Why did you answer as you did?

_____

_____

_____

117 Was there anything in the experiment that you found odd, confusing, or disturbing?

{_}Yes {_}No

118 If there was something that you found odd or disturbing, what was it, and why did you find it odd?

_____

_____

_____

119 Please let us know if you felt anything in the procedure affected your behavior during the experiment. This will help us improve the procedure in the future.

_____

_____

_____

120 Thank you for your involvement. Please tell the experimenter that you are finished.

# APPENDIX E

## EXPERIMENT 1 CONFEDERATE SCRIPT

## Confederate Script

1. Hello, let's get started. What is your rank on the magnetic compass?
2. I ranked it 12. What was the reason for your ranking?
3. I ranked the compass 12 because the group should not try to walk out, they should stay with the bus. The heat, lack of water, and shock from the recent trauma means they probably wouldn't survive if they ventured out. What was your rank of the blue canvas?
4. I ranked it 7. What was the reason for your ranking?
5. I ranked the canvas 7 because it is good for shade and reduced dehydration. What was your rank of the book, *Edible Plants of the Desert*?
6. I ranked it 10. What was the reason for your ranking?
7. I ranked the book 10 because food is not as serious a problem as water. What was your rank of the rearwiew mirror?
8. I ranked it 1. What was the reason for your ranking?
9. I ranked the mirror 1 because it is the most important communication tool for the desert. What was your rank of the large knife?
10. I ranked it 5. What was the reason for your ranking?
11. I ranked the knife 5 because it can help in the construction of a solar still for fresh drinking water. What was your rank of the flashlight?
12. I ranked it 8. What was the reason for your ranking?
13. I ranked the flashlight 8 because it is good for night signaling. What was your rank of the jackets?
14. I ranked them 2. What was the reason for your ranking?
15. I ranked the jackets 2 because they will help prevent dehydration, one of the most serious problems in the desert. They will also protect from the cold at night. What was your rank of the ground cloths?
16. I ranked them 4. What was the reason for your ranking?
17. I ranked it 4 because the transparent ground cloths can be used to make the still. What was your rank of the pistol?
18. I ranked it 9. What was the reason for your ranking?
19. I ranked the pistol 9 because it can be used as an auditory signaling device. What was your rank of the canteens of water?
20. I ranked them 3. What was the reason for your ranking?
21. I ranked the canteens 3 because water is a necessity. If dehydration is reduced, this could last three days. What was your rank of the map?
22. I ranked it 11. What was the reason for your ranking?
23. I ranked it 11 because the group should not venture out. What was your rank of the matches?
24. I ranked them 6. What was the reason for your ranking?
25. I ranked the matches 6 because they can help protect from cold at night and are also good for signaling. That looks like all of the items, do you have anything else you would like to add?
26. I don't have anything else to add. It looks like we're finished. Thanks.

# APPENDIX F

## EXPERIMENT 2 CONFEDERATE SCRIPTS

## Script #1 – Male

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? I ranked it 4. ?
3. I ranked it 4 because without the magnetic compass, I would have no use for the map -- which I ranked 3. What did you rank the blue canvas?
4. Why? I ranked it 6.
5. I ranked the canvas 6 because I thought the canvas could be important to shelter the group from the sun. What did you rank the book, Edible Plants of the Desert?
6. Why did you rank it that way? I ranked it 2.
7. I ranked the book 2 because next to water, I felt food to be the most important item to my survival. What did you rank the rearview mirror?
8. Why? I ranked it 12.
9. I ranked the mirror 12 because I simply could not think of a use for the mirror. What did you rank the large knife?
10. Why did you rank it that way? I ranked it 10.
11. I ranked it 10, I felt it would be hard to find animals to hunt in the desert. And it would be difficult to kill them with a knife.. What did you rank the flashlight?
12. Why? I ranked it 9.
13. I ranked it 9. Although I felt the group would spend most of the night sleeping, I thought there would be times the flashlight would be useful for travel.. What did you rank the jackets?
14. Why did you rank it that way? I ranked them 7.
15. I ranked them 7 because Jackets would be useful to stay warm at night, and could possibly be used as shelter from the sun and dust storms. What did you rank the ground cloths?
16. Why? I ranked them 5.
17. I ranked them 5, I felt the ground cloth could protect the group from the hot sand and would be useful to sleep on at night.. What did you rank the pistol?
18. Why did you rank it that way? I ranked it 8.
19. I ranked it 8 because it would be difficult to find animals to hunt. But it would be easier to kill them with a pistol than with a knife. What did you rank the canteens of water?
20. Why? I ranked them 1.
21. I ranked them 1, I felt water to be the most important item to my survival. What did you rank the map?
22. Why did you rank it that way? I ranked it 3.
23. I ranked it 3, without the map, I would never know how to reach the outpost. What did you rank the matches?
24. Why? I ranked them 11.
25. I ranked them 11, it's hot enough in the desert. That looks like all of the items, do you have anything else you would like to add?
26. I don't have anything else to add. It looks like we're finished. Thanks.

## Script #2 – Female

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? i marked it 8.
3. i marked it 8 because I thought that it might be useful if I needed to eventually get out of the desert. What did you rank the blue canvas?
4. Why? I ranked it 2
5. I ranked the canvas 2 because it is good for shade and reduced dehydration. What did you rak the book, Edible Plants of the Desert?
6. Why did you rank it that way? I ranked it 9.
7. I ranked it 9, I thought it might be somewhat useful but not really vital, it might help if we were force to go in search of food. What did you rank the rearview mirror?
8. Why? I ranked it 12
9. I ranked the mirror 12, it did not seam to have any purpose. What did you rank the large knife?
10. Why did you rank it that way? I marked it 4
11. I marked the knife 4. I thought that it might be useful to kill something if we were attacked. What did you rank the flashlight?
12. Why?
13. I ranked the flashlight 6. What did you rank the jackets?
14. Why did you rank it that way? I ranked the jackets 10.
15. I ranked the jackets 10, I thought that we were already protected from the sun by the canvas so they were not very useful what did you rank the ground cloths?
16. Why?
17. I ranked the cloth 11. What was your rank of the pistol?
18. I ranked the pistol 3, what about you? Why did you rank it that way?
19. I ranked the pistol 3 because I have no idea what kind of animals live in the Kuwaiti desert but I did not want to be eaten by them. What did you rank the canteens of water?
20. Why did you rank it that way? I ranked them 1.
21. I ranked the canteens 1, I thought that it was pretty important to have water in the desert. What did you rank the map?
22. Why? I ranked the map 7.
23. I ranked the map 7. I thought that it might be good to have if we needed to attempt to leave the desert. What did you rank the matches?
24. Why did you rank it that way? I ranked the matches 5.
25. I ranked the matches 5 because I thought that they would be useful to make the group easy to spot at night. That looks like all of the items, anything else you want to add?
26. Looks like we're finished. Thanks.

## Script #3 – Male

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? My rank on the magnetic compass is 7.
3. I ranked it 7 because I ranked my map 6. You need a compass to follow a map. What did you rank the blue canvas?
4. Why? I ranked it 8.
5. I ranked it 8 because I got all the necessary items out of the way like the water, gun, knife , matches, book, the mao and the compass. What did you rank the book, Edible Plants of the Desert?
6. Why did you rank it that way? I ranked it 5
7. I ranked it 5 because the members of the group really need to know what they can eat just in case they can't find any other food. What did you rank the rearview mirror?
8. Why? I ranked it 12.
9. I ranked the mirror 12, I really couldn't find a use for the mirror except to reflect light on something. What did you rank the large knife?
10. Why did you rank it that way? I ranked it 3.
11. I ranked it a 3 because I felt that you need a knife to survive in the desert. It can be used to gut animals or chop down plants to eat. What did you rank the flashlight?
12. Why? I ranked it a 10.
13. I ranked it 10, I really didn't think it was that important for survival. What did you rank the jackets?
14. Why did you rank it that way? I ranked the jackets an 11.
15. I ranked the jackets an 11. I didn't think you needed a jacket in 108 degree weather.. What did you rank the ground cloths?
16. Why? I ranked it a 9.
17. I ranked it 9, I felt that a ground cloth was not a true necessity because it is only there for comfort. The soldiers were probably trained to sleep on the ground without any problems. What did you rank the pistol?
18. Why did you rank it that way? I ranked it a 2.
19. I ranked it 2.Since we are on a reconnaissance mission I felt the one of the most important keys to survival was a weapon. Especially in hostile territories. What did you rank the canteens of water?
20. Why? I ranked them 1.
21. I ranked it 1 because I felt that water was the most important thing for surviving in the desert. What did you rank the map?
22. Why did you rank it that way? I ranked it 6.
23. I ranked it 6. Because when the group splits up and a person is missing a map is a good thing to have so you can locate the missing group member. What did you rank the matches?
24. Why? I ranked it a 4.
25. I ranked it a four because you can use the matches for cooking food or sending out smoke signals. That looks like all of the items, do you have anything else you would like to add?
26. I don't have anything else to add. It looks like we're finished. Thanks.

## Script #4 – Female

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? i have it at 2.
3. I ranked it 2 because I thought it could give them some direction on which way is east and help with finding the people at the outpost. What did you rank the blue canvas?
4. Why? I put it at 6, but i was unsure of its use
5. What did you rank the book, Edible Plants of the Desert?
6. Why did you rank it that way? I ranked it 10
7. I ranked it 10 because I figured the searchers would find by morning at least because they know the general direction of the survivors, they wouldn't starve. What did you rank the rearview mirror?
8. Why? I ranked it 12.
9. I ranked it 12, actually had no idea of the use in this situation. What did you rank the large knife?
10. Why did you rank it that way? I ranked it 9
11. I ranked it 9, it can be a useful for plants (food) What did you rank the flashlight?
12. Why? I ranked it 4
13. I ranked it 4 because it will get dark soon and the survivors need to be aware of all the things around them, dangerous snakes, ets... What did you rank the jackets?
14. Why did you rank it that way? I ranked them at 5
15. I ranked them at 5 because it give them protection from the sun, but also at night desert reach freezing temp. and they will need all the warmth they can get since they are only in lightweight summer clothes What did you rank the ground cloths?
16. Why? i ranked it 11
17. I ranked it 11 because i really had no clue, but as i'm chating i realized that it will help to collect water and deserves a higher ranking. What did you rank the pistol?
18. Why did you rank it that way? I ranked it 8
19. i ranked the pistol 8 because it can be useful in case of danger. What did you rank the canteens of water?
20. Why? I ranked those at 1
21. I put those at number 1 because dehydration is a major problem in deserts. What did you rank the map?
22. Why did you rank it that way? I put that at 3
23. i put that at 3, this is because i was choosing to venture out but now i see that there are some major risks by doing so.. What did you rank the matches?
24. Why? I put those at 7
25. i put those at 7, if they could by chance salvage anything that could burn from the wreck they will need the heat of a fire at night.
26. That looks like all of the items, do you have anything else you would like to add?
27. i think i'm set to make my final rankings. thank you

## Script #5 – Male

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? I ranked it nine.
3. I ranked it 9, more improtant than other things. What did you rank the blue canvas?
4. Why? I ranked it 10.
5. 10, once again it did not seem very useful for this situation. What did you rank the book, Edible Plants of the Desert?
6. Why did you rank it that way? I put the book 8.
7. I put it at 8. I seemed somewhat helpful in the desert. What did you rank the rearview mirror?
8. Why? I ranked it 4
9. I ranked it 4, because i could use it to reflect the light to signial for help. What did you rank the large knife?
10. Why did you rank it that way? I ranked it 2
11. I ranked the knife 2, for protection. What did you rank the flashlight?
12. Why? I ranked it 7.
13. I ranked it 7, it might help ,but not necessary for survival. What did you rank the jackets?
14. Why did you rank it that way? I ranked it 12.
15. I ranked the jackets 12, because it is 108 who needs a jacket. What did you rank the ground cloths?
16. Why? I ranked it 11, no real need for it.
17. What did you rank the pistol?
18. I ranked the pistol 5, you never know when you need protection. What did you rank the canteens of water?
19. Why did you rank it that way? I ranked them first of course.
20. water is essential for life if you don't have enough you will die. What did you rank the map?
21. Why? I ranked it 6.
22. I ranked it 6, the map would direct you. What did you rank the matches?
23. Why did you rank it that way? I ranked them 3
24. I ranked the matches 3 because it could be used to make a fire for signaling or heating food. That looks like all of the items, do you have anything else you would like to add?
25. I don't have anything else to add. It looks like we're finished. Thanks

## Script #6 – Female

1. Hi, let's start. What did you rank the magnetic compass?
2. Why did you rank it that way? I ranked it 4.
3. I ranked it 4 so they could walk to east. What did you rank the blue canvas?
4. Why? I ranked 9..
5. I ranked it 9, If they were walking east, they could have the canvas for the night or to rest. What did you rank the book, Edible Plants of the Desert?
6. Why did you rank it that way? I put 10.
7. I put it 10 because I just didn,t that was too important because other people were going to look for them soon. What did you rank the rearview mirror?
8. why did you rank it that way? I ranked 1
9. I ranked 1 because the sun could shine the mirror and they could be spotted. What did you rank the large knife?
10. I ranked the knife 11 for the because I thought the pistol would be more important. What about you?
11. What did you rank the flashlight?
12. Why? I ranked it 2
13. I ranked it 2 because they could use the light at night and the other people could spot them at night.What did you rank the jackets?
14. why? I ranked the jacket 8
15. I ranked the jacket 8 for the night and it could be useful from the sun.What did you rank the ground cloths?
16. Why did you rank it that way? I ranked the ground cloth 7 because the sand is hot during the day..
17. What did you rank the pistol?
18. why?
19. I ranked it 6 for and desert animals. What did you rank the canteens of water?
20. why did you rank it that way?
21. I ranked it 3 for because water helps prevent dehydration. What did you rank the map?
22. why?
23. I ranked the map 12 because they knew where they are. What did you rank the matches?
24. why did you rank it that way?
25. I ranked it 5 because they could burn the dead mice and animal leavings for heat at night. That looks like all of the items, do you have anything else you would like to add?
26. I think we are done. Thanks.

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