



Does ‘cyber-conformity’ vary cross-culturally? Exploring the effect of culture and communication medium on social conformity

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Abstract

Previous research has established that individuals from collectivistic cultures tend to conform more than their counterparts from individualistic cultures do [Bond, R., & Smith, P.B. (1996). Culture and conformity: A meta-analysis of studies using Asch’s (1952b, 1956) line judgment task. *Psychological Bulletin* 119(1) 111–137]. However, there is presently a dearth of research exploring the degree to which this kind of cross-cultural difference is also present in computer-mediated communication (CMC) contexts where group members are never met face-to-face (f-t-f). A normative social influence paradigm of line-length judgment (based on Asch [Asch, S.E., (1955). Opinions and social pressure. *Scientific American* 193(5) 31–35]) was employed to investigate the effects of communication medium (f-t-f against CMC) and culture (participants from individualistic cultures against those from collectivist cultures). A communication type \times culture interaction was found, in which the expected cultural differences were demonstrated only in the face-to-face conditions, being absent in computer-mediated conditions.

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1. Introduction

Despite considerable advances in computer technology over the last 15 years, the majority of Internet users still engage in text-based interactions, through asynchronous

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e-mail or synchronous ‘chat’. In comparison with face-to-face (f-t-f) interaction, this (usually) text-based computer-mediated communication (or CMC as it is more commonly known) is potentially very different, not least because fewer regular channels of communication are open to its users. Non-verbal communication such as body language is removed in CMC, as well as obvious clues as to age, gender, ethnicity and status. There is now a growing inter-disciplinary literature exploring sociological and psychological aspects of CMC, however the degree to which documented cross-cultural differences from the f-t-f literature translate into the realm of CMC remains under-articulated. In CMC, does the potential absence of cues revealing the cultural background of communicators mean that ensuing communications are outside the influence of cultural norms? Our key aim in this experimental study is to provide an answer to this question, and in this way encourage researchers to further explore the potential for cross-cultural differences to influence CMC. In pursuit of these goals, the experiment reported herein explores the issue of cross-cultural differences in conformity, as manifested on- and off-line.

Numerous studies have investigated phenomena associated with compliance in computer-mediated and face-to-face groups, such as group decision-making (e.g., Kiesler, Siegel, & McGuire, 1984), status and power differentials (e.g., Mantovani, 1994) and group polarization (Spears, Lea, & Lee, 1990). However, there seems to be a lack of literature exploring *cultural* differences in CMC participants, despite the fact that, in f-t-f groups, it has been shown that different cultures vary in the degree to which they promote conformity to group norms (see Matsumoto, 2000; for an overview).

Cross-cultural social psychology has been the focus of a large amount of research since the 1970s, with pioneers such as Triandis (e.g. 1972; 1994) and Hofstede (1980; 1984) pointing, in particular, to the way that cultures vary on a number of value dimensions, including, perhaps most significantly, their level of individualism versus collectivism (see also Markus & Kitayama, 1991; and their related concept of ‘independent’ versus ‘interdependent’ selves). For example, citizens of countries such as the USA, Australia and the United Kingdom tend to be more *individualistic* than people from countries such as Greece, Hong Kong and most African nations, who, in contrast, are labeled as more *collectivistic*. Hamaguchi (1985) illustrates collectivism in Japan, for example, by the fact that the Japanese word for self, ‘jibun’, means ‘one’s portion of the shared space’. A consensus has formed amongst many cross-cultural social psychologists about defining these concepts: the individualistic nations are said to stress the rights of the individual over the group, whereas collectivist cultures value primarily the unity of all people, and the primacy of the group over the individual (Matsumoto, 2000).

In order to quantitatively assess the individualism or collectivism of various nationalities, scales have been established, generally to measure attitudes, at the cultural level (e.g. Triandis, McCusker, & Hui, 1990) and at the level of the individual (e.g. Yamaguchi, 1994). Empirical studies have gone some way towards documenting which nations are at the scale extremes of individualism or collectivism (see Hofstede, 1984, for example). Kim and associates (1994) suggest that the historical development of such varying levels of individualism and collectivism across nations is due to underlying moral-political philosophies of Eastern and Western cultures. It is argued that the liberal philosophy prevalent in the West encourages an autonomous, self-directing and assertive attitude, resulting in a more individualistic standpoint. Conversely, the basic doctrine of Confucianism in the East emphasizes social harmony above individual gain, leading to the more collec-

tivist standpoint of eastern nations. Cross-cultural studies of child-rearing point to how these differences in values are visible in the socialization of children of an early age (see, for example, Stropes-Roe & Cochrane, 1990).

The purpose of this experimental study is to explore cultural differences in group conformity with regard to CMC and face-to-face decision-making. This remains an under-researched issue in the environment of computer-mediated-communication. A reading of the existing literature from cross-cultural social psychology indicates that one might expect individuals from non-Western cultures previously found to value collectivism to manifest greater conformity than individuals from individualistic Western cultures. Some theorists argue that these differences can be traced back to fundamental properties of cultures, such as whether they are agricultural societies, various ecological factors, and child-rearing practices (Berry, 1979). Punetha, Giles, and Young (1987), for example, found that Asian participants valued conformity and obedience significantly more than a group of British participants. Other studies have compared non-Western with British or North American participants and reported similar results – Argyle and associates (1986), for example, found that Japanese and Hong Kong Chinese endorsed the value of obedience to a greater extent than British or Italian participants (see also Buck, Newton, & Muramatsu, 1984; Hadiyono & Hahn, 1985; Kim & Markus, 1999; Matsumoto, 2000).

The present study examines evidence for cross-cultural differences in CMC conformity (or what might be called ‘cyber-conformity’) by means of a line comparison task modeled on that used in Solomon Asch’s classic group conformity studies of the 1950s, but this time adding a computer-mediated condition. Such a task involves a participant deciding which one of a number of lines is the same length as a test line. However, before the participant gives their answer, a number of confederate participants give a uniformly incorrect response. The typical finding is that the unanimous majority has a marked effect in changing the response of the real participant, who moves towards the majority judgment. In his 1955 paper, Asch reports that under such group pressure, minority participants swung to the misleading majority’s wrong judgments in 36.8% of the trials, whereas under normal, control circumstances, individuals made mistakes less than 1% of the time. Abrams and associates (1990) state that the conformity effect seen in the Asch task is due to *normative* influence, which is defined as influence that arises when an individual’s actions are open to surveillance by other members of a group. It is thus argued that the participants do not privately accept the responses they give, but answer in such a way as to go along with the inspecting group. This notion is supported by the fact that influence increases when there are greater numbers of confederate participants (e.g. Asch, 1955) and decreases when participants respond privately (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990). Turner (1982) also argues that the influence of others on tasks such as line length judgment is only seen when the members of the group are from the same social category or group as the participant. In his Self-Categorization Theory (SCT) model of social influence, other group members create conformity through so-called ‘referent informational influence’, which is enhanced when participants feel that their fellow group members are similar to themselves.

Berry (1967), in a cross-cultural study of conformity, used an Asch type paradigm to investigate the differences in conformity between collectivistic and individualistic cultures. He found that high collectivists (the Temne people of Sierra Leone) conformed more to the group’s judgment than did high individualists (the Eskimo of Baffin Island). A control group of Scottish participants lay between the two extremes. An interesting aspect of this particular study was that groups of confederate participants were not used to influence the

real participants' judgments. Rather, Berry relied on Sherif's (1935) finding that "social norms persist in individuals even when the group is not present to take account of the individual's behavior" (Berry, 1967: p. 416). A sense of social identity was engendered by simply informing participants that a certain line was the one most frequently chosen by members of their society (i.e. that it was the group normative response), and the conformity effect remained evident. This effect is compatible with Turner's concept of referent informational influence, with its emphasis on the social similarity of other group members, and the notion that conformity can occur even if the other group members are not present, if social identity is salient. In the current study, an attempt is made to increase the salience of group identity through consistent highlighting of, and referral to, participants' identities as students of a particular university.

Berry's cross-cultural exploration of the Asch conformity paradigm was not unique – Bond and Smith (1996) report a meta-analysis of 177 conformity studies across 17 different countries. Of particular relevance for the present study was their observation that one variable consistently related to effect size was individualism–collectivism, with a pattern of greater conformity in collectivistic, as opposed to individualistic, countries. This stable finding may, in part, be due to how individualistic cultures stress values of uniqueness, freedom and independence, whereas collectivistic cultures tend to stress connectedness and harmony (Kim & Markus, 1999). It may be that the latter values are more conducive to social conformity effects. However, it should be noted that there may be times when greater social conformity is manifested by members of individualistic, as opposed to collectivistic, cultures – Triandis (1994, p. 227) for example, argues that this might be the case when decision-making does not involve the ego.

In the early literature on computer-mediated communication, there was debate about whether CMC is an 'impoverished' medium, due to the apparent loss of social cues otherwise present in face-to-face interaction (see, for example, Kiesler et al., 1984; Rutter, 1984; Short, Williams, & Christie, 1976). Some researchers, accepting this idea of reduced cues in CMC, went on to argue that, as a consequence, CMC may be more open to deviant and anti-normative behavior. These authors used concepts such as de-individuation (Festinger, Pepitone, & Newcomb, 1952; Zimbardo, 1969) and self-awareness (Diener, 1979, 1980; Prentice-Dunn & Rogers, 1982, 1989) to bolster their claims that CMC reduces conformity effects. Much of this research sits uncomfortably with more recent Internet-focused research that has highlighted the existence of many explicit and implicit norms about CMC communication on-line – the sum total of which has come to be called 'netiquette' (Shea, 1994). This seems to suggest that conformity certainly *can* and *does* occur in naturalistic CMC interactions over the Internet (see Wallace, 1999; for interesting examples), not least because 'virtual' groups exist on-line, with their own sets of norms and stereotypes, and leaders willing and able to enforce conformity (see, for example, Smith, McLaughlin, & Osborne, 1998).

In contrast to the idea that CMC encourages anti-normative behavior and reduced conformity, starting in the late 1980s, ideas from social identity and self-categorization theories were employed, largely by European social psychologists, to suggest that when individuals engaging in CMC come to feel part of a salient social category/group, then CMC may actually *enhance* conformity to group norms, due to an increased sense of self-categorization as group member leading to a desire to conform to group norms (see, for example, Lea & Spears, 1991; Postmes & Spears, 1998; Postmes, Spears, & Lea, 1998, 1999; Reicher, Spears, & Postmes, 1995; Spears & Lea, 1992, 1994). Developing

what they have come to call the Social Identity/DEindividuation (SIDE) model, these researchers argue that, potentially, the whole range of intra and inter-group processes could be *more powerful* in CMC, as opposed to f-t-f, *if* a strong sense of group identity is present, in part because social category cues are often more salient than interpersonal information in CMC, and also due to the ability of CMC to reduce the perception of ingroup heterogeneity, thus engendering enhanced perceptions of intragroup similarity. It is clear, therefore, that the question of whether, and in what way, social influence phenomena translate into the world of CMC, depends on whether one accepts the early CMC theories of reduced social cues or increased personal self-awareness (which both suggest *reduced* conformity on-line), or the more recent work of the SIDE researchers, who argue that conformity to group norms will be *higher* in a CMC context, *if* conformity pressure is associated with a salient and meaningful self-categorization.

What the CMC literature on social conformity does not address, is the question of whether established cross-cultural differences in f-t-f conformity translate into a CMC context. It is this question which we address in the experimental study reported herein. In order to explore whether conformity is affected by the value dimension of individualism–collectivism in *both* f-t-f and CMC contexts, we tested participants in both conditions, in a 2×2 between-groups experimental procedure, where the culture of the participants (individualistic versus collectivistic) and the context of the judgment task (f-t-f versus CMC) were manipulated. Whilst there is some empirical research suggesting that Asch-style conformity is present, albeit to a lowered degree, in CMC scenarios (Smilowitz, Compton, & Flint, 1988), the issue of cross-cultural differences in CMC conformity has not been empirically addressed before.

Our first hypothesis (H1) is that participants in the experimental conditions will conform to the confederate judgments to an extent, and thus score higher on the line judgment task than participants under control conditions, who do not have confederates influencing their decisions. Such a result would indicate that there is an experimental conformity effect of the three confederates' judgments, rather than any differences in line length judgment score being due to differences in the perceptual ability of participants. Thus, H1 essentially predicts the classic conformity finding demonstrated by Asch (1955).

The second hypothesis (H2), based on the cross-cultural work on individualism–collectivism reported earlier, is that participants from collectivistic cultures will conform more with the confederate judgments than will participants from individualistic cultures. This will result in significantly higher scores on the line judgment task for participants from collectivistic cultures.

Our analysis will also examine whether there is any evidence for a two-way interaction between communication context and culture of participants. If the cues-filtered out approach or self-awareness perspectives are correct, one might expect *less* conformity in the CMC condition, whereas a SIDE approach might argue that, if participants felt part of a salient self-categorization, one would expect *greater* conformity in the CMC condition, as opposed to the f-t-f condition. This might especially be the case because previous research in the SIDE tradition (Lea, Spears, & de Groot, 2001) suggests heightened attraction to the group and evaluation apprehension under conditions of visual anonymity, and the latter was a characteristic of our CMC condition. Since we have no a priori reasons to expect one of these perspectives to be supported above the other in this novel study of culture and conformity in CMC, any interaction found between condition and culture will be interpreted in a *post-hoc* manner, and thus does not form the basis of a core research hypothesis.

2. Methods

2.1. Design

The investigation employed an independent measures experimental design, with two independent variables. The first of these was the communication condition the participants were in: face-to-face communication versus computer mediated communication. The second was the culture of the participants: individualistic versus collectivistic.

There was one dependent variable in the investigation: the score on the line length judgment task. This was determined by how far the participants moved away from the correct line judgments toward the false judgments given by the confederate participants or computer program. The score provided a ratio-level quantitative measure of degree of social conformity, and use of this Asch conformity paradigm facilitates comparison of our results with the large existing body of research on conformity employing the same procedure.

It was necessary to control for a number of potentially confounding variables in the experimental design. The first area in which these controls were made was in the groups of confederates in the face-to-face condition. Each group of three confederates was used for the same number of collectivist participants as they were with individualistic participants, to ensure that any effects of the confederate groups would not influence one culture group more than the other. The groups of confederates were also counterbalanced for gender, with some groups containing two female and one male confederate whilst others contained two male and one female confederate. The study was carried out on the same four computers throughout, with face-to-face participants using the same computer as CMC participants. This fact ensured that any differences in line judgment could not be attributed to the visual display. A control group of participants carried out the line length judgment task without being privy to any other confederate judgments, to ensure that any effects were due to group influence, rather than differential perceptual abilities in estimating line length.

3. Participants

A mixed recruitment design of opportunity and quota sampling was used, resulting in 71 undergraduate university students from the University of London (United Kingdom) making up the one control and four experimental conditions. All participants were volunteers recruited by means of posters and e-mail requests, and did not receive financial reward or course credit in return for their participation. Informed consent was obtained in writing and a full post-experimental de-brief explained the need for deception in the experimental design. Country of birth was used to assign participants to either an individualistic or a collectivistic condition, on the basis of findings from prior research by Hofstede (1980; 1984) and Triandis et al. (1990). Once cultural group had been assigned, participants were then randomly allocated to a face-to-face, computer-mediated or control condition.

The control condition comprised 15 participants from nations traditionally categorized as individualistic in the cross-cultural psychology literature. The gender composition of this group was 5 males and 10 females, with an age range of 19–24, the mean age being 20.8 years. It was felt unnecessary to use a control group of participants from collectivist backgrounds, as there is no research evidence to suggest cultural differences in the perceptual task of line length judgment.

The first experimental condition was individualistic participants in face-to-face communication. This condition contained 15 students (9 males and 6 females) with an age range of 19–22 years (mean age 20.4 years). All were from countries traditionally scoring high on measures of individualism (13 British, 1 Italian, 1 French; see Hofstede, 1980).

The second experimental condition was collectivist participants in face-to-face communication. This condition contained 10 students (4 males and 6 females) with an age range of 20–23 years (mean age 21.18 years). These participants were all international students born and raised in traditionally collectivistic countries such as Greece and Korea (based on Hofstede, 1980, and the research of Triandis and associates).

The third experimental condition was individualistic participants in computer-mediated communication. This condition contained 15 students (4 males and 11 females) with an age range of 19–21 years (mean age 20.27 years). Fourteen members of this group were of British origin, with one German participant.

The fourth experimental condition was collectivist participants in computer-mediated communication. This condition contained 14 students (6 males and 8 females) with an age range of 18–28 years (mean age 21.8 years). These participants were again all international students born and raised in traditionally collectivist countries.

The confederate groups were made up of third year psychology undergraduates. Fifteen people (8 females and 7 males) were given confederate instructions, from which five groups were constructed. Three of these groups contained two females and one male confederate, while two contained two males and one female confederate.

None of the participants in the study had received any formal teaching about the social psychology of conformity or computer-mediated communication, nor had they received instruction on cross-cultural psychology.

4. Materials

Line-length judgment software was purpose-written for this investigation, based on a computerized implementation of the task used by Berry (1967). The software was prepared in two different versions, for the two communication conditions. The face-to-face program began with a practice screen, where participants enter their responses by clicking a number next to their chosen line. The program then continued with four test screens, where participants simply vocalized their response to the experimenter. The CMC program began with an identical practice screen, but on the four test screens, three ‘confederate’ answers were programmed into the computer. These false answers appeared on the screen, one after another, via a random time delay of 2–7 s each. After the third answer had appeared on screen, the participant was able to enter their response by clicking on the number next to their chosen line. Confederate participants were given an instruction sheet, detailing their role and the answers they would be required to give, before testing began.

5. Procedure

5.1. Face-to-face condition

The participant to be tested was brought into a room in which three confederate participants were sat at computers. Each participant was able to clearly see the confederates for the duration of the experiment. The test participant sat at the final computer

in the row, and the following introductory instructions were read aloud by the experimenter:

“Thank you for agreeing to take part in my investigation. I am carrying out an investigation into visual perception among University of London students, and seeing how these University of London students’ perceptions differ from other groups of people. You are University of London group 1 (or appropriate number)”

These initial instructions were designed in order to engender a sense of group identity within the participants, by continually referring to their University of London student group identity. This was implemented in order to make being a student of this particular university a salient self-categorization for participants, and thus enable later exploration at the analysis phase of whether this had, as predicted by the SIDE model, encouraged greater conformity in the CMC condition.

The first practice screen of line judgments was completed by the participants, who were corrected if they answered incorrectly, to make sure they understood the task they were carrying out. The participants were then instructed to complete the four test screens in the same manner as the practice screen, but instead of clicking on the number next to the line they felt was correct, they were asked to speak their answers out aloud, in turn. The participant was instructed to speak after the three confederate participants had spoken their (predetermined) responses, the purpose of which was for the confederates to influence the last participant’s judgments. The experimenter gave the impression of making a note of all four participants’ responses but in fact noted down only the final participant’s numbers.

After completing the fourth and final test screen, each participant was de-briefed thoroughly by the experimenter.

5.2. CMC condition

For the CMC condition, the procedure differed in that no confederate participants were used, and each participant sat on at a personal computer by themselves, with no other participants in the room. The computer program gave the impression that other people were participating in the task by displaying the same predetermined responses as the confederate participants had given in the face-to-face condition. These false responses appeared on the screen via a random time delay of 2–7 s, as though others were making decisions and entering them on computers elsewhere in the same building.

The CMC conditions were kept as similar to the face-to-face condition as possible, with the participants given the same introductory speech as before, this time stressing that they were members of an Internet-based communication group. It was stressed that the other members of the group were fellow University of London students, and that they were taking part in the study simultaneously, but in different rooms. Again, the participants completed the first practice screen to make sure the instructions on the computer program had been understood. Participants were then told that they were the fourth and final member of the Internet group, and that the other three members were at the same stage, ready to proceed with the program. Instructions were given that, as they were the final member of the group, when they clicked ‘OK’ on the program, the other three members’ programs would also begin. Participants were told to enter their responses only after the other answers had appeared on the screen. To ensure this, the computer program prevented

the entry of a response by the participant until it had generated the three numbers on the screen. Responses given by the participants were stored in a text file by the computer program.

Whilst the participants were carrying out the task screens, the experimenter informed them that he would also be checking on the other three participants in the other rooms, and thus entered and exited the real participant's room from time to time, in order to give this impression. Following the last test screen, the participant was debriefed. It should be noted that in all CMC conditions, the debrief confirmed that all participants reported being successfully deceived into believing in the existence of other group members.

5.3. Control condition

In this condition, modeled on the control group setup for all Asch-type conformity studies, participants undertook the line-length judgments using the same computer software, but did so individually and without being presented with any judgments from fellow participants. However, in order to maintain comparability with the experimental groups, participants were told that the study was particularly focusing on students from the University of London, in order to encourage the salience of this group membership.

6. Results

6.1. Manipulation check

Output from a one-way ANOVA ($F(2, 66) = 24.05, p < 0.001$) confirmed that participants in both face-to-face ($M = 7.96; SD = 3.34; n = 25$) and computer-mediated ($M = 3.93; SD = 3.27; n = 29$) conditions scored more highly on conformity (mean line-length judgment score) than participants in the control group ($M = 0.87; SD = 2.97; n = 15$; both experimental means significantly different from control at $p < 0.05$, 2-tailed, using Tukey HSD post-hoc tests). This provides evidence that social conformity was present across all experimental conditions. It was also apparent that conformity was higher in the face-to-face than in the computer-mediated condition ($p < 0.001$, 2-tailed, with a Tukey HSD test).

6.2. Main analysis

A two-way ANOVA was conducted to look at the effects of communication (face-to-face vs. CMC) and culture (individualistic vs. collectivist) on line-length judgment scores for participants in the experimental conditions (summarized in Table 1). This analysis revealed significant main effects of both communication condition ($F(1, 50) = 25.13, p < 0.001$) and culture condition ($F(1, 50) = 6.05, p = 0.02$). The effect of communication condition was such that conformity was higher in the face-to-face group ($M = 8.38, SD = 3.30; n = 25$) compared to the CMC group ($M = 3.93; SD = 3.22; n = 29$). The culture main effect was such that collectivists conformed more ($M = 7.25; SD = 3.19; n = 24$) than individualists ($M = 5.07; SD = 3.07, n = 30$). However, these main effects must be considered in light of the significant communication \times culture interaction ($F(1, 50) = 5.33, p = 0.02$). As illustrated in Fig. 1, this indicates that, in face-to-face conditions, collectivists conformed more than individualists ($M = 10.50, SD = 3.91$ for collectivists,

Table 1

Means, standard deviations and results of the ANOVA on conformity as a function of communication condition (face-to-face versus CMC) and individualism–collectivism

	Communication	Individualism–collectivism	Interaction
$F(1,50)$	25.13	6.05	5.33
p	<0.001	0.02	0.02
Means (SD)	FtF:8.38 (3.30) CMC:3.93 (3.22)	Ind: 5.07 (3.07) Coll:7.25 (3.19)	Ftf-Ind:6.27 (3.21) Ftf-Coll:10.50 (3.91) CMC-Ind:3.87 (2.98) CMC-Coll:4.00 (3.01)

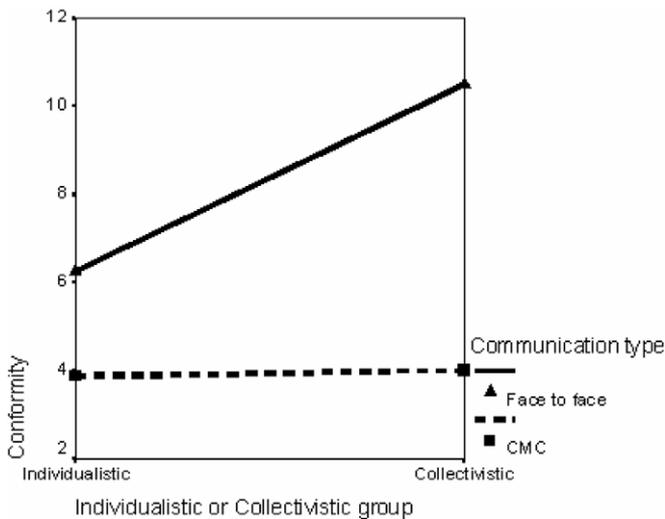


Fig. 1. ANOVA interaction of communication type and culture on levels of conformity.

$M = 6.27$, $SD = 3.21$ for individualists, Tukey unplanned comparison gives $p < 0.05$, 2-tailed). However, in computer-mediated-communication conditions, conformity levels were the same, regardless of culture ($M = 4.00$, $SD = 3.01$ for collectivists, $M = 3.87$, $SD = 2.98$ for individualists, Tukey unplanned comparison NS). The interaction effect demonstrates that the effect of culture on conformity levels is only present in the face-to-face condition, and not in the computer-mediated condition.

7. Discussion

Our results indicate that participants were influenced by confederate judgments in both face-to-face and computer-mediated communication conditions, resulting in higher scores than control participants, as predicted by H1. This finding is important in itself, as it proves that the experimental conformity effect was present in this study. Thus, the phenomenon of social conformity, as investigated through Asch's (1955) paradigm, is still robust almost half a century on, and can be demonstrated even in the environment of computer-mediated responding.

Our findings also suggest lower levels of conformity in CMC, as opposed to f-t-f conditions, in line with some previous research (e.g. Smilowitz et al., 1988), but in contrast to

what the SIDE model might have predicted. Can a reduced social cues approach explain our findings satisfactorily? These findings certainly appear, on first inspection, to be compatible with this perspective. The theoretical rationale for predicting reduced normative conformity in CMC, as forwarded by the reduced social cues approach, hinges on the notion that many of the communication cues present in f-t-f communication are absent from CMC encounters, thus leading to reduced feelings of accountability and reduced evaluation anxiety. However, in both our f-t-f and CMC conditions, non-verbal cues were somewhat restricted, because no verbal communication took place, other than the participant orally announcing their line-length estimations in the f-t-f condition. Perhaps the key distinction between our f-t-f and CMC conditions, in terms of differences in communication channels, was visual anonymity in the CMC condition, with participants not able to see each other. Here, on the issue of visual anonymity, the cues filtered out and SIDE models go head-to-head, with the former predicting that visual anonymity reduces conformity and increases private self-awareness, and the latter perspective arguing that it can, under certain conditions, enhance social identification and thus conformity to group norms.

Do our findings of reduced conformity in the CMC groups thus challenge the SIDE model of researchers such as [Lea and Spears \(1991\)](#)? Not necessarily, because the SIDE model only predicts enhanced conformity to group norms in CMC conditions which are explicitly associated with a salient and meaningful social identification, and one which is linked to the social norms on which conformity is being measured. For our participants, it could have been the case that the spontaneously imposed groups created by the experimenter were not particularly meaningful in terms of self-categorization, and as such, it is not surprising that social identity processes were not activated sufficiently to create enhanced group conformity. Additionally, even though we endeavored to remind students of their university group membership, no information was *explicitly* provided about what the group normative response should be. In fact, recent research in the SIDE model (e.g. [Postmes, Spears, & Lea, 2000](#)) demonstrates that new on-line groups may take a little time before group norms develop, in which case one might not always expect normative compliance in the early phases of CMC group development. Furthermore, it is recognized that the SIDE model may not provide an explanation for social psychological processes in *every* CMC context, or all of the time (see [Joinson, 2003](#)); it may, for example, be the case that short-lived on-line groups, or on-line groups in the very early phases of group development, may not lend themselves to the provision of meaningful self-categorization for their members, and thus SIDE explanations of behavior in such groups may be of limited value. The findings we present here would be compatible with this view, and suggest the need for further research which maps the circumstances under which the SIDE model's predictions are most relevant to CMC groups.

Our second hypothesis, predicting greater conformity for participants from a collectivistic culture, was partially supported, as there was a main effect of culture in the predicted direction, with participants from collectivistic nations manifesting greater conformity. This is important in itself, as it demonstrates that, even when they are studying and living in an individualistic nation (the UK), participants from collectivistic cultures will still manifest greater levels of conformity than those from individualistic nations, at least in situations where they think they are communicating with other participants from collectivistic cultures.

However, this main effect must be considered in light of the significant two-way interaction, which essentially showed that the cultural difference manifested itself *only* in the

f-t-f condition, being absent from the CMC condition. This finding suggests that in certain circumstances, robust, well-established cross-cultural differences in f-t-f social behavior may not be manifested in computer-mediated encounters. In the case of culture and conformity, it may therefore be the case that there is something about face-to-face social encounters that facilitates the operation of cultural differences in conformity, and is absent from the kind of computer-mediated scenario employed in the present study. As outlined earlier, one key difference between our f-t-f and CMC conditions was visual anonymity in the latter. This suggests a key role for the visibility of fellow group members in the cross-cultural conformity effect, at least in the context of newly formed groups, and with cognitive judgment tasks akin to the Asch line-length task. This makes sense, since the Asch conformity paradigm is thought to measure public *compliance*, rather than private *conversion* of beliefs, and as such, it is understandable that the cultural pressure to conform may be reduced when the visual presence of fellow in-group members is removed. This might be partly explained by reduced fear of rejection (argued to be important in the conformity of collectivists – see Yamaguchi, 1994). We have demonstrated this effect for a computer-mediated social conformity task, and in order to establish how widespread this phenomenon is, future research needs to explore whether the effect holds across other kinds of computer-mediated scenarios, such as e-mail, Internet chat, organizational intranets, and so on, with the possibility that other cultural differences in social behavior may be negated or operate differently when communication is computer-mediated. It will also be important to elucidate factors which help explain the possible inhibition of cross-cultural differences in conformity in CMC environments, isolating the role of different kinds of anonymity, available communication channels, self-awareness and fear of rejection.

Could our finding that cross-cultural differences in conformity were present in the f-t-f group but absent in the CMC group be explained by methodological weaknesses preventing the expression of cross-cultural effects? We would argue not – the f-t-f and CMC conditions were kept as similar as possible, other than the removal of physical co-presence in the CMC condition. Whilst some cross-cultural studies might unwittingly inhibit the manifestation of cross-cultural differences due to the use of short-lived, ad-hoc groups of dubious psychological value to the participants (Smith & Bond, 1993), this cannot explain our findings. In the study presented here, although the social groups created were short-lived, this clearly did not prevent the manifestation of cross-cultural differences, which were present, and in the expected direction, in our f-t-f groups. Another possible criticism of the study is that the collectivistic participants were tested while studying in an individualistic culture (the United Kingdom), and this experience may have somehow ‘diluted’ the influence of their collectivistic upbringing. This potential weakness in recruitment of participants cannot explain our findings, and does not seem valid, since we did find the expected main effect of culture on levels of conformity. Similarly, since participants were randomly allocated to f-t-f or CMC groups, this potential weakness in the composition of participant groups cannot explain why collectivists manifested higher conformity than individualists in the f-t-f condition but not in the CMC condition.

Methodologically, we sought to stay close to the design of the original Asch studies of conformity, in order to provide results which might be compared easily with those available in the substantial body of literature using that method, and especially previous cross-cultural studies of conformity and social influence. However, in the future, and in the interest of ecological validity, it would clearly be desirable to employ empirical studies which explore the many different types of on-line group and software interfaces available, since

significant differences exist between systems, on variables such as degree of anonymity, identifiability, and whether the communication is synchronous or asynchronous. Furthermore, as Triandis et al. (1990) have argued, it is important that studies of cross-cultural differences employ multiple methods. We have operationalized individualism–collectivism as a culture-level variable, but it can also be operationalized as an individual difference variable and measured using Likert-type attitude scales. Further research exploring this dimension and its possible implications for CMC would therefore benefit from using different levels of analysis and methodologies.

As we spend more and more time ‘on-line’, both at work and in our leisure time, it becomes increasingly important to explore the potential similarities and differences in social processes between CMC and f-t-f settings. We propose that cross-cultural (social) psychology needs to interface with the psychology of the Internet and computer-mediated communication, so that an understanding can be developed for the role of culture in CMC settings. The study presented herein provides preliminary evidence to suggest that some established cross-cultural differences in social behavior, such as cross-cultural differences in conformity, may not operate in all CMC environments. Just as the SIDE model has illustrated persuasively that CMC, given certain conditions, does not negate the power of social groups to influence individual cognition and action, so we propose an agenda for future research which aims to explore and map the conditions in which cross-cultural differences in cognition and behavior transfer from f-t-f to CMC environments. Given the increasing implementation of CMC in industry (e.g. computer-mediated forms of teleconferencing) and for leisure purposes (e.g. the popularity of Internet ‘chat’), we believe this issue to be an extremely timely one, and propose that cross-cultural psychologists extend their remit from the f-t-f to the CMC domain. Can this research feedback usefully into the broader cross-cultural psychology literature? We believe so, because it may help illuminate the underlying bases for cross-cultural differences. The present findings, for example, suggest that the enhanced levels of conformity to group norms evinced by Collectivists may be public compliance and not private conversion (as also argued by Yamaguchi, 1994), and that the role of visual anonymity is worthy of further exploration.

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