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Virtual Team Coopetition: An Investigation of Coopetitive Proclivity in Virtual and Face-to-Face Female Dyads

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VIRTUAL TEAM COOPETITION: AN INVESTIGATION OF
COOPETITIVE PROCLIVITY IN VIRTUAL AND FACE-TO-FACE FEMALE
DYADS

by

ANDREW J. LUTZ

A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Psychology
in the College of Sciences
and in The Burnett Honors College
at the University of Central Florida
Orlando, Florida

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Thesis Chair: Dr. Matthew Chin

Abstract

The use of virtual teams (VTs) in the workplace has increased rapidly as companies seek to coordinate the collaboration of geographically dispersed employees effectively. This study involved an experimental comparison of VTs and face-to-face teams engaged in cooperation. Cooperation occurs when a relationship is characterized by simultaneous cooperation and competition.

This study differed from previous research because many previous studies of team cooperation place their focus on traditional face-to-face teams and fail to touch upon the intricacies of VT cooperation. Because of this, investigating the intricacies of cooperation among VT members is an essential addition to the large body of research on face-to-face teams.

This study examined team cooperation through separate measures of competitiveness and cooperativeness. The constructs competitiveness and cooperativeness were measured separately instead of together on a single continuum. This method determined team members' cooperative proclivities, the balance between one's tendency to perform behaviors directed toward achieving a self-serving goal or goals and one's tendency to perform behaviors directed toward achieving a group-serving goal or goals within the context of a cooperative relationship. Team members' cooperative proclivities were examined through a combination of videogame play and electronic surveys. All participants in this experiment were female.

No significant differences between the cooperative proclivities of virtual and face-to-face teams were found. We found that the ratings of competence that participants received from their partners tended to be lower under the virtual condition. We found that extroverted team members were more likely to cooperate. We also found that the ratings of competitiveness that participants

received from their partners were negatively correlated with the ratings of desirability for future collaboration (i.e., team viability) that participants received from their partners. Further, it was determined that the ratings of cooperativeness that participants received from their partners were positively correlated with the ratings of team viability that participants received from their partners. Additional results indicated a positive relationship between team members' self-reported levels of agreeableness and the ratings of competence that participants received from their partners. Results also indicated a positive relationship between team members' self-reported levels of openness and the ratings of competence that participants received from their partners. This paper discusses the implications of these results and possible directions for future study.

Keywords: virtual teams, face-to-face teams, cooperation, cooperative proclivity, dyadic teams, individual perceptions, competence, team viability, female dyads

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List of Abbreviations and Symbols

GPA.. Grade point average

KO.... Knock-out

Mdn... Median

M..... Mean or average

NGM.. Non-guided match

NPC... Non-player computer character

p.....Significance level

PM.... Practice match

PRC... Primary reward condition

r..... Estimate of effect size

r_s..... Spearman's correlation coefficient

SD..... Standard Deviation

SRC...Secondary reward condition

U.....The Mann-Whitney test statistic

VT....Virtual team

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Introduction

Virtual teams (VTs) are made up of members who are dispersed geographically and typically communicate with one another through electronic mediums such as video-conferencing, email, or telephone (Kirkman & Mathieu, 2005; Landy & Conte, 2010, p. 591). Different VTs are characterized by varying degrees of “virtualness” (Martins, Gilson, & Maynard, 2004). For example, some VT members meet in person regularly between periods of geographically dispersed work, while other VT members never undergo face-to-face interaction. Virtual teams have distinct advantages over traditional face-to-face teams. These advantages include saving time, increased access to experts, and the ability to recruit and employ effective employees regardless of their geographic locations (Cascio, 2000). At the same time, VTs are similar to face-to-face teams, in that members of both share information, make decisions, and complete tasks together (Uhl-Bien, Schermerhorn, & Osborn, 2013, p.146).

This experiment investigated some of the intricacies of VT cooperation. Cooperation occurs when relationships among team members are characterized to some degree by simultaneously opposite logics of interaction; cooperation and competition (Bengtsson & Kock, 2000; Baruch & Lin, 2012). In other words, cooperation occurs when two or more parties work together toward at least one cooperative (group-serving) goal, while one or more of the parties involved simultaneously work toward at least one competitive (self-serving) goal. Most real-world teams are not purely competitive or purely cooperative, and instead perform both competitive behaviors and cooperative behaviors. For example, a team tasked with designing a product must cooperate to successfully design the product effectively. At the same time, team members may compete by attempting to contribute more to the project than their teammates by

working on the project for more hours each week or by contributing more ideas that are utilized in the final design of the product. This study was concerned with a comparison of VTs and traditional face-to-face teams engaged in cooperation.

This study differs from past research for several reasons. First, past research related to team member interactions sometimes focuses on competition or cooperation individually, or attempts to measure cooperation along a single continuum with cooperation on one end and competition on the other (Tjosvold, 1997; Tjosvold & Wong, 1994). These practices result in an unbalanced understanding of both team members and team outcomes. (Lin, Wang, Tsai, & Hsu, 2010; Baruch & Lin, 2012; Bengtsson & Kock, 2014).

This study examined the constructs competitiveness and cooperativeness were measured separately instead of together on a single continuum. These separate measures were integrated into what we have defined as cooperative proclivity. Cooperative proclivity entails the balance between one's tendency to perform behaviors directed toward achieving a self-serving goal or goals and one's tendency to perform behaviors directed toward achieving a group-serving goal or goals within the context of a cooperative relationship.

Team members' cooperative and competitive tendencies were measured separately by true or false inventories, each containing 10 items. The number of "true" (positive) responses on each inventory was tallied, and so the possible range of scores on each inventory ran from 0 to 10, with a score of 0 representing no cooperativeness or competitiveness and a score of 10 representing high cooperativeness or competitiveness. These ratings were gathered using a computer survey administered at the end of each session in which participants rated their partner's cooperative proclivity.

Past research suggests that intragroup cooperation engenders favorable intragroup evaluations by team members, and that intragroup competition typically does not engender intragroup liking (Goldman, Stockbauer, & McAuliffe, 1977). The present study had team members evaluate their partners. Team members rated their partners' tendencies to cooperate and compete and participants were asked if they would like to work with their teammate again in the future.

The present study also differs from previous research because many previous studies of team competition place their focus on traditional face-to-face teams and fail to touch upon the intricacies of VT competition. Limited attempts to integrate the competition literature with VTs have emerged. Because of this, investigating the intricacies of competition among VT members is an essential addition to the large body of research on face-to-face teams (Baruch & Lin, 2012).

This study involves the investigation of two-member (i.e., dyadic), virtual and face-to-face teams. All dyad members in this experiment were female in order to prevent potential confounds. Past research has found that males and females have significantly different likelihoods of choosing competition over cooperation.

Males tend to show a behavioral preference for competition while females tend to show a preference for cooperation, and these preferences seem to hold for both intrinsically and extrinsically rewarding activities (Fisher & Grégoire, 2006; Croson & Gneezy, 2009). Another study found that males exhibit higher positive emotional responses during competitive play, as opposed to cooperative play, however no significant differences were found for females (Kivikangas, Kätsyri, Järvelä, & Ravaja, 2014). This finding suggests that the emotional experiences of females are not significantly different between cooperation and competition,

which further suggests that females are less biased in their motivation to perform cooperative versus competitive behaviors. In other words, females' preference for cooperation appears to be weaker than males' preference for competition.

Interestingly, past research has also shown that female-female, male-male, and male-female dyads' members each communicate differently with one another. For example, males tend to talk more when paired with a female than when paired with a male, and males in mixed-gender dyads talk more than females in either possible gender-pairing (Mulac, 1989). These findings suggest that gender plays a relevant role in shaping dyadic team communications, competitive behaviors, and cooperative behaviors.

All participants were female because females exhibit less bias in choosing which cooperative and competitive behaviors to perform. In other words, past research suggests that females should exhibit a more balanced cooperative proclivity than males. Further, the gender pairings of dyads between sessions must be balanced, as an imbalance in gender pairings could skew data toward either cooperation (if there are more females in the sample) or competition (if there are more males in the sample). By restricting participation to females it can be assumed that differences in cooperative proclivity between conditions are unrelated to gender differences. We acknowledge that restricting participation to females-only will reduce the generalizability of results.

We were interested in comparing team members' cooperative proclivities between the virtual condition and the face-to-face condition. We hypothesized that the ratings of competitiveness that participants received from their partners under the virtual condition would tend to differ from the ratings of competence that participants received from their partners under

the face-to-face condition. We also hypothesized that the ratings of cooperativeness that participants received from their partners under the virtual condition would tend to differ from the ratings of competence that participants received from their partners under the face-to-face condition.

We were also interested in whether the ratings of competence that participants received from their partners and the ratings of team viability that participants received from their partners (i.e., participants' willingness to work with their partner in the future) varied significantly between the virtual condition and the face-to-face condition. Both the ratings of competence that participants received from their partners and the ratings of team viability that participants received from their partners were scored on 5 point Likert scales. A higher rating (e.g., 5) of competence indicates a more positive evaluation of a partners' competency than a lower score (e.g., 2). A higher rating (e.g., 5) of team viability indicates a more positive evaluation of a team's viability than a lower score (e.g., 2).

We formulated several hypotheses directed toward gaining a better understanding of both virtual and face-to-face teams. These hypotheses were tested by pooling together the data from both conditions.

Relationships between cooperative proclivity and participants' self-reported big five personality characteristics, which include extraversion, openness, agreeableness, neuroticism, and conscientiousness, were also examined.

We hypothesized that moderate positive or negative Spearman correlations would be found between the ratings of cooperativeness that participants received from their partners and participants' self-reported big five personality characteristics.

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We hypothesized that moderate positive or negative Spearman correlations would be found between participants' self-reported big five personality characteristics and the ratings of competence that participants received from their partners. We also hypothesized that moderate positive or negative Spearman correlations would be found between participants' self-reported big five personality characteristics and the ratings of team viability that participants received from their partners.

Method

Participants

Thirty-four students (all female) enrolled at the University of Central Florida participated. Only females who were 18 or older participated. Participants were recruited through the Department of Psychology's research participant pool. Participants received partial course credit (SONA credit) for their time.

Apparatus

Participants played *Super Smash Bros. Brawl*, a fighting videogame, on a Nintendo Wii system. It was released in 2008, and has an ESRB rating of T, indicating that it is appropriate for players who are age 13 and older ("ESRB ratings guide"). Gameplay involves combat between cartoon avatars (characters) that are taken from various videogames such as *Super Mario Bros.* and *The Legend of Zelda*.

Participants controlled their *Super Smash Bros. Brawl* character using a wired Nintendo Gamecube Controller. In both conditions participants viewed *Super Smash Bros. Brawl* on a television display. Participants and the experimenter communicated with one another via USB headsets in both conditions. Participants were able to communicate with each other and with the experimenter. The experimenter was able to communicate with the participants as well, but and was only able to communicate with them as a group. No one-on-one communications were carried out over the headsets. Participants completed surveys on two separate PCs running the Windows 7 operating system.

An Elgato Video Capture device was used to record videos of participants' gameplay (screen captures) throughout the experiment and audio-only transcripts of participants' communications via headsets. Images of the participants themselves were not recorded.

One Nintendo Wii system was used in this experiment and so its video signal had to be split by a 1 In 4 Out 3 RCA Audio Video Splitter. This device allowed the Nintendo Wii system's video output to be sent to two television displays and the Elgato Video Capture device simultaneously.

Participant's big five personality characteristics (extraversion, openness, agreeableness, neuroticism, and conscientiousness) were assessed using the Big Five Inventory (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008).

Data Reduction

Data for participants who answered less than 75 percent of the validity questions in either survey correctly were removed from the sample. Further, the data belonging to the partner of any removed participant were also removed from the sample.

Procedure

Overview of the experimental session

Each experimental session involved two participants playing a videogame together. This experiment had two conditions. In the first (face-to-face) condition participants played *Super Smash Bros. Brawl* on the same television display while sitting side by side. In the second (virtual) condition participants played *Super Smash Bros. Brawl* on separate television displays

situated far apart from one another in separate rooms. In other words, these participants were physically isolated from one another.

Beginning of the experimental session

Upon arrival to the lab, each participant was seated at a computer. The experimenter then read participants the consent form. Participants were given a paper copy of the consent form for their records.

Participants then filled out the first of two surveys, a 104-item computer survey, which was comprised of 11 introductory questions and 3 scales. Four validity questions were included in the survey. An example of a validity question is, "For this question, please select the option "Neither agree nor disagree." Student confidentiality was prioritized, and so participants' names were not tied to completed surveys or data in any way. This survey can be found in Appendix B.

The first introductory question asked participants to report their SONA ID (a number used to confidentially keep participants data organized). A second asked how many semesters each participant had been attending the university. A third asked participants to report their approximate GPA. A fourth asked how many online and in person courses each participant typically takes. A fifth asked why participants prefer either online classes or in person classes. A sixth asked participants to report their age. A seventh asked how often participants play videogames. An eighth asked how much experience participants have playing fighting videogames. A ninth asked how much experience participants have playing videogames in the *Super Smash Bros.* series. A tenth asked how much experience participants have playing videogames developed or published by Nintendo. An eleventh asked how many hours per week participants work.

Three scales were then administered to determine participants' personality characteristics, sense of community and likelihood of performing organizational citizenship behaviors. The personality traits that were measured are extraversion, agreeableness, conscientiousness, neuroticism, and openness.

After both participants completed the introductory survey the experimenter sat participants in front of either the same television display or two separate television displays, depending on the condition of the particular session.

Participants were given a chart that denoted how to control *Super Smash Bros. Brawl*. The experimenter then explained the rules of the experimental session of *Super Smash Bros. Brawl* gameplay to participants and guided participants through a practice match (PM) of the game. Participants then played three additional matches without the experimenter's guidance, which we have called non-guided matches (NGMs).

Rules for gameplay during each experimental session of Super Smash Bros. Brawl.

Participants played one 15-minute PM and three 5-minute NGMs of *Super Smash Bros. Brawl*. During the PM participants were instructed on how to play *Super Smash Bros. Brawl*, with a particular emphasis on how to perform critical in-game tasks such as knocking one's opponent off the stage, moving one's avatar, and defending one's avatar. Successful completion of these tasks allowed us to ensure that participants were prepared to move on to the NGMs.

There were four players in each match. Two were the participants and the other two were non-player computer players (NPCs). The NPCs were set at the '2' difficulty for every match. Difficulty ratings are on a 9 point scale with '1' being the least

formidable opponent difficulty and ‘9’ being the most formidable opponent difficulty. We chose the ‘2’ difficulty because a series of pilot sessions revealed that higher difficulties proved to be too challenging for most participants.

The experimenter selected which avatars participants and NPCs will use. These avatars remained constant through the PM and all three NGMs. One participant played as Ganondorf. The other participant played as Captain Falcon. Participants were assigned one of these avatars based upon the flip of a coin. Both NPCs played as Meta Knight.

The experimenter selected the arena (stage) in which players competed during each match. The Final Destination stage was used for the PM and all three NGMs. “Items” were disabled during all matches because they are an optional gameplay feature that can sometimes disorient and confuse novice players.

Players engaged in timed free for all matches. In other words, there was one victorious player per match. The victorious player was the one that scored the most KOs on other players within 5 minutes. KOs were scored by knocking other players’ characters out of the stage. Participants could score KOs by knocking the other participant out of the arena or by knocking either NPC out of the stage.

Participants were instructed to avoid hitting any buttons unless instructed otherwise during certain portions of the gameplay session. These portions of the session occurred before and in between the PM and three NGMs. These times were indicated by the experimenter’s command made through the USB headsets. Participants were told to hit the ‘a’ button after each match to allow the experimenter to begin the next match.

During the PM and three NGMs participants were allowed to hit any buttons other than the ‘start’ (pause) button.

Participants were told that they would receive a reward at the end of the three NGMs if the following condition were met. For at least two of the NGMs, either participant must have scored the most KOs. In other words, they were told that neither participant would receive a reward at the end if either NPC wins at least two of the three NGMs. For example, if participant one won two of the NGMs both participants received a reward. Further, if participant one won one of the NGMs and participant two won one of the NGMs, both participants received a reward. We have referred to this condition as the primary reward condition (PRC).

In addition to the PRC, a second condition was presented to participants. The secondary condition allowed one participant to potentially get a better reward. During the explanation of the rules participants were shown two similar rewards; however one was of a lower value, which was emphasized by the experimenter. Participants were instructed that, if the PRC was met, the participant who scored the most KOs between all three NGMs would get the reward of higher value. In other words, if the PRC was met both participants got a reward, but the participant who scored the most KOs got the more valuable reward. We have referred to this condition as the secondary reward condition (SRC).

The rewards were Amazon.com gift cards of \$2.00 and \$3.00 value. Participants were told about the gift cards during the explanation of the rules, but they did not receive

a reward until the end of the experiment, and they only received a reward if the PRC was met. Gift cards were printed on standard printer paper directly.

Remainder of the experimental procedure occurring after the third NGM

Immediately after completing the third NGM participants completed a second computer survey. The second survey contained 76 items. It was comprised of 11 introductory questions and 4 scales. Eight validity questions were included in this survey. An example of a validity question was, "For this question, please select the option "Often."” Student confidentiality was prioritized, and so participants’ names were not tied to completed surveys or data in any way.

The first introductory question asked participants to report their SONA ID (a number used to confidentially keep participants’ data organized). A second asked each participant to guess the GPA of their partner. A third asked participants how well they believed their partner performed while playing *Super Smash Bros. Brawl*. A fourth asked participants to assess the desirability of the Amazon.com gift cards. A fifth asked participants to guess how often their partner plays videogames. A sixth served as a validity question. A seventh asked participants to guess how much experience their partner has playing fighting videogames. An eighth asked participants to assess the desirability of the \$3.00 Amazon.com gift card. A ninth asked participants to guess how much experience their partner has playing videogames in the *Super Smash Bros.* series. A tenth asked participants how strongly they would like to work with their partner in the future. An eleventh asked participants to assess the desirability of the \$2.00 Amazon.com gift card.

Four scales will were then administered. The first asked how likely each participant believes it is that their partner will perform organizational citizenship behaviors at the University

of Central Florida. The second asked participants to rate their partner's virtual-collaboration behaviors, virtual-socialization skills, and virtual-communication skills. The third asked participants to assess their partner's tendency to perform cooperative behaviors. The fourth asked participants to assess their partner's tendency to perform competitive behaviors.

The results of the three NGMs, including whether participants met the PRC and/or the SRC, was revealed to participants after both had completed the second survey.

If participants met the PRC they were each given an Amazon.com gift card. If the PRC was met, the participant who scored the most KOs during the 3 NGMs received a \$3.00 gift card at this time, while the other participant received a \$2.00 gift card.

The PRC and SRC were necessary because they provided participants with conflicting motivations, just as workers in cooperative environments face a similar conflict between the importance of group-serving and self-serving goals. These motivations created a cooperative scenario in which each participant had to decide between cooperation with the other participant (prioritization of a group-serving goal) or non-cooperation (prioritization of a self-serving goal).

Participants were then dismissed from the experiment. Each session took between 1.0 and 1.5 hours to complete.

Data were analyzed through the Mann–Whitney *U* test and Spearman's rank correlation coefficient using IBM SPSS. Non-parametric tests were used because participants' evaluations of their partner's competence, cooperativeness, competitiveness, and team viability procured ordinal data. Further, the Mann–Whitney *U* test and

Spearman's rank correlation are more stringent (i.e., less likely to cause a type-one error) than the independent-samples t-test and Pearson's correlation respectively.

Results

The pre-established data removal criterion resulted in the removal of two participants from the sample. These two participants participated in the same experimental session (i.e., they were a dyadic team). The data from both participants in this session were removed because one of the participants in this session failed the validity test. The removed pair of participants participated under the face-to-face condition. The data belonging to 32 of the 34 participants were analyzed in this study. The post-data removal virtual condition consisted of 18 participants and the post-data removal face-to-face condition consisted of 14 participants.

The average age of the 18 participants in the virtual condition was 19.2 ($SD = 1$). The average age of the 14 participants in the face-to-face condition was 19.3 ($SD = 1.59$). The average age of the 32 participants who provided analyzable data was 19.3 ($SD = 1.27$).

In all but one of the experimental sessions participants successfully met the PRC and were thus rewarded with gift cards. The one session in which participants did not meet the PRC was under the virtual condition and during this particular session the participants won one of the three NGMs.

The number of participants who won the \$2 gift card and the number of participants who won the \$3 gift card was balanced within each condition. In other words, seven participants in the face-to-face condition won a \$2 gift card and seven participants in the face-to-face condition won a \$3 gift card. Further, eight participants in the face-to-face condition won a \$2 gift card and eight participants in the face-to-face condition won a \$3 gift card.

A Mann-Whitney test indicated that the ratings of competitiveness that participants received from their partners under the virtual condition ($Mdn = 1$) were not significantly different

than ratings of competitiveness that participants received from their partners under the face-to-face condition ($Mdn = 1$), $U = 122$, $p = .876$, $r = .027$.

A Mann-Whitney test indicated that the ratings of cooperativeness that participants received from their partners under the virtual condition ($Mdn = 7$) were not significantly different than the ratings of cooperativeness that participants received from their partners under the face-to-face condition ($Mdn = 7.5$), $U = 106.5$, $p = .453$, $r = .133$.

A Mann-Whitney test indicated that the ratings of team viability that participants received from their partners under the virtual condition ($Mdn = 3$) were not significantly different than the ratings of team viability that participants received from their partners under the face-to-face condition ($Mdn = 3.5$), $U = 116.5$, $p = .690$, $r = .071$.

A Mann-Whitney test indicated that the ratings of competence that participants received from their partners under the virtual condition ($Mdn = 4$) were significantly different than the ratings of competence that participants received from their partners under the face-to-face condition ($Mdn = 5$), $U = 74$, $p = .036$, $r = .372$.

Another Mann-Whitney test was conducted to compare the ratings of competence that participants received from their partners between the virtual condition and the face-to-face condition; however for this second analysis the pair of participants who failed to meet the PRC (i.e., the only pair of participants that did not receive gift cards) in the virtual condition was dropped from the sample, leaving 14 face-to-face and 16 virtual participants in the sample. This Mann-Whitney test indicated the ratings of competence that participants received from their partners under the virtual condition ($Mdn = 4$) were not significantly different than the ratings of competence that participants received from their partners under the face-to-face condition (Mdn

= 5), $U = 70.5$, $p = .064$, $r = .338$. The frequency distributions of the ratings of competence that participants received from their partners under the virtual condition and the face-to-face condition from the data used in each of the two preceding Mann-Whitney tests are displayed in the following graphs. The first graph includes data from the session in which participants did not meet the PRC and the second graph does not include these data.

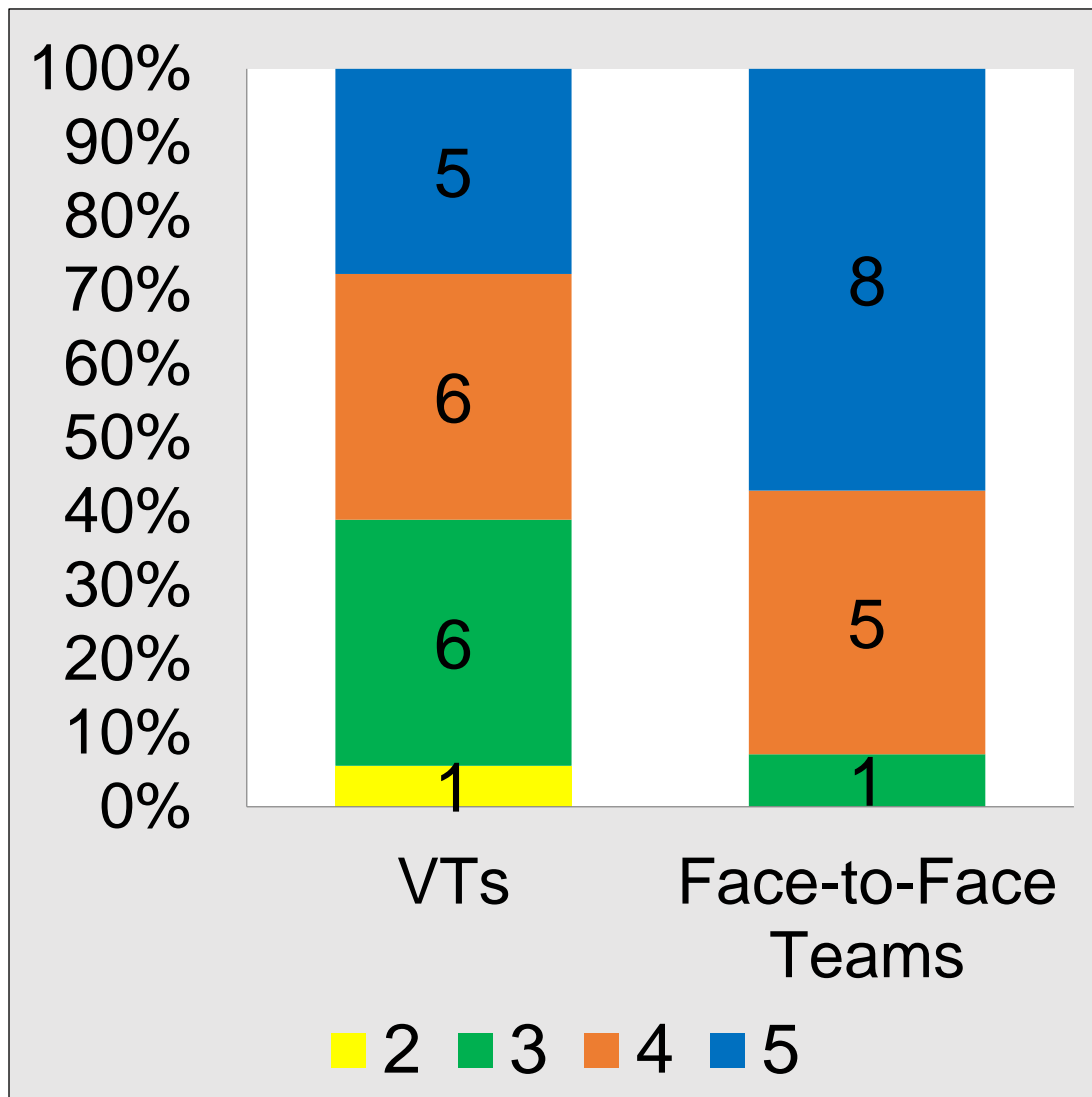


Figure 1: Frequency of the ratings of competence that participants received from their partners including the two participants who did not meet the PRC.

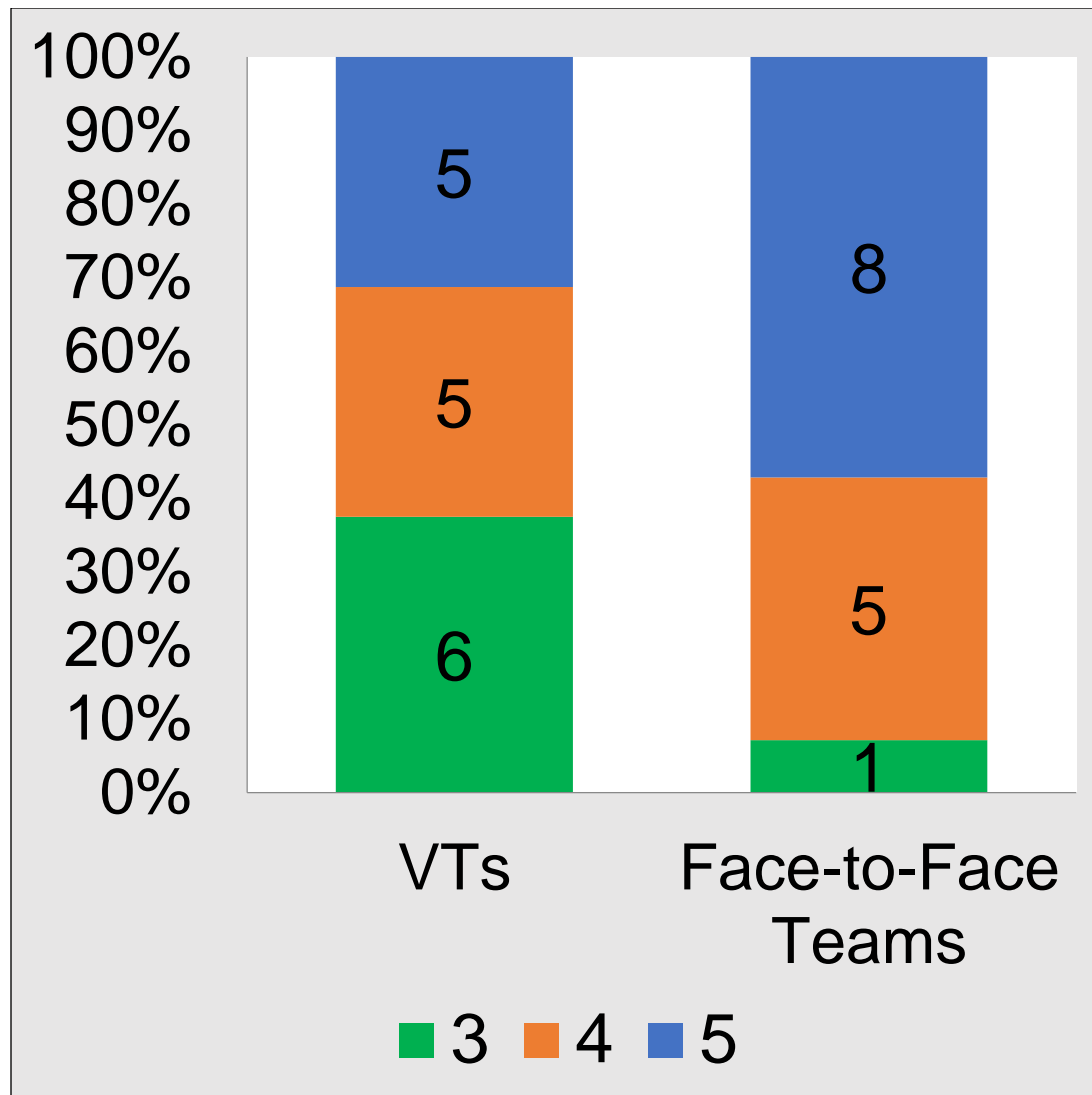


Figure 2: Frequency of the ratings of competence that participants received from their partners without the two participants who did not receive gift cards.

A Mann-Whitney test indicated that participants who more KOs than their partner over the three NGMs (i.e., participants who won the SRC) ($Mdn = 4.5$) did not receive competence ratings that were significantly different than those received by participants who scored fewer KOs than their partner over the three NGMs (i.e., participants who lost the SRC) ($Mdn = 4$), $U = 99$, $p = .245$, $r = .206$. Similarly, a significant Spearman correlation was not found between the

total number of KOs participants scored over the three NGMs and the ratings of competence that participants received from their partners.

Spearman correlations compared each of the intrateam ratings (i.e., competitiveness, cooperativeness, competence, and team viability) and each of the Big Five personality characteristics (i.e., extraversion, conscientiousness, openness, agreeableness, and neuroticism), for a total of five comparisons between each of the intrateam ratings and the Big Five personality characteristics. For example, individual Spearman correlations compared the ratings of competence that participants received from their partners to each of the Big Five personality characteristics. Spearman correlations were also run between each possible pair of intrateam ratings. For example, a Spearman correlation compared the ratings of competitiveness that participants received from their partners with the ratings of team viability that participants received from their partners.

Due to the large number of comparisons that were made, the alpha levels of the following Spearman correlations were adjusted from .05 to .01 to prevent alpha inflation and by extension the likelihood of committing a type-1 error. At the same time, we have provided the p-values and Spearman's correlation coefficients of comparisons that procured p-values less than .05. We chose to include non-significant Spearman correlation coefficients which procured p-values less than .05 because of the small sample size utilized in the present study. We propose that replications of the present study with larger samples sizes may reveal significant Spearman correlations when making the same comparisons.

A significant negative Spearman correlation was found between the ratings of competitiveness that participants received from their partners ($Mdn = 1$) and participants' self-reported levels of extraversion ($M = 3.367$), $r_s = -.454$, $p = .009$.

A non-significant positive Spearman correlation was found between participants' self-reported levels of agreeableness ($M = 3.906$) and the ratings of competence that participants received from their partners ($Mdn = 5$), $r_s = .421$, $p = .016$.

A non-significant positive Spearman correlation was found between participants' self-reported levels of openness ($M = 3.684$) and the ratings of competence that participants received from their partners ($Mdn = 5$), $r_s = .365$, $p = .040$.

A non-significant negative Spearman correlation was found between the ratings of competitiveness that participants received from their partners ($Mdn = 1$) the ratings of team viability that participants received from their partners ($Mdn = 3$), $r_s = -.364$, $p = .041$.

A non-significant positive Spearman correlation was found between the ratings of team viability that participants received from their partners ($Mdn = 3$) and the ratings of cooperativeness that participants received from their partners ($Mdn = 7$), $r_s = .418$, $p = .017$.

A non-significant Spearman correlation was found between the ratings of competitiveness that participants received from their partners ($Mdn = 1$) and the ratings of team viability that participants received from their partners ($Mdn = 3$), $r_s = -.364$, $p = .041$.

A non-significant Spearman correlation was found Spearman correlation was not found between the ratings of cooperativeness that participants received from their partners ($Mdn = 7$) and the ratings of team viability that participants received from their partners ($Mdn = 3$), $r_s = .418$, $p = .017$.

Discussion

We did not find either facet of cooperative proclivity (i.e., cooperativeness or competitiveness) to differ significantly between conditions, although VTs in our sample were slightly more competitive and less cooperative than face-to-face teams. We suggest that further study of cooperative proclivity in VTs should be carried out in the form of field studies of real-world teams and studies with larger sample sizes. Perhaps either or both of these directions for further study would result in significant findings.

Interestingly, we found a significant result that indicates that VT members tend to assign lower ratings of competence to their partners than face-to-face team members assign to their partners. In line with past research we suggest that the undervaluation of teammates in the virtual condition is, at least in part, influenced by the difficulty of directly observing one's teammate in the absence of face-to-face interaction due to the inability to visually observe the performance of one's teammate during virtual collaboration (Blackburn, Furst, & Rosen, 2003, p.110-111). It is possible that participants' inability to directly observe their partners' performance (i.e., their operation of the videogame controller) during virtual collaboration may have caused the undervaluation of competence that was observed. This finding suggests that care must be taken when considering VT members' evaluations of their partners' competencies.

We considered the possibility that the pair of participants in the virtual condition who failed the PRC may have contributed to the significant difference between the ratings of competence that participants received from their partners between the virtual condition and the face-to-face condition. Another Mann-Whitney test was conducted to compare the ratings of competence that participants received from their partners between conditions; however for this

analysis the pair of participants in the virtual condition who failed the PRC was dropped from the sample, leaving 14 face-to-face and 16 virtual participants in the sample. This Mann-Whitney test indicated that the ratings of competence that participants received from their partners under the virtual condition were not significantly different than the ratings of competence that participants received from their partners under the face-to-face condition. Although this second Mann-Whitney test was not statistically significant, a nearly moderate effect size (i.e., magnitude of effect) was observed and the same trend was observed in which VT members were typically rated as being less competent than face-to-face team members.

Participants could have easily discerned whether or not they won a gift card before being told if they did at the end of the study when gift cards were distributed (i.e., before participants completed their intrateam ratings of their partners). As a result, the single session of the present study in which participants did not win gift cards may have been characteristically different than all other sessions in the present study. Participants in this session may have known that they were not going to win the gift cards before they evaluated their partner and so they may have evaluated them accordingly (i.e., less favorably). This would explain the difference between team members' evaluations of their partners' competencies when this session is and isn't included in the analyzed data. This difference may have influenced the relationship between the ratings of competence that participants received from their partners and the condition under which participants participated, such that the observed result turned out to be non-significant when the one session in which participants did not meet the PRC was dropped from the sample. Future studies should take care not to disclose whether participants met the PRC until after

participants have evaluated their partners. This change in methodology should help prevent this potential confound in future studies.

We did not include the pair of participants who failed the PRC when comparing the ratings of competitiveness that participants received from their partners between the virtual condition and the face-to-face condition. We also did not include the pair of participants who failed the PRC when comparing the ratings of cooperativeness that participants received from their partners between treatments. Similarly, did not include the pair of participants who failed the PRC when comparing the ratings the ratings of team viability that participants received from their partners between treatments. We only ran this type of analysis on the ratings of competence that participants received from their partners because the p-value ($p = .036$) for the initial comparison of competence ratings between conditions (i.e., the Mann-Whitney test which included the pair of participants who failed the PRC) was close to the preselected .05 alpha level. The p-values for the between-treatments comparisons of the ratings of competitiveness that participants received from their partners ($p = .876$), the ratings of cooperativeness that participants received from their partners ($p = .453$), and the ratings of team viability that participants received from their partners ($p = .690$) were well above the preselected .05 alpha level.

We propose that replications of this study either move the organizational citizenship behavior scale to the end of the second survey or remove the scale from the study. This scale may have engendered a priming effect because it asked participants about the behaviors that they perform to improve their university community. These behaviors could be described as

cooperative behaviors, as the performer of said behaviors (i.e., the participant) is cooperating with the university community by performing organizational citizenship behaviors.

One analysis indicated that the ratings of competence that participants received from their partners were not significantly different for participants who scored more KOs total over the three NGMs than they were for participants who scored fewer KOs total over the three NGMs. This result suggests that differences between the ratings of competence that participants received from their partners under the virtual condition and the face-to-face condition were not related to whether any given participant received either the \$2 gift card or the \$3 gift card, and were instead primarily related to the condition under which team members participated.

We did not find a significant Spearman correlation between each participant's actual performance (i.e., the total number of KOs they scored between the three NGMs) and the ratings of competence that participants received from their partners. This indicates that the ratings of competence that participants received from their partners were not related to how well participants performed. Instead, competence ratings seem to be primarily related to the condition (i.e., virtual or face-to-face) under which team members participated. This finding suggests that intrateam evaluations may be unduly influenced by the virtual or face-to-face nature of collaboration rather than relevant factors such as the quality of the performance of individual team members.

We found that the ratings of team viability that participants received from their partners under the virtual condition were not significantly different than the ratings of team viability that participants received from their partners under the face-to-face condition. This suggests that team

viability evaluations by team members are not significantly affected by the virtual or face-to-face nature of collaboration.

We found that the ratings of competitiveness that introverted participants received from their partners tended to be higher than the ratings of competitiveness that extroverted participants received from their partners. It is unclear whether this result implies that introverted team members are inherently more competitive, or whether introverted participants were simply seen as being more competitive regardless of performance due to the potentially unique characteristics of their interaction styles as compared to those of more extroverted participants. Further investigation should be conducted into the relationship between introversion, competitiveness, and intrateam evaluations within the context of VTs and teams in general.

We propose that males may not exhibit a similar relationship between competitiveness ratings and extraversion, and that further study of competitiveness in mixed-gender dyads may be fruitful in discerning whether a different relationship or no relationship exists in mixed-gender dyads. No other significant relationships were found between the big five personality traits and either facet of cooperative proclivity.

We propose that further studies should be conducted with samples representing genders other than female. For example, a replication of this study in which a third of each condition's dyads are male-male, a third are male-female, and a third are female-female may be fruitful in ascertaining the generalizability of these results to teams with different gender compositions. It would be interesting to examine possible differences in both facets of cooperative proclivity between genders. It would be interesting to examine if the three possible gender pairings of dyads (i.e., male-female, female-female, and male-male) are related to the ratings of

competitiveness that participants receive from their partners. It would also be interesting to examine if the gender pairings of dyads are related to the ratings of cooperativeness that participants receive from their partners. For example, it could be that males in male-female dyads are more likely to act competitively and less likely to act cooperatively than males in male-male dyads and females in any gender pairing. This would logically follow past research on dyads that indicated that males tend to talk more when paired with a female than when paired with a male, and that males in mixed-gender dyads tend to talk more than females in either female-female or male-female dyads (Mulac, 1989).

We propose that a replication of this study in which participants' competitiveness and cooperativeness are rated through behavioral coding, instead of through intrateam ratings, may be fruitful. Perhaps evaluators removed from the team and gameplay would be more accurate in determining both facets of team members' cooperative proclivities.

In summary, we found no differences between participants' levels of competitiveness or cooperativeness between treatments. These findings suggest that employees' cooperative proclivities are not affected by the virtual or face-to-face nature of collaboration. Interestingly, we found that participants tended to undervalue their partner's *Super Smash Bros.* performance during virtual rather than face-to-face collaboration. This finding suggests that care should be taken whenever intrateam evaluations of employees' competencies are considered during performance evaluations, as virtual team members may receive intrateam ratings that undervalue the quality of their performances.

Appendix A: IRB Approval Letter



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1
FWA0000351, IRB00001138**

To: **Matthew G. Chin** and Co-PIs: **Andrew Lutz, Doan T. Modianos**

Date: **January 07, 2015**

Dear Researcher:

On 1/7/2015, the IRB approved the following human participant research until 01/06/2016 inclusive:

Type of Review: UCF Initial Review Submission Form
Project Title: Virtual Team Cooperation: An Investigation of Cooperative Proclivity in Virtual and Face-to-Face Dyads
Investigator: Matthew G Chin
IRB Number: SBE-14-10808
Funding Agency:
Grant Title:
Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 01/06/2016, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

All data, including signed consent forms if applicable, must be retained and secured per protocol for a minimum of five years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained and secured per protocol. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Joanne Muratori

Signature applied by Joanne Muratori on 01/07/2015 04:00:53 PM EST

IRB Manager

Appendix B: Survey One

Introductory Questions

Please type your SONA ID in the following box:

Including the current semester, for how many semesters have you been a student at the University of Central Florida?

Please select the following answer that is nearest to your current cumulative Grade Point Average (GPA).

- A) 2.0 or lower
- B) 2.25
- C) 2.5
- D) 2.75
- E) 3.0
- F) 3.25
- G) 3.5
- H) 3.75
- I) 4.0
- J) I do not have a GPA (select if you are currently in your first semester)

Typically, how do you take classes at the University of Central Florida? Note that in person classes are typically listed on myUCF as "Face to Face Instruction (P)," and online classes are typically listed on myUCF as "World Wide Web (W)." If you have taken mixed mode classes (reduced seat time) do not consider them when choosing your answer.

- A) I take all or most of my classes in person
- B) I take slightly more of my classes in person than I do online
- C) I take about half of my classes in person and half of my classes online
- D) I take slightly more of my classes online than I do in person
- E) I take all or most of my classes online

Please explain why you prefer to take either online or in person classes, or alternatively, why you do not have a preference for either online or in person classes.

Please type your age in the following box:

How often do you play videogames?

- A) Almost every day
- B) A few times a week
- C) About once a week
- D) Every few weeks
- E) About once a month
- F) Once every few months
- G) Infrequently or never

How much experience do you have playing fighting videogames such as Super Smash Bros., Tekken, and Street Fighter?

- A) No experience
- B) Little experience
- C) Moderate experience
- D) Strong experience
- E) Advanced experience

How much experience do you have playing videogames in the Super Smash Bros. series?

- A) No experience
- B) Little experience
- C) Moderate experience
- D) Strong experience
-

- E) Advanced experience

How much experience do you have playing videogames developed or publish by Nintendo, such as The Legend of Zelda and Super Mario Bros.?

- A) No experience
- B) Little experience
- C) Moderate experience
- D) Strong experience
- E) Advanced experience

Please type the typical number of hours per week that you have worked outside of class in either an internship or a job during the current and/or most recent semester. If you have not regularly spent time in an internship or job during the current and/or most recent semester please type "0" in the following box.
0 hours (Select if you do not work outside of classwork).

Part A

How likely are you to perform each of the following behaviors while attending the University of Central Florida?

	Extremely unlikely	Unlikely	More likely than not	Likely	Very likely	Extremely likely	Virtually certain
1. Let a classmate know when assignments are due or the date and/or time of a quiz or exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Take time to advise or tutor a classmate, free of charge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Help a fellow student find class resources, either in person or online.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Help a new UCF student get oriented with the university.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Lend a compassionate ear or online correspondence when a fellow student had a class-related problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Lend a compassionate ear or online correspondence when a fellow student had a personal problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Finish my part of a group project early in order to have time to help with the rest of your groups' project or task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Offer suggestions to improve how classwork is done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Offer suggestions for improving the university environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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10. Please select the option "Extremely unlikely."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Help a classmate to determine what material to study for a test or gave a classmate legitimate review resources (such as a study guide).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Help a less tech-savvy classmate use digital or online class or university resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Help a classmate who had too much to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Volunteer for extra assignments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Help a student who was out of class for a day or more catch up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Say good things about your classmate in front of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Give up significant downtime or put in extra time to complete group-graded classwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Volunteer to help a classmate deal with a difficult student or professor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Go out of the way to give a classmate encouragement or express appreciation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Organize or help organize a group study session either online (in the form of a discussion) or in person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Defend a student who is being "put-down" or spoken ill of by other students or a professor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part B

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

I am someone who...

	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1. Is talkative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Tends to find fault with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Is depressed, blue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Is original, comes up with new ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Is helpful and unselfish with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Can be somewhat careless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Is relaxed, handles stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Is curious about many different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Is full of energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Starts quarrels with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Is a reliable worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Can be tense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Is ingenious, a deep thinker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Generates a lot of enthusiasm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Please select the option "Neither agree nor disagree."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Has a forgiving nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Tends to be disorganized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Worries a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Tends to be quiet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Is generally trusting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Tends to be lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Is emotionally stable, not easily upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. Is inventive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Has an assertive personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. Can be cold and aloof	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Perseveres until the task is finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Can be moody	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. Values artistic, aesthetic experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Is sometimes shy, inhibited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Is considerate and kind to almost everyone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. Does things efficiently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. Remains calm in tense situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. Prefers work that is routine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. Is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. Is sometimes rude to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39. Makes plans and follows through with them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. Please select the option "Disagree a little."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. Gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. Likes to reflect, play with ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. Has few artistic interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44. Likes to cooperate with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45. Is easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. Is sophisticated in art, music, or literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part C

The following questions about community refer to: The University of Central Florida.

	Prefer Not to be Part of This Community	Not Important at All	Not Very Important	Somewhat Important	Important	Very Important
How important is it to you to feel a sense of community with other community members?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions about community refer to: The University of Central Florida.

How well do each of the following statements represent how you *feel* about this community?

	Not at all	Somewhat	Mostly	Completely
1. I get important needs of mine met because I am part of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Community members and I value the same things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. This community has been successful in getting the needs of its members met.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Being a member of this community makes me feel good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. When I have a problem, I can talk about it with members of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. People in this community have similar needs, priorities, and goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I can trust people in this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I can recognize most of the members of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Most community members know me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. This community has symbols and expressions of membership such as clothes, signs, art, architecture, logos, landmarks, and flags that people can recognize.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I put a lot of time and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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effort into being part of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Being a member of this community is a part of my identity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Fitting into this community is important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. This community can influence other communities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I care about what other community members think of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I have influence over what this community is like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. If there is a problem in this community, members can get it solved.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Please select the option "Mostly."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. This community has good leaders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. It is very important to me to be a part of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I am with other community members a lot and enjoy being with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I expect to be a part of this community for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Members of this community have shared important events together, such as holidays, celebrations, or disasters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I feel hopeful about the future of this community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Members of this community care about each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix C: Survey Two

Introductory Questions

Please type your SONA ID in the following box:

Please guess the cumulative GPA of your the other participant, and then select the following option that is closest to your guess.

- A) 2.0 or lower
- B) 2.25
- C) 2.5
- D) 2.75
- E) 3.0
- F) 3.25
- G) 3.5
- H) 3.75
- I) 4.0
- J) I do not have a GPA (select if you are currently in your first semester)

Overall, how do you believe the other participant performed during the last three matches of Super Smash Bros. Brawl?

- A) He or she performed very poorly
- B) He or she performed somewhat poorly
- C) He or she performance was average
- D) He or she performed somewhat strongly
- E) He or she performed very strongly

How desirable do you consider the Amazon.com gift cards to be?

- A) Not desirable at all

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- B) Barely desirable
- C) Somewhat desirable
- D) Very desirable

Please guess how often the other participant plays videogames, and then select the following option that is closest to your guess.

- A) Almost every day
- B) A few times a week
- C) About once a week
- D) Every few weeks
- E) About once a month
- F) Once every few months
- G) Infrequently or never

Please select the option "C) Somewhat desirable."

- A) Not desirable at all
- B) Barely desirable
- C) Somewhat desirable
- D) Very desirable

Please guess how much experience the other participant has playing fighting videogames such as Super Smash Bros., Tekken, and Street Fighter, and then select the following option that is closest to your guess.

- A) No experience
- B) Little experience
- C) Moderate experience
- D) Strong experience
- E) Advanced experience

How desirable do you consider the \$3.00 Amazon.com gift card to be?

- A) Not desirable at all
- B) Barely desirable
- C) Somewhat desirable
-

D) Very desirable

Please guess how much experience the other participant has playing videogames in the Super Smash Bros. series, including Super Smash Bros. Brawl, and then select the following option that is closest to your guess.

- A) No experience
- B) Little experience
- C) Moderate experience
- D) Strong experience
- E) Advanced experience

To what degree would you be like to work with the other participant in the future?

- A) Would strongly dislike working with him or her again
- B) Would somewhat not like working with him or her again
- C) Don't care one way or the other
- D) Would somewhat like working with him or her again
- E) Would strongly like working with him or her again

How desirable do you consider the \$2.00 Amazon.com gift card to be?

- A) Not desirable at all
- B) Barely desirable
- C) Somewhat desirable
- D) Very desirable

Part A

For each of the following statements please select the option that most accurately describes how often the other participant performed or acted in the way stated.

	Never	Rarely	Sometimes	Often	Very Often
1. Rephrased statements that were unclear to you.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Was prompt in accomplishing agreed upon goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Asked you what he or she should be doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Expressed disappointment when you won a match or scored a KO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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5. Apologized for a mistake that he or she made or thought they made.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Responded promptly to things that you said.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Worked with you to decide what you should each be doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Made it difficult for you to understand what he or she was trying to say.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Made it difficult for you to exchange ideas with him or her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Complimented you for your performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Exchanged ideas without criticizing you.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Criticized you for your performance or actions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Made sure that you understood what he or she said.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Effectively worked with you to agree on a course of action.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Please select the option "Rarely."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Let you know that they understood something you said.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Took awhile to respond to your questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Was ineffective at helping to decide what each of you should be doing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Cheered because you won a match or scored a KO.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part B

Please guess how likely the other participant is to perform each of the following behaviors while attending the University of Central Florida, and select the option that is closest to your guess for each behavior.

	Extremely unlikely	Unlikely	More likely than not	Likely	Very likely	Extremely likely	Virtually certain
1. Let a classmate know when assignments are due or the date and/or time of a quiz or exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Take time to advise or tutor a classmate, free of charge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Help a fellow student find class resources, either in person or online.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Help a new UCF student get oriented with the university.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Please select the option "Extremely unlikely."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Lend a compassionate ear or online correspondence when a fellow student had a class-related problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Lend a compassionate ear or online correspondence when a fellow student had a personal problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<https://ucf.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview&T=1EUVVZ1hPfkVfuAyLjHvYu>

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8. Finish my part of a group project early in order to have time to help with the rest of your groups' project or task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Offer suggestions to improve how classwork is done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Offer suggestions for improving the university environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Help a classmate to determine what material to study for a test or gave a classmate legitimate review resources (such as a study guide).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Help a less tech-savvy classmate use digital or online class or university resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Help a classmate who had too much to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Volunteer for extra assignments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Help a student who was out of class for a day or more catch up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Say good things about your classmate in front of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Give up significant downtime or put in extra time to complete group-graded classwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Volunteer to help a classmate deal with a difficult student or professor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Go out of the way to give a classmate encouragement or express appreciation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Please select the option "Likely."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Organize or help organize a group study session either online (in the form of a discussion) or in person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Defend a student who is being "put-down" or spoken ill of by other students or a professor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 3

Please read each of the following statements and select "True" if you agree with the statement or "False" if you disagree with the statement.

	True	False
1. My partner seemed to care more about us both winning a gift card than he or she cared about winning the \$3 gift card.	<input type="radio"/>	<input type="radio"/>
2. My partner directed more of their attacks toward the computer players than me.	<input type="radio"/>	<input type="radio"/>
3. Please select the option "True."	<input type="radio"/>	<input type="radio"/>
4. When the computer players fought against each other my partner tried to catch their attention and fight them rather than fight me.	<input type="radio"/>	<input type="radio"/>
5. My partner came to help me when both computer players were attacking me.	<input type="radio"/>	<input type="radio"/>
6. My partner treated me like a teammate most of the		

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time.	<input type="radio"/>	<input type="radio"/>
7. My partner tried to help figure out how to defeat the computer players.	<input type="radio"/>	<input type="radio"/>
8. My partner did not steal my KOs by attacking computer players that I had gotten close to finishing.	<input type="radio"/>	<input type="radio"/>
9. My partner seemed to care about me.	<input type="radio"/>	<input type="radio"/>
10. Please select the option "False."	<input type="radio"/>	<input type="radio"/>
11. My partner tried to cooperate with me most of the time.	<input type="radio"/>	<input type="radio"/>
12. My partner verbally encouraged me to do well.	<input type="radio"/>	<input type="radio"/>

Block 4

Please read each of the following statements and select "True" if you agree with the statement or "False" if you disagree with the statement.

	True	False
1. My partner seemed to care more about winning the \$3 gift card instead of the \$2 gift card than making sure we both got a gift card.	<input type="radio"/>	<input type="radio"/>
2. My partner directed more of their attacks toward me than either computer player.	<input type="radio"/>	<input type="radio"/>
3. When the computer players fought against each other my partner fought me rather than trying to catch their attention and fight them.	<input type="radio"/>	<input type="radio"/>
4. Please select the option "False."	<input type="radio"/>	<input type="radio"/>
5. My partner allowed both computer players to attack me at the same time. He or she sat back and watched from a safe distance.	<input type="radio"/>	<input type="radio"/>
6. My partner treated me like a foe most of the time.	<input type="radio"/>	<input type="radio"/>
7. My partner did not try to help figure out how to defeat the computer players.	<input type="radio"/>	<input type="radio"/>
8. My partner stole my KOs by attacking computer players that I had gotten close to finishing.	<input type="radio"/>	<input type="radio"/>
9. My partner did not seem to care about me.	<input type="radio"/>	<input type="radio"/>
10. My partner tried to compete with me most of the time.	<input type="radio"/>	<input type="radio"/>
11. Please select the option "True."	<input type="radio"/>	<input type="radio"/>
12. My partner verbally discouraged me from doing well.	<input type="radio"/>	<input type="radio"/>

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