

A VIRTUAL FOOT IN THE DOOR: HOW AVATAR SIMILARITY
IMPACTS GROUP IDENTITY IN
COMPUTER-MEDIATED
COMMUNICATION

by

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THESIS

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ABSTRACT

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Communication researchers continue to explore the promise and the impact of the Internet and computer-mediated communication. While much research has shown that the effects have been distancing, polarizing and negative others point to a more connected global world. In this study we attempt to look for the initial promise of the Internet. By manipulating anonymity, avatars and types of similarity in a virtual computer-mediated scenario we uncover a pathway to improve group identity, trust and social attraction. These concepts are supported by social identity theories and by the social identity model of deindividuation effects (SIDE). A 2x3 factorial experimental design looked for causal relationships but all the findings did not support our hypotheses. However, we did support our underlying suppositions and the basis for our conceptual model.

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Chapter 1

Introduction

The arrival of the digital age and the Internet held the promise of a more connected and informed citizenry (Castells, 1997; Fishkin, 1995); but research today shows a very different online space than what was imagined by some (Sunstein, 2001; Warner, 2010; Amichai-Hamburger, 2013). Group dynamics and selective exposure have created an online socio-political world filled with polarized spaces, “The Internet was supposed to homogenize everyone by connecting us all. Instead what it’s allowed is silos of interest” (Godin, 2009). Within these “silos” are potentially polarized groups of homogenized thinkers; all faced with the pressure of group conformity and often filled to the brim with fear and loathing of the opposition (Pew, 2014; Pildes, 2011; Warner, 2010; Hoter et al., 2009; Lawrence, Sides & Farrell, 2010). The goal of this study is to see if we can use those “silos” to reconnect people split across these divisive lines. This paradox, of a connected world making us more isolated, could be undone. Maybe all we need is that proverbial “foot in the door”.

Pew’s 2014 polarization study showed that the effects of polarization are spilling over into life choices and causing a geographical separation in the United States, as well as an ideological one; “People on the right and left...are more likely to say it is important to them to live in a place where most people share their political views.” Those who ascribed to liberal views showed a preference for urban, walkable communities where services were nearby, while conservatives looked for suburban and rural communities with the goal of having a larger home. This geographical segregation is mirrored in the media and in the customizable aspects of media consumption, also known as selective exposure. Previous research has shown a clear connection between the polarization of politics and an evermore-polarized news media, online and off,

building upon each other in an ongoing feedback loop (Baum & Groeling, 2008; Druckman, Peterson & Slothuus, 2013; Stroud, 2007, 2010, Sunstein, 2009). American society has broken into two distinct ideological positions and the two sides are as far apart as they were before the Civil War (Poole, 2015).

Politics is not the only arena affected by ingroup and outgroup prejudice and division. Global corporations deal with culture clash in global virtual teams spread out across the world (Jarvenpaa & Leidner, 1998). Religious differences create animosity between countries and within countries (Pew Study Religious Hostilities, 2014). Interethnic issues abound and fill the pages of our newspapers (Shah & Thorton, 2003). So the question for this researcher is not whether or not the Internet hinders or helps, because the Internet and computer-mediated communication (CMC) are now an integral part of our everyday lives, but rather how will we adapt and look for new ways to reconnect in this digital age. “One of the greatest advantages of the Internet lies in its inherent ability to allow for tailoring and tweaking of various features in order to create optimal conditions for a specific contact situation” (Amichai-Hamburger, 2013, p. 220).

In this study we will look at manipulations of CMC, with avatars specifically, as a possible route back to the initial promise of the Internet. This notion is supported by the CMC theory, the social identity model of deindividuation effects (SIDE) (Postmes, Spears, & Lea, 1998). Through CMC’s ability to control anonymity and the inherent power of similarity, we may be able to capitalize on the Internet’s “silos of interest” (Godin, 2009). We will look at how in CMC, manipulating avatars based off of surface (visual) and deep-level (psychographic) similarity can manipulate group-identification; and how that same group identity can positively affect group dimensions like trust and social attraction. We’ll also investigate how competition

may increase the effects across these same variables.

Chapter 2

Literature Review and Hypotheses

The goal of this research is to investigate computer-mediated communication's (CMC's) ability to manipulate group identity for positive effect. Specifically, we will look at avatar manipulation, as a valuable tool in creating CMC team/group/social identity and thereby positive outcomes. "Because virtual team members are often represented by avatars, strategically crafting the appearance of these avatars may influence interpersonal interaction and team performance and overcome...interpersonal challenges in virtual teams" (Van der land et al., 2014, p. 2). In their study, Van der land et al. compared team performance outcomes in a classic 2 x 2 configuration comparing team visual similarity/dissimilarity (social identification) and member-avatar similarity/dissimilarity (self-identification). They found that when both types of similarity were combined in a team they outperformed teams with dissimilarity of either kind.

By furthering the study of member-avatar similarity to include a psychographic dimension (deep-level similarity) and comparing it to team visual similarity, (surface-level similarity), we can compare effects on social-identification to see if "deeper" produces different or even stronger outcomes. We will measure group identification and the effect of a more salient identification on trust, and social attraction, all of which setup group members for more positive group interactions. Finally, we will look not only at similarity on its own, but also in conjunction with competition, a variable that research shows strengthens group salience especially in CMC settings (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981).

The social identity model of deindividuation effects or SIDE provides the theoretical framework for this study. SIDE suggests that minimal categorical cues shared, like similar avatars, in an otherwise anonymous environment online, increase the salience of group

membership (Postmes, Spears, & Lea, 1998). Therefore, using visually identical avatars in a group (surface-level similarity) is likely to increase group identity, trust and social attraction (Van der land et al., 2014). Merely constructing surface-level similarity may not be enough to have an impact that will be sustained as member differences arise. Group members connecting qualities of themselves to their avatar (deep-level similarity) may generate a stronger affinity to the avatar (self-identification) and thereby to the group. We'll also explore the power of competition and its effect on group identification in the CMC environment.

Computer-Mediated Communication Theories of Social Identity

The anonymity of the Internet has been greatly researched as a benefit of CMC over face-to-face communication especially in sensitive discussion areas like socio-political topics (Amichai-Hamburger & Furman, 2007). "The lack of social cues enables individuals to raise their voices without much fear of revealing their true profiles and to reduce prejudices toward others that may be coming from different socio-demographic backgrounds" (Kim, 2009, p.88). As the source of communication fades, we eliminate social cues, non-verbal information and more; making any information that is available to the receiver all the more important (Lea and Spears, 1991; Postmes, Spears, & Lea, 1998; Postmes, Spears, & Lea, 1999; Kim & Park, 2011).

Henri Tajfel (1979) developed Social Identity theory (SIT) as an explanation for a cognitive-perceptual origin to prejudice, stereotyping and bias. By demonstrating systemic categorization via similarity and difference he was able to show that categories or schemas were present not only in our basic cognitive functions (apples versus oranges) but also in our social processes (us versus them). Tajfel and Turner labeled this process, social categorization. They demonstrated a need in humans to place others and ourselves into ingroups (us) and outgroups

(them), encouraging us to discriminate against any outgroups, outgroup bias, while praising the members of our ingroup, ingroup favoritism. This process of categorization also minimizes the perceived differences within categories while accentuating intergroup differences (Tajfel, 1969). SIT is not the only theory to be predicated on the idea of similarity; homophily, balance theory, the similarity-attraction hypothesis and selective exposure are just a few of the many theories that build out of this larger concept.

The Power of Shared Connections

In Motyl et al.'s study, in 2011, they approached the concept of similarity from the universal rather than the specific in the hope that it might decrease hostility and prejudice in intergroup communication. They primed “shared human experiences (SHE)... relatively universal aspects of human experience that are shared by people of all cultures” to build connections between groups from different cultures, in this case, Arabs and Americans, reducing outgroup hostility and prejudice by creating a universal connection through common experience (2010, p. 1180). While they showed that these universal similarities did reduce hostility and prejudice it's not always practical to present shared human experiences. Instead of shared experiences, interests and similarities on the more specific level might yield similar results if initial interactions were anonymous. In fact these types of similarities might have an even greater impact as they allow intergroup members to share something that may also be uniquely shared.

In Wojcieszak and Mutz's 2009 study, the researchers looked at where political discourse is actually occurring online. “Where” has become important in the debate because political sites online are typically partisan and lead to “echo chambers where like-minded people are exposed to one-sided arguments which reinforce their initial predilections” (Wojcieszak & Mutz, 2009,

p.42). Researchers who looked at nonpolitical online spaces, where the politically heterogeneous gathered, found an entirely different community (Dahlberg, 2001). According to Wojcieszak & Mutz's study, "the most frequently visited type of online group - one revolving around hobbies, interests, or activities - is in essence political, with 53% of participants encountering political topics within this context" (p.45). In their discussion, Wojcieszak & Mutz suggest, "once people have established common ground, perhaps as gardeners, or as weekend house fixer-uppers, political differences may be less threatening and more easily deflected" (p.51-52). The creation of a group identity, outside of a political identity allows the discussion to occur in these non-political online spaces. If similar interests, attitudes, experiences, etc. are shared prior to knowledge of one's socio-political identity, it may create connections that bridge conversation across the divide. "Sharing the same self-representation in cyberspace allow[s] people from diverse social and ethnic backgrounds to get over their differences, identify with one another, and even interact with one another without much prejudice" (Kim, 2009, p. 94).

Social Identity Model of Deindividuation Effects (SIDE)

The social identity model of deindividuation effects (SIDE) suggests that a lack of non-verbal signals and visual identification in computer-mediated communication actually amplifies any cues that are available as group members form opinions of each other, resulting in greater stereotyping, outgroup bias and prejudice (Lea and Spears, 1991; Postmes, Spears, & Lea, 1998; Postmes, Spears, & Lea, 1999; Kim & Park, 2011). "That when individuals are located in a virtual group sharing a common social identity (e.g., ethnicity, gender, political positions, etc.), their individual differences are minimized and their social group membership become salient, which makes them perceive each other as stereotypical members of their group" (Postmes & Spears, 2002 from Kim, 2009, p. 88).

SIDE advances and supports this idea of, “reduced focus on individual differences (i.e., personal identity) and increased attention to group membership (i.e., social identity)” or what has been termed “depersonalization” (Postmes et al., 1999, Kim & Park, 2011). Kim looked specifically at the effects of visual similarity on group identity in a virtual setting. In an experiment that distinguished between transient (being in the same group within the experiment) and lasting group membership (based on actual social and/or demographic dimensions), Kim found that, “Individuals who do not share any common socio-demographic background can identify with each other as the same group members in cyberspace” (2009, p. 94). This supports the idea of a swift forming group identity, or “transient identity” as Kim calls it, challenging the preconceived condition of lasting group membership as necessary for group identity in SIDE theory. Allen and Wilder (1975), Rabbie and Horwitz (1969) and Wit and Wilke (1992) all artificially created group identity in in-person experiments (Eckel & Grossman, 2005). Many CMC studies are further able to limit cues allowing for even greater manipulation. “From a social identity perspective therefore the text-based and relative anonymous nature of CMC can be exploited under salient group identity conditions to promote cohesion” (Rogers & Lea, 2011).

Similarity

Similarity is not a one-dimensional variable, but behaves quite differently depending on the condition. Diversity researchers have created a typology for similarity/diversity as it arises in social categorization. Surface-level or visual similarities and differences such as gender, race or team affiliation, which because of their visual nature are salient immediately in groups, are distinguished from deep-level or psychographic similarities/differences such as opinions, values and preferences (Harrison, Price & Bell, 1998; Harrison, Price, Gavin & Florey, 2002; Jackson, May & Whitney, 1995). In a study by Allen and Wilder, students were split into two groups, per

their preference for paintings by Klee or Kandinsky (1979). The study found a greater perceived similarity between the participants and similar others than between the dissimilar others on art as well as politics, a subject not broached until the survey. Although it was nothing more than an abstract similarity with no meaning attached, participants inferred and applied meaning. The similarity of the manipulated art affinity was enough to activate group identification.

As social identity forms and social categorization occurs people make the initial assumption that their attitudes and beliefs are shared with those who are surface-level similar (Chen & Kenrick, 2002; Phillips & Lloyd, 2006; Tajfel, 1969). This identity can be both a positive and negative; “intensified group identification might or might not be welcomed depending on virtual communities’ diverse goals” (Kim & Park, 2011). In online communities where group identity promotes positive feelings, high levels of visual similarity among participants is known to strengthen social affinity (Kim, 2009; Lee, 2004).

Phillips, Northcraft, and Neal used surface-level and deep-level diversity and similarity to study information sharing and group performance and in the process discovered a perception of ingroup similarity, “We move beyond the typical social categorization perspective on diversity and highlight a byproduct of the social categorization process — assumptions of in-group similarity — which has been overlooked by many researchers in this tradition” (2006, p. 468). Past research has focused solely on the negative implications of perceived ingroup similarity, such as the decrease in knowledge sharing and the increase in outgroup derogation, prejudice and intergroup conflict (Phillips, Northcraft & Neal, 2006; Zakaria, Amelinckx & Wilemon, 2004; Wilson, Straus & McEvily, 2005). This study’s approach is to identify the benefits of manipulating similarity to build group identity, trust and social attraction in groups early on, so as to decrease conflict when differences arise due to other social identities.

H1: Group identification will be higher when surface-level similarity is present than when there is no similarity.

Deep-level similarity consists of psychographic information that can only be known via information exchange or inferred meaning through the use of icons or symbols. One such recent example came in the form of Facebook's rainbow flag overlay created for user profile pictures to show support for the U.S. Supreme Court ruling to legalize same sex marriage (Moscaritolo, 2015). Deep similarity, because of the psychographic dimension, holds significant and relatable meaning within the similarity. Now group members not only have something in common, but the commonality has an additional facet to it. The perception of ingroup similarity confers that meaning, that connection, that similarity onto the ingroup. Because of the added personal connection to the similarity there should be greater group identification than when only surface-level similarity is present.

H2: Group identification will be higher with deep-level similarity than when only surface-level similarity is present.

Competition

Intergroup competition, creating an "us" versus "them" scenario, increases the salience of group identity (Tajfel, 1982; Hamilton, Sherman, & Lickel, 1998). The classic example of competition's effect on that social identity can be seen in Sherif's Robber's Cave experiment (1954, 1958 & 1961). In the experiment two randomly assigned teams of boys were sent to a Boy Scouts of America camp. A series of competitive activities created a clear delineation between the two teams (group identification was made salient) and much animosity between the boys. Ingroup favoritism and outgroup derogation were both observed until Sherif's team created

new goals that could not be attained without the resources and efforts of both teams. The new goals that required intergroup cooperation for success demonstrate the potential to manipulate group dynamics. Most research focuses on the negative actions of the boys at the camp, or on the negative outcomes of intergroup conflict, while the intragroup cooperation between team members is ignored. With group identification made salient from competition, an increase in social attraction and cooperation followed in Sherif's experiment. The ingroup favoritism that arises from social categorization shows allegiance and attraction toward the group. This favoritism is additional proof that group identification is salient. Once group identification is made salient, self-identification with the group and the group's avatar should also be made salient.

H3: Group identification will be higher when competition is present.

RQ: What will be the effect of competition on the relationship between similarity type and group identity?

Trust and Social Attraction

The hyperpersonal effect of CMC theorizes that in virtual group environments where only limited cues are available, users focus and magnify those limited cues. Consequently, initial impressions from the cues that are available use stereotyping as a basis for categorizing ingroup and outgroup membership (Walther, 1996). Using visual similarity via team avatars, ingroup membership can be manipulated via that same limited cues categorization mechanism (Van der Land et al., 2014, p. 3). Studies using matching avatars (surface-level similar) to represent team membership found increased group identification and social attraction, as well as increased trust of those with similar avatars, when compared to those with dissimilar avatars (DeBruine, 2002; Donath, 2007; Kim, 2009; Lee, 2004). Surface-level similarity leads to social attraction of group

members, not as individuals, but rather as an expression of the group. Therefore, team avatar similarity (surface-level) will create shared group membership, increasing feelings of social attraction and trust. (Tanis & Postmes, 2005). Even when group categorization is seemingly random it can be enough to trigger social attraction for one's ingroup (Hogg, Abrams, Otten & Hinkle, 2004). As the categories become salient, favorability for one's own group or ingroup increases, while members of the outgroup are perceived more negatively (Tajfel, Billig, Bundy, & Flament, 1971).

Walther's social information processing theory (SIP) and other research in the area of trust and CMC, have shown that trust starts out lower in computer-mediated groups when compared to face-to-face groups, but that over time the same levels of trust can be reached (Walther, 1994; Walther, 1996; Wilson, Straus & McEvily, 2006). More recent research responded by distinguishing a different, more transient type of trust, known as swift trust. Swift trust can develop over short periods of time when certain conditions, tight schedules, high stakes scenarios, etc. are met. This is often the case for teams like film and flight crews but also for computer-mediated groups. These groups work together temporarily and must develop swift trust to succeed; therefore swift trust can be a strong form of trust or as Eckel & Grossman put it, "feeling of membership in a group can create the perception that the group's fate and one's own fate are the same" (2005, p. 374). Because of the limitations placed on the relationship, it is the nature of swift trust to rely heavily on surface characteristics or stereotypes. The same category-driven process is at work because of time constraints and so only a quick categorization of team members can take place, once again relying on whatever limited cues might be available. Under swift trust the group must begin from a place of trust and then adjust over time. Swift trust erodes with "deviations from or violations of group norms and presumptions about

competent...behavior” of the team (Meyerson, Weick & Kramer, 1995, p. 190). By adhering to and acting in accordance with group norms, the individual strengthens social attraction (Crisp and Jarvenpaa, 2013).

H4a: Trust will be higher when surface-level similarity is present than when there is no similarity.

H4b: Trust will be higher with deep-level similarity than when surface-level similarity alone is present.

H4c: The positive effect of similarity on trust will be mediated by group identification.

H5a: Social attraction will be higher when surface-level similarity is present than when there is no similarity.

H5b: Social attraction will be higher with deep-level similarity than when surface-level similarity alone is present.

H5c: The positive effect of similarity on social attraction will be mediated by group identification.

Chapter 3

Method

Participants and design

A convenience sample of 255 undergraduate students from a large American university was recruited to participate. Participants were required to be over 18 years of age to participate and were randomly assigned to one of 6 experimental conditions in a 2 (Competitive/Non-competitive (control group)) x 3 (Dissimilar (control group), Surface-Level Similar, Deep-Level Similar) between-subjects design. Each participant was placed in a simulated online chatroom group consisting of the participant and what they were told was four other participants from another area of campus, but was in fact four computer-simulated discussants with a pre-programmed and pre-written script. A post-test questionnaire was used to compare the conditions across three dependent variables, Group Identification (GI), Trust (T), and Social Attraction (SA), along with two manipulation check variables, Surface-Level Similarity (SLS) and Deep-Level Similarity (DLS).

Pilot Study

Over 200 students participated in various stages of a pilot study where we tested variations on the experimental design. We evaluated the feasibility of research instruments, tested the believability of the deception, and identified problems in the online website. We also held a chat session with all real participants to aid in the generation of a convincing chat script.

Materials and procedure

Participants were provided with a cover story, via a video and a handout, about a foundation looking for college students to generate ideas to improve high school graduation rates

at low performing schools across their area. During the introductory video and on a provided handout participants were told that they would collaborate with other university students across campus via an online chatroom. Per the cover story, the online chatroom will be presented as a new procedure for the foundation, on a trial run, replacing face-to-face forums of the past, so as to explain the need for a survey.

Upon completing the informed consent procedure at the sign-in desk, each participant entered the computer lab, logged into a computer, navigated to an online link given them via a handout and watched a video that presented the initial cover story and then automatically navigated them to the demographic survey (Figure 5). Once participants completed the video they logged into the online discussion website and were randomly assigned to one of six conditions: No Similarity No Competition (1- NSNC), No Similarity with Competition (2 -NSC), Surface Similarity No Competition (3 -SSNC), Surface Similarity with Competition (4 -SSC), Deep Similarity No Competition (5 -DSNC) and Deep Similarity with Competition (6 -DSC). After an initial demographic survey via Qualtrics, participants were automatically redirected back to the chat website. Before entering the chatroom, those in the deep-level similarity condition were also required to complete a visual survey (Figure 5), on the computer, where the goal was to trigger a deep-level association with their avatar and/or with their team and its members.

The avatars used in the conditions were created based on simple shapes, circle, pentagon, triangle, octagon and square, the shape assigned to all the similarity condition participants (See Figures 3 & 4). We avoided color and any images that would contain negative social or cultural associations. Participants were led to believe that they were taking part in real-time discussions, when in fact the other discussants in their group were not real people, but pre-programmed

responses. The deception was necessary to prevent unexpected and uncontrolled interactions between participants. The script provided by the programmed discussants was based upon a real online chatroom discussion held prior to the experiment so as to provide a believable interaction. Participants were given the task of choosing a high school to focus on from an online list. Although unaware of this, all participants had an identical scripted group discussion experience. The participants arrived after the chat session was already in progress with some discussion between the other four simulated members occurring on screen in front of them. They were forced to observe for a little less than 2 minutes the pre-scripted dialogue as they wait for the, “your account is being setup” message to clear the screen. Once, the message changed, participants saw that they were added to the chatroom and could now participate. Participants were welcomed in the chat script and could comment as many as three times with generic responses set to answer any comment. If participants failed to comment the script was triggered to ask them questions as a prompt for response. After they commented three times or ran out of time, whichever happened first, a mandatory break message was triggered sending them to the post-test survey which they were told was about their experience so far. The online survey provided that a measure of each of the dependent variables. Upon completion participants were debriefed via a video and handout and then excused.

Similarity Manipulation

Each respondent was randomly assigned to either the control group or to one of two similarity conditions. Each experimental group received a different treatment, either surface or deep-level similarity.

In the control group for similarity (no similarity), all of the online group members, including the participant, were represented with unique and visually different avatars. In the first condition, surface-level similarity was manipulated by assigning the participant an avatar that was visually the same as all members of their group, i.e. Square Group all with square avatars. In addition, they saw that other groups on the discussion site had been assigned groups different than theirs, i.e. Circle Group, Triangle Group, etc. Participants were referred to by their group's avatar such as Square #1, #2 etc. within the chat dialogue and visually on their avatar. In the second similarity condition, deep-level similarity, participants were given a visual quiz prior to entering the virtual discussion group. The premise was that their answers to the quiz, "What Type of Student Are You?" would indicate a certain result. They were told, they have been assigned to a group whose participants had a similar result to the quiz (See Figure 5). There was no difference in their group/avatar assignment as they too were assigned the Square group and avatar. The implication was that the avatar and group name somehow symbolized their shared similar test results.

Competitiveness Manipulation

Each respondent was randomly assigned to either the control group, Non-competitive or to the Competitiveness condition. In the Competitiveness condition participants were informed via an introductory video and handout that ideas from the winning university team had the opportunity to be implemented with a partner high school and that members of the group would receive recognition for their achievement. In addition, they were told that, "The top three teams from each university region will be invited to further develop their ideas and participate in the second round of competition." Participants were informed of the deception and why it was necessary in the debriefing video and handout.

Measures

Cover Story & Demographic Questions

In order to maintain the cover story, a short series of questions were included asking for demographics and high school history. These questions were asked prior to participation in the chatroom.

Post-Test Survey

All items were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), except an additional open-ended question and drop-down list question asking participants to identify their group and the avatar that represented them within the chatroom. Questions for each of the following constructs are listed in Figure 2.

Perceived Similarity

Participants were asked to rate their perceived surface-level similarity and perceived deep level similarity. For perceived surface-level similarity, four questions measured the extent to which participants were aware of avatar similarity within their group. (1) I could be easily distinguished from others in my group. (reversed) (2) I am represented in the same way as other members of my group. (3) The representation of me in the chatroom is similar to that of my group. (4) Each member's profile image in the chatroom appears much the same as mine.

Seven questions measure the perceived deep-level similarity manipulation, (1) I feel I am a different type of student from my group members. (reversed) (2) I feel like the others in my group were a similar type of student. (3) I think my team members are similar to me. (4) I have more in common with my group than the other groups. (5) I have a lot in common with my group

members. (6) My team members are a lot like me. (7) The members of my group seem very different from me. (reversed) All questions were adapted from Van der Land et al. (2014).

Group Identity

Group identification is how an individual describes or refers to their awareness of belonging to a specific group, and per social identity theory, the individual identity derives predominantly from group memberships (McClain et al., 2009). Six group identity questions were adapted from Voci and Hewstone (2003) and Van der Land et al. (2014) to measure the level of identification within the assigned group. (1) I see myself as a member of this group. (2) There is “team spirit” in my group. (3) My group is doing the best. (4) I see myself as a member of this group. (5) I identify with this group. (6) I’m happy to belong to this group.

Trust

The post-test contained eleven items to measure trust across multiple facets as adapted from Jarvenpaa, Knoll and Leidner's (1998) trust inventory and Van der Land et al. (2014). (1) I can trust the other team members in my group. (2) I can trust the information presented by other team members (3) I feel that the other members of my team are honest. (4) I feel that my teammates are trustworthy. (5) If I had my way, I would not let other members have any influence over important issues. (reversed) (6) I really wish I had a good way to oversee the work of the other members. (reversed) (7) I would be comfortable giving the other members complete responsibility of this project. (8) I cannot rely on those with whom I work in this group. (reversed) (9) Members of my work group show a great deal of integrity. (10) Overall, the people in my group are not very trustworthy. (reversed) (10) There is “team spirit” in my group. (11) We have confidence in one another in this group.

Social Attraction

Six items on the questionnaire measured social attraction, as adapted from Van der Land et al. (2014). (1) I think my team members could be friends of mine. (2) I would like to have a friendly chat with one or more of my team members. (3) My team members and I could never establish a friendship with each other. (reversed) (4) My team members would be pleasant to be with. (5) I think my team members are probably attractive. (6) I would meet up with my group members outside of school.

Chapter 4

Results

The initial participant pool (N=255) was culled by factors that indicated low engagement on the part of the participant. The first analysis looked at the total time, measured in seconds, participants took to answer the post-test survey, $M = 214.13$, $SD = 97.99$. One standard deviation was eliminated from the data set leaving only participants who took 98 seconds or longer to complete the 52-item survey. In essence, we eliminated participants who took less than 2 seconds to respond to each item. Additional outliers were eliminated based on responses that implied no true participation in the survey as all responses were coded the same (all 1's or all 5's) even on reversed questions. The final participant total (N=215) for data analysis maintained fairly even distribution across all six conditions (Table 1) One participant's information was missing demographic responses due to a computer error but this did not affect their post-test survey data.

<u>Gender</u>	<u>Race</u>	<u>Similarity Condition</u>	<u>Competition Condition</u>
Fem = 130	White (non-Hispanic) = 65	No Sim = 76	No Competition = 109
Male = 84	Hispanic = 64	Surface-Level Sim = 72	Competition = 106
	Black = 41	Deep-Level Sim = 67	
	Asian = 28		
	Pacific Islander = 1		
	Multi-racial = 15		

The results of manipulation checks on similarity conditions were mixed. A manipulation check to make sure participants perceived the avatar similarity in their groups per their assigned condition revealed that participants in the Surface Similar and Deep Similar conditions were significantly more likely to correctly identify their avatar. A question labeled as Avatar Identification displayed choices as a dropdown list of a variety of shapes shown throughout the

experiment. It was coded in a correct = 1 and incorrect = 2 format. ANOVA indicated that the between groups difference was statistically significant for Avatar Identification $F(2, 212) = 87.86, p = .000$. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the Surface ($M = 1.13, SD = 0.33$) and Deep conditions ($M = 1.09, SD = 0.29$) were significantly different than the control condition ($M = 1.78, SD = 0.42$). Therefore, in both the Surface and Deep conditions, participants were better able to recall their avatar than in the control group.

Subsequently, we constructed measurement models of five factors established from prior studies, Perceived Surface-Level Similarity (PSLS), Perceived Deep-Level Similarity (PDLS), Group Identity (GI), Trust (T) and Social Attraction (SA) and conducted confirmatory factor analysis (CFA) using the data obtained from 215 respondents. The CFA procedure assessed the convergent and the discriminant validity of the factors. A total of 7 out of 34 questions not highly correlated, $r < .50$, were eliminated. All of the eliminated questions were reverse-style questions. An ANOVA indicated that the between groups difference between Perceived Surface-Level Similarity ($F(2, 212) = .168, p = .846$) and Perceived Deep-Level Similarity ($F(2, 212) = 1.28, p = .282$) was not statistically significant when compared by Similarity Type or to the control group in any of the variables.

Table 2 <i>Descriptive Statistics</i>		
<u>Dependent Variable</u>	<u>Mean</u>	<u>Standard Deviation</u>
Perceived Surface-Level Similarity (PSLS)	3.32	0.05
Perceived Deep-Level Similarity (PDLS)	3.06	0.04
Group Identity	3.3	0.05
Trust	3.21	0.05
Social Attraction	3.28	0.05

Hypothesis 1 and 2 predicted that Group Identity would be higher when Surface-Level and Deep-Level Similarity were present than when there was no such similarity. A one-way ANOVA tested the group differences, and no significant difference in the Group Identity score was found [$F(2, 212) = .018, p = .982$] between the Surface-Similarity condition ($M = 3.31, SD = 0.71$), the Deep-Similarity condition ($M = 3.29, SD = 0.74$), and the No Similarity condition ($M = 3.30, SD = 0.58$). Hypotheses 1 and 2 were not supported.

In Hypothesis 3 we predicted that Competition would have a main effect on Group Identity. A one-way ANOVA tested the group differences, and there was no significant difference in the Group Identity score [$F(1, 213) = 1.074, p = .301$] between the control group, No Competition ($M = 3.25, SD = 0.76$) and the Competition condition ($M = 3.35, SD = 0.57$). As Competition showed no significant effect on Group Identity Hypothesis 3 was not supported.

MANOVA did indicate a significant interaction between Competition and Similarity Type but it was based on Trust, $F(6, 414) = 2.36, p < .03$; Wilk's $\Lambda = 0.935$, partial $\eta^2 = .033$ and not Group Identity (see Figure 7). The relationship between Trust and similarity type, as tested in the Surface and Deep conditions, was moderated by Competition. We saw a significant increase in the Trust mean when Competition was present in the Deep-Level condition as

compared to the Surface-Level condition. These results also present an answer, to our Research Question. Per the data, Competition had no significant effect on the relationship between similarity type and group identity.

Further analysis via an independent-samples t-test split across Similarity conditions was conducted to compare Trust in the Competition condition and its control No Competition group. There was a significant difference in the Trust scores for Deep Similarity/No Competition ($M=2.90$, $SD=0.73$) and Deep Similarity/Competition ($M=3.38$, $SD=0.57$) conditions; $t = -3.026$, $p = 0.004$. These results suggest that Competition affects perceived Trust. Specifically, our results suggest that when similarity is deeper or psychographic in nature and competition is present trust will increase.

Hypothesis 4a, 4b, 5a and 5b predicted that Trust and Social Attraction would be higher when Surface-Level and Deep-Level Similarity were present than when there was no such similarity. A one-way ANOVA tested the group differences, and no significant difference in the Trust score was found [$F(2, 212) = .8$, $p = .451$] between the Surface-Similarity condition ($M = 3.19$, $SD = 0.69$), the Deep-Similarity condition ($M = 3.15$, $SD = 0.69$), and the No Similarity condition ($M = 3.29$, $SD = 0.65$). Hypotheses 4a and 4b were not supported. No significant difference in the Social Attraction score was found [$F(2, 212) = 1.7$, $p = .184$] between the Surface-Similarity condition ($M = 3.17$, $SD = 0.8$), the Deep-Similarity condition ($M = 3.39$, $SD = 0.64$), and the No Similarity condition ($M = 3.3$, $SD = 0.68$). Hypotheses 5a and 5b were not supported.

While none of the analysis served to support hypotheses based upon the experimental manipulations of the conditions, there was evidence of correlations between the dependent variables. A Pearson correlation coefficient was computed to assess the relationship between

each of the dependent variables, Perceived Surface-Level Similarity, Perceived Deep-Level Similarity, Group Identity, Trust and Social Attraction; each of the scores is positively and significantly correlated with the criterion (see Table 3). There was a particularly strong correlation between Trust and Group Identity.

		<u>DLS Mean</u>	<u>Trust Mean</u>	<u>Soc Attr Mean</u>	<u>Group Id Mean</u>
<u>PSLS Mean</u>	Pearson Correlation	.381**	.430**	.362**	.449**
<u>PDLS Mean</u>	Pearson Correlation		.546**	.481**	.553**
<u>Trust Mean</u>	Pearson Correlation			.528**	.708**
<u>Soc Attr Mean</u>	Pearson Correlation				.551**

Results of linear and multiple regression models can be seen in Table 4 and Figure 8. Sobel's test revealed a significant mediated effect each of the models displayed in Figure 8.

Variable	GROUP IDENTITY		TRUST				
	β	β	β	β	β	β	β
PSLS	0.449**		0.430**			0.14**	
PDLS		0.553***		0.546**			0.223**
Group Identity					0.708**	0.645**	0.585**
R ²	.198	.303	.181	0.295	.499	0.512	0.531

*p < .05. **p < .01.

Table 5							
<i>Summary of Hierarchical Regression Analysis for Variables Predicting Group Identity & Social Attraction (N=214)</i>							
	GROUP IDENTITY		SOCIAL ATTRACTION				
Variable	β	β	β	β	β	β	β
PSLS	0.449**		0.362**			0.143**	
PDLS		0.553***		0.481**			0.254**
Group Identity					0.551**	0.487**	0.411**
R ²	.198	.303	.127	.228	.301	0.314	0.343

*p < .05. **p < .01.

Therefore, group identity significantly mediated the effects of each type of perceived similarity on each dimension, Trust and Social Attraction. This supports findings of prior research that identified “transient identity” or the idea of a swift forming group identity (Kim, 2009). It also supports, in part, the conceptual model suggested even as no causation was discovered. In Hypotheses 4c and 5c we predicted that the positive effect of similarity on Trust and Social Attraction would be mediated by group identification. While there was no significant difference in the Similarity conditions on either Trust or Social Attraction, Group Identity was shown to mediate Trust and Social Attraction within the constructs of Perceived Surface-Level and Perceived Deep-Level Similarity. Hypotheses 4c and 5c were not supported.

Chapter 5

Discussion

This study explored the potential to manipulate group identity via something as minimal as similar avatars. And while the experimental design failed to show any main effects of the experimental manipulation there do appear to be indirect effects supporting elements of the proposed theoretical model. In addition, there are aspects of this study that yielded results contributing to the discussion of group identity in computer-mediated communication (CMC). But maybe the greatest contribution of this research is in what did not work and why.

The simplest and clearest explanation for the lack of significant results is a lack of “good” data because of a “bad” design. So why didn’t the manipulation work? Two issues appear to be at work, a lack of investment, attachment or general apathy by the participants and a possible triggering of increased Need for Uniqueness (NFU) (Maslow, 1969).

NFU as an individual difference was not measured, which is unfortunate, in that we might have been able to corroborate Kim’s finding, “Participants high in NFU resisted more strongly against the group identity formation process in the condition of dual group memberships than in the condition of a single group membership” (2009). But we can certainly infer that NFU’s potential to negatively affect group identity may have been at work especially in the Deep-Similarity condition which was an example of dual group membership. Participants in this condition had membership in both the transient or experimental group and in a more lasting group as created by their participation in the “What Kind of Student Are You?” quiz. Participants high in NFU might have felt that their unique self-concepts were threatened more in the Deep-Level Similarity condition, where they were surrounded by those who not only had the same perceived responses to the questionnaire as them, but also looked a lot like them via their shared

avatars. In this situation, participants might have made more mindful efforts to sustain their uniqueness.

We may have been able to avoid arousing NFU and created a more balanced environment per Brewer's Optimal Distinctiveness Theory (ODT). ODT theorizes that individuals want to be relatively similar or unique in any given setting. (1991). Kim, in a 2009 experimental design, mixed chat groups with similar (3) and dissimilar (3) members. The participant was a member of the similar set but the presence of the dissimilar members allowed for Optimal Distinctiveness or a balance of the Need for Belonging and the Need for Uniqueness. Our design had all members of the chat group similar with no opportunity for members to have any level of otherness. Being too similar to others can make individuals feel deprived of their distinctiveness as unique persons (Imhoff & Erb, 2009).

The apparent apathy of participants in answering the survey questions was, in our opinion, the greatest contributor to our results or lack thereof. We saw a lack of "buy-in" in the results as evidenced by the Confirmatory Factorial Analysis that showed little to no difference in responses of positive and reversed questions. We also saw many respondents who answered all questions with "Neutral". During the experiment, in the lab, we witnessed many participants who appeared frustrated or flustered when the chat ended so soon and they were asked to respond to questions about their group. Many participants asked the moderator if this was a mistake.

We had tried to encourage participants to watch the chat screen as they were compelled into waiting for their chance to comment so that they could begin to form judgments of their fellow group members, however, we often witnessed participants ignoring the chat until they had an opportunity to participate. Unfortunately, the design necessitated limited interaction. The chat

room design was supposed to feel more natural in encouraging an open forum; however, many participants on exiting the experiment, commented on how “fast” the chat had appeared. Rather than indicating that the chat script was unnaturally fast, a more likely explanation for this reaction is the lack of chatrooms of this style in today’s CMC. Computer-mediated conversations are much more likely to happen in a direct message scenario between two people where turn-taking is typical. Another style of CMC for the experimental design might not have elicited such confusion and frustration toward the scenario.

Another issue to participant buy-in may have been associated with the length of the survey instrument. In an effort to increase reliability, questions were added but it’s possible the repetition of the questions created inattentiveness in participant responses. Adding to this issue, the researcher had a difficult time acquiring instruments used in prior research.

While the experimental manipulation of similarity did not work as expected, the perceived similarity scores reported by the participants allow us to conduct additional statistical analyses which yield results that reinforce the theoretical underpinnings of our conceptual model. Our analysis showed a positive correlation between perceived similarity as measured by our Surface-Level Similarity and Deep-Level Similarity factors and our dependent variables, Group Identity, Trust and Social Attraction. The data also supported Group Identity as a mediator of the relationship between perceived similarity and Trust and Social Attraction as we indicated in our proposed model. The lack of a causal relationship allows for future research in this area.

Additionally, a significant interaction was discovered. Competition moderated the relationship between Trust and Similarity type. Specifically, Trust was higher in the Deep-Level similarity condition than in the Surface-Level condition. While this did not support the original hypothesis it does open the door for additional research. There was no significant difference

between the control group for similarity (No Similarity) and Surface-Level condition. So far much research has been conducted on Trust and on Competition in individuals but little has looked at the relationship of these both in a group or team context. Future research into this area is recommended, not only as it relates to Similarity type, but in general.

The results of the current study have some implications to online activities that involve groups such as social networking sites and online communities. Users might be able to identify with each other via similar visuals in online spaces (e.g. Profile Pictures) but it's also possible sharing similarities loaded with too much information might obstruct online social identities rather than reinforcing them. Hyperpersonal theory offers a possible explanation (Walther, 1996). Participants in SNS and online communities prefer the relative anonymity or possibility of alternate identities afforded them within these spaces. These online worlds might allow us to get over our dissimilarities, identify with one another, and even interrelate with one another without as much bias.

Chapter 6

Limitations and Future Research

We've covered many of the limitations of this study earlier in the discussion. Issues with our design and instrument may have led to apathy in participants and may have also increased NFU, which negatively impacted group identity. Future studies might make the following considerations.

To increase buy-in we suggest participants be allowed to choose their avatar representations rather than be assigned them. Other involvement in avatar aspects should result in increased transfer of identity to the avatar. Avatar options should also have been tested for negative reactions. In addition, this study used a scripted discussion in order to diminish unforeseen interactions among participants. Even though this script was taken from an actual focus group, predetermined discussion might have reduced realism. The falseness and inherent deception built into the design may have also contributed to the participants' indifference. In future studies, real participants in a real scenario with the help of a moderator might prove more reliable.

Even though this study focused on the similarity of visual representation as a major means to induce group identity, it might have been difficult for participants to identify with their group members without spending enough time with them. Allowing more time for interaction might make it easier for participants to naturally affiliate with their own avatars, which were randomly assigned to them, and to recognize their similarity with others.

Finally, we believe more emphasis needed to be placed on inter-group differences to elicit stronger, more measurable outcomes. By simply mixing the chat groups between similar

and dissimilar, we could have generated truer responses. The competition scenario did little to amplify any effects but if differences were more evident we should see an increase in group identity and its outcomes both positive and negative.

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Appendix A

Figures

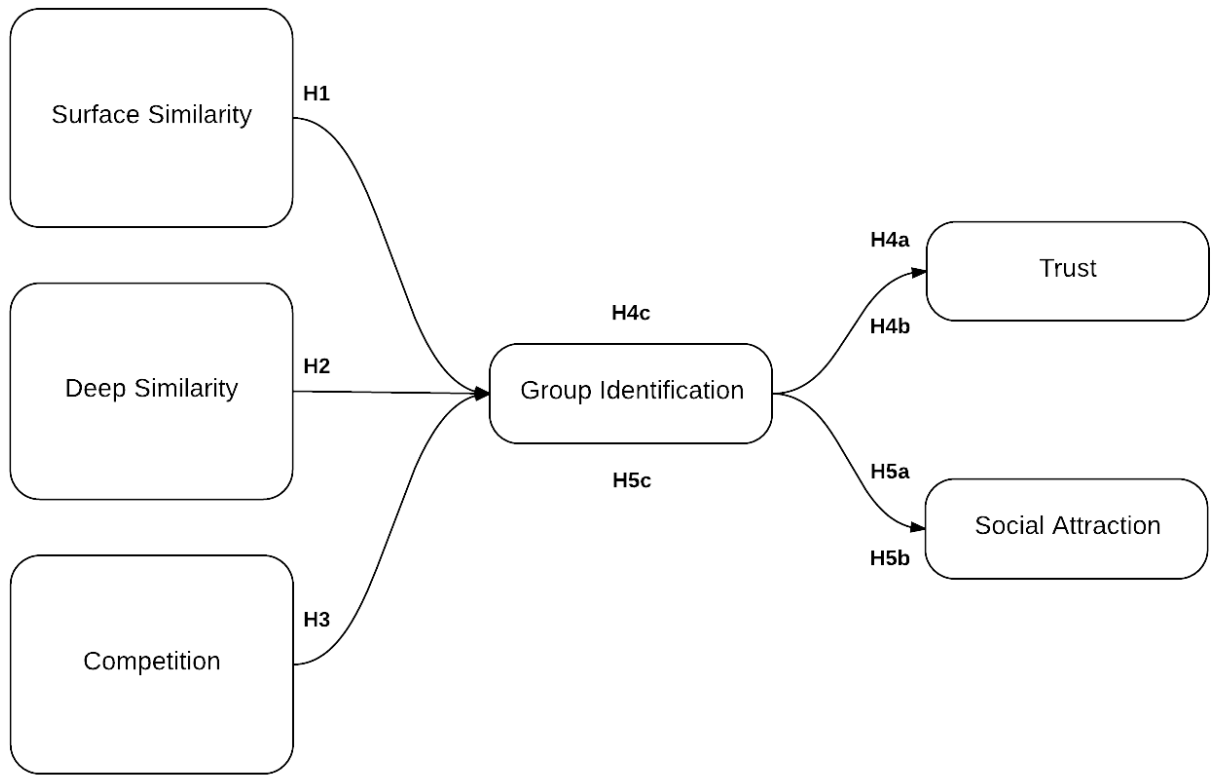


Figure 1. Conceptual model.

Construct	Items
Surface-Level Similarity	<p>I could be easily distinguished from others in my group (reverse)</p> <p>I am represented in the same way as other members of my group</p> <p>The representation of me in the chatroom is similar to that of my group</p>
Deep-Level Similarity	<p>I feel I am a different type of student from my group members (reverse)</p> <p>I feel like the others in my group were a similar type of student</p> <p>I think my team members are similar to me</p>
Trust	<p>I can trust the other team members in my group</p> <p>I can trust the information presented by other team members</p> <p>I feel that the other members of my team are honest</p> <p>I feel that my teammates are trustworthy</p> <p>If I had my way, I would not let other members have any influence over important issues (reversed)</p> <p>I really wish I had a good way to oversee the work of the other members (reversed)</p> <p>I would be comfortable giving the other members complete responsibility of this project</p> <p>Members of my work group show a great deal of integrity</p> <p>I cannot rely on those with whom I work in this group (reversed)</p> <p>Overall, the people in my group are not very trustworthy (reversed)</p> <p>There is “team spirit” in my group</p> <p>We have confidence in one another in this group</p>
Group Identity	<p>I have more in common with my group than the other groups</p> <p>My group is different than the other groups</p> <p>My group is doing the best</p> <p>I see myself as a member of this group</p> <p>I identify with this group</p> <p>I’m happy to belong to this group</p>

Figure 2. Questionnaire Items.

Construct	Items
Social Attraction	<p data-bbox="516 338 1110 369">I think my team members could be friends of mine</p> <p data-bbox="516 394 1393 426">I would like to have a friendly chat with one or more of my team members</p> <p data-bbox="516 451 1393 520">My team members and I could never establish a friendship with each other (reversed)</p> <p data-bbox="516 541 1081 573">My team members would be pleasant to be with</p> <p data-bbox="516 598 1089 632">I think my team members are probably attractive</p>

What avatar represented you in the chatroom? _____

Figure 2. (Cont.) Questionnaire Items.

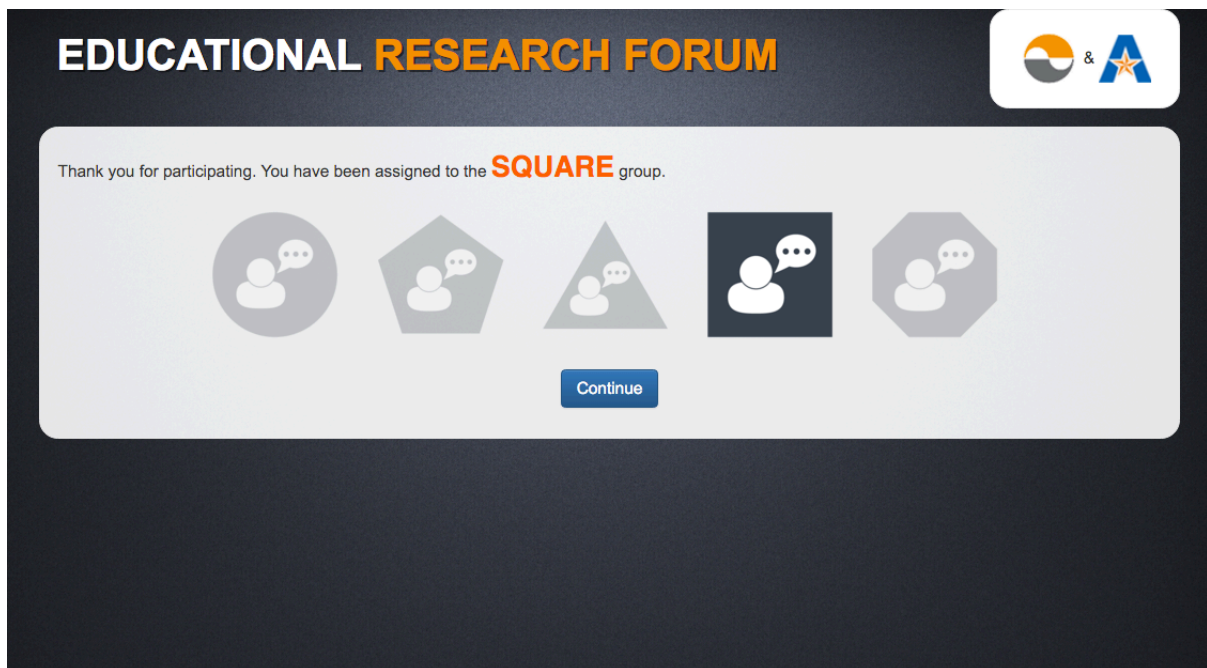
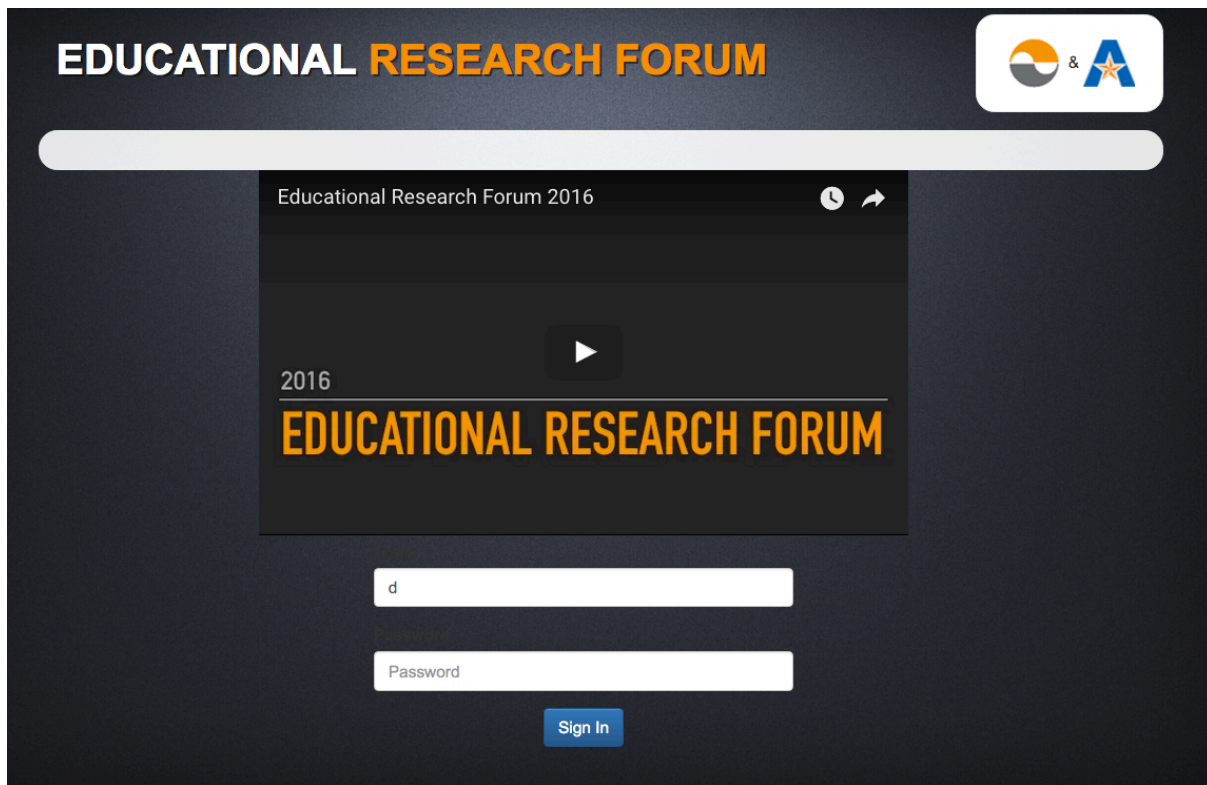



Figure 3. Online login screen and chat assignment windows.

EDUCATIONAL RESEARCH FORUM CHATROOM



Member 2
lolol @ 3

Member 1
thats right were the number twos

Member 3
Twos? lol

Member 2
So what do we do? I'm totally cofused

MEMBER 4 HAS JOINED

Member 1
Did anyone look at the info about the schools?

Member 2
sup 4!

You are a member of:

Group 2 (5 Members)

Other groups online:

Group 1 (5 Members) Chatting...

Group 3 (5 Members) Chatting...


Group 4 (4 Members) Chatting...

Group 5 (5 Members)

You are member #5. A system administrator is creating your account. Please wait ...

Member 5:

EDUCATIONAL RESEARCH FORUM CHATROOM



Square 2
lolol @ Square 3

Square 1
it's hip to be square

Square 3
blockheads

Square 2
So what do we do? I'm totally cofused

SQUARE 4 HAS JOINED

Square 1
Did anyone look at the info about the schools?

Square 2
sup 4!

Square 3
Yo.

You are a member of:

Square Group (5 Members) Chatting...

Other groups online:

Triangle Group (5 Members)

Circle Group (5 Members)

Pentagon Group (4 Members)

Octagon Group (5 Members) Chatting...

You are member #5. A system administrator is creating your account. Please wait ...

Square 5:

Figure 4. No Similarity (top) and Similarity (bottom) chat windows.

What Type of Student Are You?

Choose a classroom tool:



Choose an animal:



What are you doing outside of class?



How do you study?



Pick an app.

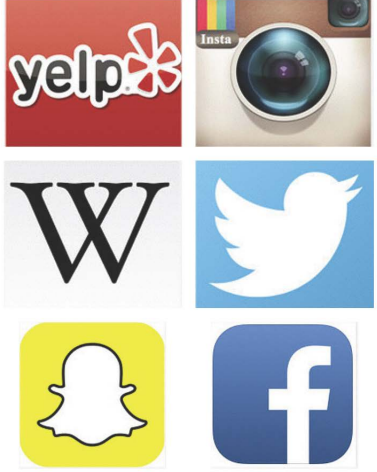


Figure 5. Deep-level “psychographic” visual survey.

SEDL Forum for a Better America

Every year the SEDL hosts a forum for university students from a different section of the country, looking for their feedback on the critical issue of high school drop out rates. This year we're looking for feedback from North Texas. This survey helps us to collect information about the students who participate. You'll be asked a short series of questions. All information will be strictly confidential. Upon completing the survey you'll begin working with other students in an online discussion group. Thank you for participating.

1. Are you male or female? _____ Male _____ Female
2. What year were you born? _____ (enter 4-digit birth year; for example, 1976)
3. Which of the following categories best describes your employment status?
 - a. Employed, working 1-39 hours per week
 - b. Employed, working 40 or more hours per week
 - c. Not employed, looking for work
 - d. Not employed, NOT looking for work
 - e. Retired
 - f. Disabled, not able to work
4. How much total combined money did all members of your HOUSEHOLD earn in 2014?
 - a. Less than \$20,000
 - b. \$20,000 to \$34,999
 - c. \$35,000 to \$49,999
 - d. \$50,000 to \$74,999
 - e. \$75,000 to \$99,999
 - f. \$100,000 to \$149,999
 - g. \$150,000 or More
 - h. Would rather not say
5. Which of the following do you identify most closely with?
 - a. White (non-Hispanic)
 - b. Hispanic
 - c. Black or African-American
 - d. American Indian or Alaskan Native
 - e. Asian
 - f. Native Hawaiian or other Pacific Islander
 - g. From multiple races
6. Which of these do you most identify with politically?
 - a. Democrat
 - b. Independent Leaning Democrat
 - c. Independent
 - d. Independent Leaning Republican
 - e. Republican

Figure 6. Pre-test survey with demographics and cover story.

7. Did you attend high school in North Texas? _____ Yes _____ No
8. If yes, what was the name of your high school? _____
9. In what ZIP code is your home located? (5-digit code; example, 94305) _____
10. In what language do you speak most often?
- | | | |
|------------------|---------------|----------------|
| a. Arabic | i. Gujarati | q. Russian |
| b. Armenian | j. Hindi | r. Spanish |
| c. Chinese | k. Italian | s. Tagalog |
| d. English | l. Japanese | t. Urdu |
| e. French | m. Korean | u. Vietnamese |
| f. French Creole | n. Persian | v. Other _____ |
| g. German | o. Polish | |
| h. Greek | p. Portuguese | |
11. Do you identify with any of the following religions? (Please select all that apply.)
- | | |
|------------------|-----------------------------|
| a. Protestantism | g. Hinduism |
| b. Catholicism | h. Native American |
| c. Christianity | i. Inter/Non-denominational |
| d. Judaism | j. No religion |
| e. Islam | k. Other _____ |
| f. Buddhism | |

Figure 6. (Cont.) Pre-test survey with demographics and cover story.

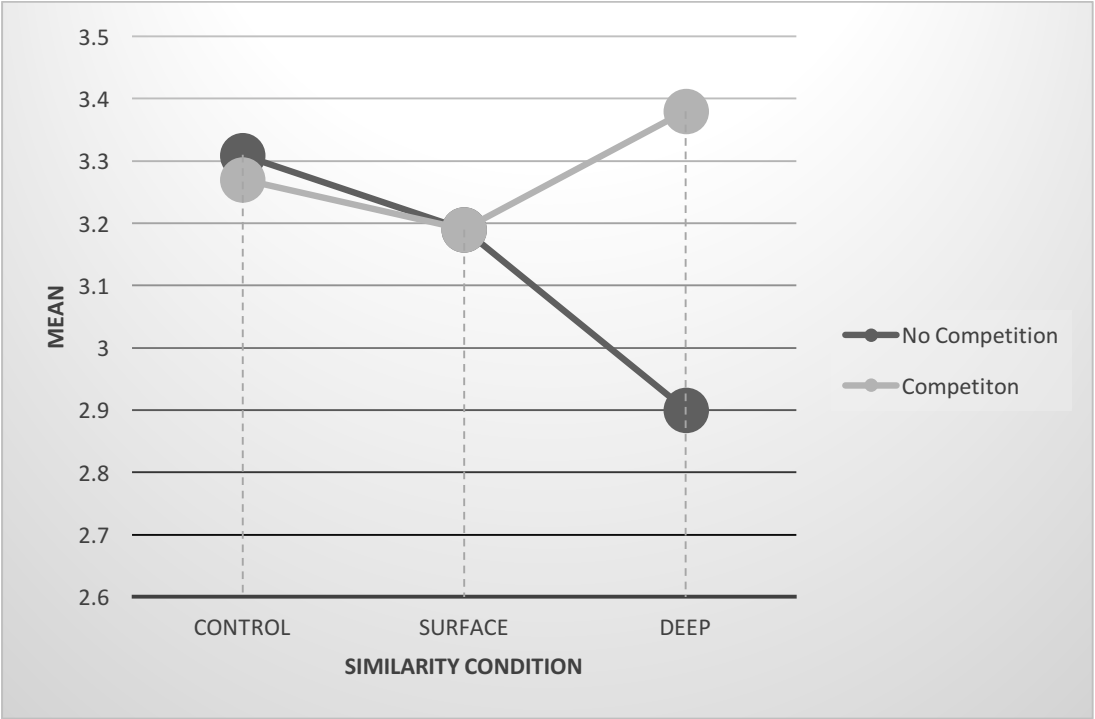


Figure 7. Means comparison between Similarity Conditions and Competition type on Trust

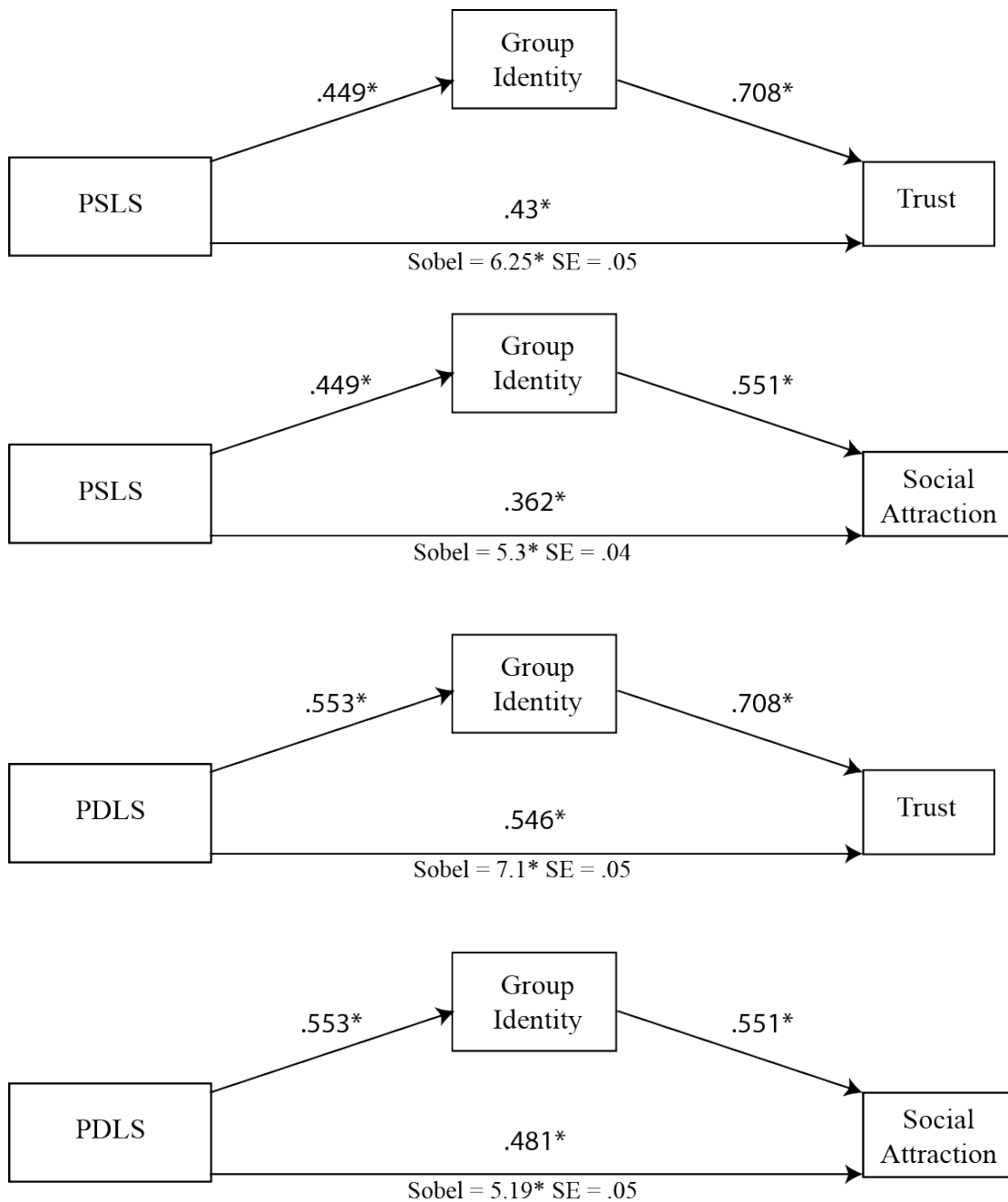


Figure 8. Standardized regression coefficients for the relationships between Similarity (Perceived Surface-Level and Perceived Deep-Level) and Trust/Social Attraction as mediated by Group Identity. The standardized regression coefficient between Perceived Similarity types and Trust/Social Attraction, controlling for Group Identity, is in parentheses.

* $p < .01$