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**Cultural self-efficacy increases creativity in bicultural dyads: Evidence from two dyadic
divergent thinking tasks**

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Abstract

Although past research has stressed the importance of creativity in multicultural groups, few studies have explored the individual factors that can facilitate collective creative performance in such contexts. In two studies we investigated the effect of cultural self-efficacy on creative performance in bicultural dyads. In a first study ($N = 110$, 55 dyads), we found a positive correlation between individuals' level of cultural self-efficacy and their joint creative output in bicultural dyads. In a second study ($N = 104$), we manipulated study participants' cultural self-efficacy prior to an online brainstorming session either with someone from a different culture, or with someone from their own culture. Results revealed that the cultural self-efficacy manipulation positively affected the individual creativity of participants when participants believed that they were brainstorming ideas with someone from a different culture. Our findings suggest that cultural self-efficacy is an important facilitator of creativity when working with people with a different cultural background. Theoretical and practical implications are discussed.

Keywords: cultural self-efficacy, creativity, bicultural dyads, divergent thinking

Introduction

Interest in studying the effects of a group's cultural composition on collective creative performance is long-standing (Gassmann, 2001). In the context of globalization, individuals increasingly work with people from different cultures to solve complex problems, which requires collective creativity (Cheng, Chua, Morris & Lee, 2012). For example, student populations around the globe are more and more culturally heterogeneous and student interactions frequently involve multicultural group work (Popov et al., 2012). Moreover, organizations are encouraged to set up multicultural working groups to facilitate creative performance following the suggestions of research showing that multicultural groups tend to be more creative than monocultural groups (McLeod & Lobel, 1992; McLeod, Lobel & Cox, 1996).

Multicultural groups are more and more common, but they also face specific challenges that can inhibit their cohesion, social integration and performance (Watson & Kumar, 1992). Past research shows, for example, that multicultural groups are more prone to conflicts than monocultural groups (Ayoko, Härtel & Callan, 2002; Godfrey, Kim, Eluère & Eys, 2019), which may, in some cases, hinder their creative potential (Farh, Lee, & Farh, 2010). It is therefore important to investigate the factors that can facilitate creative performance in multicultural groups. The present research is based on Social Cognitive Theory (Bandura, 1986) and argues that cultural self-efficacy is one of the factors that can facilitate collective creative performance in intercultural settings.

Coping with intercultural challenges

Multicultural groups face many challenges that can sometimes hinder their performance (Behfar, Kern & Brett, 2006; Watson, Kumar & Michaelsen, 1993). These

challenges are due to a series of factors that make it difficult to establish group norms and effective group processes (Behfar, Kern & Brett, 2006). Communication difficulties are a good example of such factors. They can lead to suboptimal information sharing among group members and hinder collective performance. Findings from studies analyzing the effects of cultural diversity on the team performance of multicultural professional football teams, have shown that cultural diversity in teams can have a negative effect on the performance of teams' defense players (Brandes, Franck & Theiler, 2009) and on team players' market value (Maderer, Holtbrügge & Schuster, 2014). The authors of the former study, stress that communication is a key component of the defense position and attribute the aforementioned effects to thwarted communication due to players' different first languages. In another example, Tenzer, Pudelko and Harzing (2014) showed that the language barrier in a work team can jeopardize trust formation among team members. In addition, language differences, which may only be surface differences, compared to deep-level differences pertaining to attitudes and values, are sometimes interpreted by team members as being associated with deeper differences (Tenzer, Pudelko & Harzing, 2014).

Even when communication is relatively fluent or group processes are well established, multicultural groups may be confronted with phenomena that can impact individual and, indirectly, collective performance. For example, the existence of intergroup stereotypes can lead to a stereotype threat phenomenon that can affect the performance of individual members (Robertson & Kulik, 2007). Past research suggests that anxiety generated by the anticipation of negative judgment can inhibit individual contributions within a group and, in turn, affect collective creative performance (Diehl & Stroebe, 1987).

In the literature a variety of factors that can facilitate collective creativity in an intercultural context have been identified. For example, speaking multiple languages (Lee & Kim, 2011), having a multicultural social network (Chua, 2018), growing up in a bicultural

family (Chang, Hsu, Shih & Chen, 2014), and having a bicultural identity (Nguyen & Benet-Martínez, 2007; Saad et al., 2013), are some of the factors that are positively associated with creativity in intercultural contexts. Other factors that have been identified in the literature are being open to new experiences (Leung & Chiu, 2008; Silvia et al., 2008), being able to adapt to new cultures (Maddux & Galinsky, 2009), and appraising diversifying experiences as challenges rather than threats (Gocłowska, Damian & Mor, 2018). Finally, creative personal identity has also been linked to collective creativity in intercultural contexts (Puate, Toptas, Cavazos, Wimschneider & Brem, 2019),

How do these variety of factors facilitate creativity in intercultural contexts? Various theoretical frameworks have identified self-efficacy as a crucial antecedent of intentions and behaviors (e.g., Ajzen, 1991; Bandura, 1986). Self-efficacy is especially important in predicting behavioral intentions because individuals who feel confident enough to successfully perform a given task, express favorable behavioral intentions towards the latter and demonstrate behavior that matches their behavioral intentions. Perceived self-efficacy is firstly responsible for an individual's choice of situation and environment (compared to avoidance of situations where self-efficacy is low), followed by initiation of action, regulation of the amount of effort expended, and persistence of effort for a period of time (Bandura, 1986). Based on Bandura's (1986) Social Cognitive Theory, it is plausible to expect that an important predictor of creative performance in intercultural settings is therefore an individual's self-efficacy beliefs pertaining to intercultural settings, or cultural self-efficacy.

Cultural self-efficacy: A forgotten coping resource?

Cultural self-efficacy can be defined as an individual's confidence and perceived ability to successfully manage intercultural situations (Ang et al., 2007). Like any other form of self-efficacy, cultural self-efficacy can be conceptualized as gradually developing from an early age through a variety of experiences and psychological processes, such as performance

accomplishments, vicarious experiences (modelling), verbal persuasion and emotional arousal given the presence of ample intercultural opportunities (Bandura, 1986). Factors including having a multicultural social network, growing up in a bicultural family, or being open to new experiences and appraising diversifying experiences as challenges rather than threats, arguably all facilitate the development of high cultural self-efficacy beliefs.

High cultural self-efficacy beliefs could in turn facilitate individual and collective creative performance when individuals of different cultural backgrounds work together. This is because individuals with higher self-efficacy levels tend to set higher goals and they tend to persist more to attain goals (Bandura, 1986), which ultimately could benefit creative performance as well. Surprisingly, no study has directly investigated the effect of cultural self-efficacy on individual and collective creative performance when culturally diverse individuals work together.

Several scales that measure cultural self-efficacy exist, such as the Cultural Self-Efficacy Scale (CSES, Bernal & Froman, 1993) developed for the nursing context, or, more recently, the Extended Cultural Intelligence Scale (E-CQS, Van Dyne et al., 2012), that includes a more general cultural self-efficacy subscale. An interesting property of self-efficacy beliefs is the existence of several methods to experimentally manipulate them; including anchoring (Cervone & Peake, 1986), social comparison (Weinberg, Gould, Yukelson & Jackson, 1981), and bogus performance feedback (Vancouver, Thompson, Tischner & Putka, 2002). Such methods can easily be adapted to manipulate cultural self-efficacy and investigate its causal effect on creative performance in an intercultural context.

Overview of studies

In the present research, we investigated the relationship between bicultural dyads' cultural self-efficacy and bicultural dyads' creativity through two empirical studies. Our studies focus on dyads for two reasons. First, dyadic collaborations involving individuals

from different cultures are frequent, occurring in business negotiations and transactions, as well as in friendships and in romantic relationships. Thus, dyadic creativity can make a positive difference in many domains, including economic growth through innovation in business. Second, dyadic interactions occur from the onset of life between parents and children, between siblings, and between educators and students, and represent the smallest and most fundamental unit of human interactions. Therefore, investigating dyadic creativity represents an opportunity to witness the fundamental relational component of creative performance (Glăveanu et al., 2019).

Our general hypothesis for both studies is that cultural self-efficacy leads to higher joint creative performance in bicultural dyads. The aim of Study 1 was to estimate the correlation between the cultural self-efficacy of dyad members on the one hand, and their joint creative output, on the other hand. The aim of Study 2 was to replicate and extend findings from the first study by 1) providing evidence for a causal relationship between cultural self-efficacy and creative output in bicultural dyads, by experimentally manipulating cultural self-efficacy, and 2) verifying that the effect of cultural self-efficacy is specific to bicultural dyads, by also manipulating the cultural backgrounds of dyad partners. We specifically hypothesized that cultural self-efficacy is a construct that is relevant for bicultural dyads only (and not for monocultural dyads), and therefore has the potential of being conceptually different from other forms of self-efficacy, for example, creative self-efficacy, which are also known to affect collective performance in general (Richter, Hirst, Van Knippenberg & Baer, 2012).

Study 1

The main aim of Study 1 was to test whether dyad members' cultural self-efficacy is positively associated with joint creative performance in bicultural dyads. In addition, with a

more exploratory approach, we also investigated which dyad member had the greatest impact on joint dyadic creativity. Specifically, we explored three possible results: Creative performance is mostly dependent on the members with the lower creative self-efficacy within their dyad (later referred to as ‘weaker’ dyad members), creative performance is mostly dependent on members with the higher creative self-efficacy within their dyad (later referred to as ‘stronger’ dyad members), or both dyad members contribute equally to joint dyadic creative performance.

Method

Participants

The study sample consisted of 55 dyads composed of 110 English-speaking undergraduate business school students (ranging from 21 to 23 years of age). In the study sample, 46% of the participants were male ($n = 51$) and 54% were female ($n = 59$). Participants from a range of countries including Algeria, Brazil, Colombia, Egypt, France, Greece, Iran, India, Italy, Ivory Coast, Lebanon, Madagascar, Mexico, Portugal, Poland, South Korea, Spain and the United States, were invited to take part in the study in exchange for course credit.

Measures

Cultural Self-Efficacy. Cultural self-efficacy was measured using the three-item cultural self-efficacy subscale of the Cultural Intelligence Scale (CQS; Ang et al., 2007; Van Dyne et al., 2012). A five-point Likert type response scale was used, ranging from *Strongly disagree* (1) to *Strongly agree* (5). In our study sample, the cultural self-efficacy scale exhibited satisfactory scale-score reliability, with a Cronbach’s α of 0.74.

For each of the fifty-five dyads we retained three cultural self-efficacy scores: A mean score of both participants’ cultural self-efficacy (i.e., the average dyad score), the score of the

member with the highest level of self-efficacy (i.e., the score of the stronger member), and the score of the member with the lowest level of cultural self-efficacy (i.e., the score of the weaker member).

Creativity task. Dyad's divergent thinking potential was assessed using a collective brainstorming task. In pairs, participants were given five minutes to generate as many ideas as possible on ways to improve teaching methods at their university. Two business school professors blind to the cultural self-efficacy scores of the dyad members rated the creativity of ideas independently, using a Likert type scale ranging from *Not at all creative* (1) to *Very creative* (5). The two ratings were consistent (Cronbach's α was 0.78) and were therefore averaged.

Each dyad was assigned three creativity scores. The first was an *average dyad creativity score* of all the ideas generated by the dyad. The second score represented the score of the *single most creative idea* generated by the dyad. The third score, was a *fluency score* representing the total number of ideas generated by the dyad.

Acquaintance. We measured the degree of acquaintance between dyad members with two items: "I know my partner" and "I am close to my partner" using a Likert type scale ranging from *Not at all* (1) to *Very much* (4). The two items were consistent both within individuals (Cronbach's α was 0.72), and within dyads (Cronbach's α was 0.79).

Procedure

Students participated in this study, face-to-face, as an extra credit opportunity. It was explained that the study consisted of two parts, and that all data would be collected via an online survey platform. Participants began by completing the cultural self-efficacy scale individually on their personal laptops. Next, they were divided into pairs and matched with a student with a different national origin, forming bicultural dyads. Participants were then told that for the second part of the study they had to work together on a single laptop. Next, dyads

received the instructions for the creativity task via a second online survey platform. Specifically, dyads read that their task was to brainstorm and come up with as many ideas as possible on ways to improve teaching at their university. Once dyads were ready to start, a timer appeared on their screen indicating that they had 5 minutes to complete the brainstorming task. Dyad members could talk and exchange ideas, while one of the members typed their ideas in the survey. After the creativity task, participants completed a demographic questionnaire, were debriefed, thanked for their participation, and given course extra credit. The study took place in several rooms, with four to five dyads in each room.

Results

Main analyses

Descriptive statistics for the fifty-five dyads are reported in Table 1 (p -values are two-tailed). Note that controlling for gender composition, age, or the level of acquaintance did not change any of the main results. We therefore interpret bivariate correlations.

In accordance with our main study hypothesis, results showed that average dyad cultural self-efficacy was marginally positively correlated with the score of the most creative idea generated by the dyad ($r = 0.25, p = 0.07$), and positively correlated with the average dyad creativity score of all of the ideas generated by the dyad ($r = 0.31, p = 0.02$).

Insert Table 1 here

Exploratory analyses

Analyses revealed that dyads' creative fluency was significantly correlated with dyads' average cultural self-efficacy ($r = 0.35, p = 0.008$), with the lowest level of cultural self-efficacy present in dyads ($r = 0.37, p = 0.005$) and with dyads' most creative idea ($r = 0.41, p = 0.002$).

We investigated the extent to which dyadic creativity depended on the dyad members with the lowest and highest level of cultural self-efficacy within their respective dyad. Results indicated that the cultural self-efficacy of weaker dyad members was positively correlated with the dyad's most creative idea ($r = 0.29, p = 0.03$), and with the dyad's average creativity score ($r = 0.31, p = 0.02$). The cultural self-efficacy of 'stronger' dyad members, on the other hand, was not correlated with the dyad's most creative idea ($r = 0.15, p = 0.27$), and only marginally correlated with the dyad's average creativity score ($r = 0.23, p = 0.09$). These findings are consistent with the idea that dyadic creativity is most strongly influenced by dyadic members who are relatively weaker within their dyad in terms of their cultural self-efficacy.

Discussion

The main objective of Study 1 was to determine whether there is a positive relationship between cultural self-efficacy and creative performance in bicultural dyads. Our findings show that cultural self-efficacy is indeed associated with dyadic creativity. Dyads' average cultural self-efficacy and weaker member cultural self-efficacy were positively correlated with dyads' fluency scores. Dyads' average cultural self-efficacy was not only positively linked to the most creative idea generated by the dyad, it was also positively linked to the average creativity of all the ideas generated by the dyad.

Our exploratory analyses further revealed that dyadic creativity was most strongly influenced by dyadic members who are relatively weaker within their dyad in terms of cultural self-efficacy. This effect of weaker dyad members' cultural self-efficacy on joint creative performance, in the absence of an effect of stronger dyad members' cultural self-efficacy, could be taken as an inhibitory effect on the creative potential of stronger members

(see Imai and Gelfand (2010) for a similar investigation in the context of negotiation research).

Altogether, results from this first study indicate that there is a positive relationship between dyad members' cultural self-efficacy and joint dyadic creativity in bicultural dyads. Nevertheless, this first study has several limitations. Our sample size was relatively small, and some of the correlations that we found were only marginally significant. Furthermore, the correlational nature of the study design does not determine whether cultural self-efficacy causally affects creative performance. Finally, we only had bicultural dyads in this study, making it impossible to demonstrate that it is cultural self-efficacy that facilitates creativity, and not a more general form of self-efficacy. To address these shortcomings, in Study 2 we manipulated both cultural self-efficacy and the cultural background of dyad members, so that half of the dyads were bicultural and the other half were monocultural.

Study 2

Study 2 sought to test the causality of the relationship between cultural self-efficacy and creative performance through experimental manipulation of cultural self-efficacy. In this study we also created monocultural dyads which allowed us to investigate the effect of cultural self-efficacy in both bicultural and monocultural dyads. Indeed, since it is possible that the cultural self-efficacy scale that we used partly taps into other forms of self-efficacy as well, it was essential to show that cultural self-efficacy increases creative output in bicultural dyads only, and not in monocultural dyads. This provides evidence that *cultural* self-efficacy has added value over and above general self-efficacy in explaining dyadic creativity.

In this study, participants were led to anticipate an interaction with an ostensible same culture or different culture partner. However, no real interaction took place between participants. Although in this study we do not measure joint creative performance, we can

assume that individual performance is an important predictor of joint performance. But more importantly, this method allowed us full control over the manipulation of the dyad members' cultural background, which was one of our prime objectives with this study.

Method

Participants and design

Our study sample consisted of 104 English-speaking adults living in the United States (57 women and 47 men, $M_{age} = 35.24$, $SD_{age} = 11.83$). Participants were recruited online via a Microworkers campaign. Microworkers is an international marketplace for online work where individuals can be hired to participate in surveys (Crone & Williams, 2017). Our survey guaranteed anonymity and confidentiality and required participants to answer all items before submitting their answers. This resulted in no missing data from participants. Study participants were randomly assigned to one of four experimental conditions: Cultural background of dyad partner (Same culture vs. Different culture) and Cultural self-efficacy (Low vs. High).

Materials

Manipulation of dyad partner cultural background. To manipulate anticipations of working in a mono- or bicultural dyad, participants were told that they would be randomly assigned to engage in a brainstorming task, either with another American participant, or with an individual from the Kanak culture. The Kanaks were described to study participants as individuals living on islands located in the Pacific Ocean, and overall, as having a culture that is very different from the American culture. We chose the Kanak culture because the Kanak people live in relative isolation, making it unlikely that our study participants would have Kanak origins. Study participants were then randomly assigned to one of two experimental conditions. In one condition, information provided to participants indicated that they would

work with someone from the same culture (an American), while in the other condition information indicated that they would work with someone from the Kanak culture.

Manipulation check dyad partner cultural background. A single item administered at the end of the survey -- “My assigned brainstorming partner had a cultural background that was: *Very similar to my cultural background* (1) to *Very different from my cultural background* (5) -- verified that our dyad manipulation was effective.

Manipulation of cultural self-efficacy. To manipulate cultural self-efficacy, we provided study participants with bogus feedback on their performance on an intercultural competence task. We used five cultural assimilators (Cushner & Brislin, 1996). Cultural assimilators are short scenarios based on critical incidents and are typically used as a cross-cultural training tool (Cushner & Brislin, 1996). The scenarios introduce different culture-related misunderstandings between individuals of various cultural backgrounds. Study participants read each scenario carefully and provided their best explanation of the cause of the miscommunication by choosing from four possible answer optionsⁱ. We manipulated cultural self-efficacy by providing participants with bogus feedback on their performance directly after providing their answers. Specifically, regardless of participants’ true score on the test, half of the participants received negative feedback: “*Your answers indicate that you do not have a very strong knowledge of different cultures (4 out of your 5 answers are wrong)*”, while the other half received positive feedback: “*Your answers indicate that you have a very strong knowledge of different cultures (4 out of your 5 answers are correct)*”.

Manipulation check cultural self-efficacy. Directly after the cultural self-efficacy manipulation we used the same three item self-efficacy subscale as in Study 1 (Ang et al., 2007) to assess participants’ confidence in their ability to successfully function in intercultural settings. Cronbach's α was 0.85.

Creativity task. The task chosen to evaluate participants' divergent thinking potential is a divergent thinking task called the Alternate Uses Task (AUT) originally developed by Guilford in 1967. Concretely, participants were told that they would be presented with a common object (a paperclip) and that they would have two minutes to brainstorm together and to come up with as many ideas for different uses for the object. Importantly, study participants were informed that they would *first* have to generate ideas separately, and that afterwards they would work with the other participant to elaborate on their best ideas. We emphasized that participants should write their ideas clearly, as their supposed brainstorming partner would later read their ideas. After completing the AUT, all participants were told that due to a technical problem they could not interact with the other participant, but that they would be rewarded anyway if they continued filling in additional questionnaires. All participants decided to continue.

All the ideas generated were rated independently by two judges blind to experimental conditions, on a scale from *Not very creative* (1) to *Very creative* (5). Ratings from both judges were then averaged (Cronbach's alpha was 0.85). We calculated two indicators of participants' divergent thinking performance. Each participant was assigned an average creativity score of *all the ideas* generated by the participant. The second score represented the score of the *single most creative idea* generated by the participant. In addition, a fluency score representing the total number of ideas generated per study participant, was assigned to each individual.

Big Five Personality Traits. We controlled for the Big Five personality traits using the Ten Item Personality Inventory (TIPI, Gosling, Rentfrow, & Swann Jr, 2003). This questionnaire measures extroversion, agreeableness, conscientiousness, emotional stability, and openness to experience. The TIPI was built as a short scale with large content coverage to maximize content validity. Consequently, the measurement model of the TIPI is more

formative than reflective in nature, as is evidenced by empirical research (Myszkowski, Storme, & Tavani, 2018). The Cronbach's α is therefore not a relevant indicator to assess the quality of the scale (Gosling, Rentfrow, & Swann Jr, 2003; Storme, Tavani, & Myszkowski, 2016). The reliability of the TIPI is better assessed by test-retest reliability indicators, which have been shown to be satisfactory (Gosling et al., 2003; Storme et al., 2016).

Procedure

We targeted our recruitment campaign specifically towards proficient English-speaking U.S. participants, and we presented our experiment as a study on brainstorming in bicultural dyads. Participants were explicitly informed that they would work with an (ostensible) other participant on the platform who would either have the *same*, or a *different* cultural background as the study participant. Immediately after these general instructions the manipulation of dyad partner's cultural background took place. Participants were informed that they had been randomly matched with a partner and they received information about the cultural background of their partner. Then, after the manipulation check of the dyad partner culture manipulation, participants took the supposed cultural competence test, constituting the manipulation of participants' cultural self-efficacy. After the self-efficacy manipulation check, we assessed the main dependent variable individual creativity using a divergent thinking potential task, the AUT (Guilford, 1967). An attention check question right after the measure of the dependent variable indicated that all participants were paying attention. Hereafter, participants were informed about a supposed technical malfunction preventing them from interacting with their dyad partner, and all participants proceeded with completing the short Big Five personality inventory and providing their demographic information. Afterwards, participants were debriefed about the true nature of the study: participants were told that they had been randomly assigned to a low or high cultural competence feedback experimental condition regardless of their answers to the intercultural competence questions

(represented by the cultural assimilators). Participants were also told that in order to analyze the effects that working with a culturally different other can have, they had been randomly assigned to a cultural context condition which involved working with an “imaginary” partner from either their own cultural background or a very different cultural background such as the Kanak culture. After being debriefed, participants were thanked and paid \$2.20 for their time.

Results

Manipulation checks

We first checked that both experimental manipulations were effective. We found that the manipulation of the cultural background of the brainstorming partner was effective.

Participants who were told that they would brainstorm ideas with a Kanak partner reported a higher level of cultural distance with their partner, than participants who were told that they would brainstorm ideas with an American participant, $F(1,102) = 7.16, p < 0.01, \eta_p^2 = 0.07$.

We found that the manipulation of cultural self-efficacy was also effective. Indeed, participants who received a negative feedback on their cultural competence reported significantly lower levels of cultural self-efficacy, than participants who received a positive feedback, $F(1,102) = 15.59, p < 0.001, \eta_p^2 = 0.13$.

Main analyses

We used multiple regression to control for participants’ personality traits, gender and age. We found that none of the control variables significantly affected the results of the main analyses. In what follows, we therefore report the results of analyses without control variables.

Statistical analyses revealed that participants' fluency scores were statistically unaffected by experimental manipulations. Results using a 2 Cultural self-efficacy (Low vs. High) x 2 Cultural background of dyad partner (Same culture vs. Different culture) ANOVA with participants' fluency score as the dependent variable revealed an interaction effect that did not reach statistical significance, $F(1,100) = 1.59, p = 0.21, \eta_p^2 = 0.01$. In addition, neither manipulation of cultural self-efficacy, $F(1,100) = 0.004, p = 0.94$, nor the cultural background of partner, $F(1,96) = 1.87, p = 0.17$, had an impact on participants' fluency scores.

We first ran a 2 x 2 Analysis of Variance (ANOVA) with the *average* creativity scores as the dependent variable (i.e., the average creativity of all ideas produced by study participants). The two independent variables were cultural self-efficacy (Low vs. High) and the cultural background of dyad partner (Same vs. Different). Contrary to our expectations, the interaction effect was not significant, $F(1,96) = 0.17, p = 0.68, \eta_p^2 < 0.001$. Neither the level of cultural self-efficacy, $F(1,96) = 2.95, p = 0.09$, nor the cultural background of the partner, $F(1,96) = 0.06, p = 0.81$, had an impact on the average creativity score of participants.

Next, we ran the same 2 x 2 ANOVA this time with the score of the single most creative idea generated by the participant as the dependent variable. A significant interaction effect emerged, $F(1,91) = 7.30, p < 0.01, \eta_p^2 = 0.07$. The interaction effect is depicted in Figure 1.

Insert Figure 1 here

We ran a series of additional analyses to better understand the interaction effect. In line with our hypotheses, cultural self-efficacy only had a positive effect on the score of the most creative idea among participants who anticipated to brainstorm with a partner from a

different culture, $F(1,91) = 4.95, p < 0.05, \eta_p^2 = 0.05$. Cultural self-efficacy had no such effect among participants who anticipated to brainstorm with a partner from their own culture, $F(1,91) = 2.54, p = 0.11, \eta_p^2 = 0.03$.

Discussion

Our aim with Study 2 was twofold. First, we sought to test the causality of the relationship between cultural self-efficacy and creativity through experimental manipulation of cultural self-efficacy. Second, we wanted to provide evidence that cultural self-efficacy has added value over and beyond other forms of self-efficacy by showing that cultural self-efficacy predicts creativity *only* in bicultural dyads, and not in monocultural dyads. Analyses revealed that participants' fluency scores were not statistically affected by experimental manipulations. They also showed, that in line with our hypotheses, cultural self-efficacy had a positive effect on the single most creative idea generated by study participants, but only among participants who were anticipating to brainstorm ideas with someone from a different culture. Cultural self-efficacy had no such effect among participants who were anticipating to brainstorm ideas with a partner from the same culture.

In sum, the results of Study 2 suggest that the relationship between cultural self-efficacy and creativity in intercultural settings is causal. Additionally, the results suggest that the effect of cultural self-efficacy on creativity in intercultural settings cannot be attributed to other forms of self-efficacy given that the effect of our cultural self-efficacy manipulation was unique to participants anticipating an interaction with someone from a different culture than their own.

General Discussion

Our aim was to investigate whether cultural self-efficacy facilitates creativity in bicultural dyads. In Study 1, we found that cultural self-efficacy is positively associated with the creativity of ideas generated by bicultural dyads. With Study 2 we extended the findings of Study 1 in two ways. First, we provided evidence for the causal effect of cultural self-efficacy on creativity. Second, we showed that the observed effect is specific to *cultural* self-efficacy. In other words, because we observed the effect only among participants supposedly part of a bicultural dyad, and not among participants supposedly part of a monocultural dyad, it seems that cultural self-efficacy is indeed a predictor of creativity in bicultural dyads specifically, and not in any other type of dyad.

Theoretical and practical implications

Our findings have theoretical and practical implications. From a theoretical standpoint, our findings support Bandura's Social Cognitive Theory (SCT) by showing in a new context that self-efficacy beliefs affect behaviors. More specifically, we found positive effects of cultural self-efficacy on creative performance in bicultural dyads. Although we did not test the underlying mechanisms of the effect, we can assume that self-efficacy beliefs lead individuals to set higher goals and to persist longer in attaining them, which, in turn, lead to higher creative performance. Our findings also suggest that cultural self-efficacy is a domain specific form of self-efficacy. Indeed, cultural self-efficacy appears to be specifically relevant in multicultural contexts and not in monocultural contexts. This is in line with SCT, which mainly regards self-efficacy as being contextualized (Bandura, 1986). Nevertheless, SCT also acknowledges that self-efficacy beliefs pertaining to one specific domain can generalize to related domains as well. For example, if cultural self-efficacy is consistently associated with increased performance in the creative domain, it may end up influencing creative self-efficacy as well, which could, in turn, further reinforce the effects of cultural self-efficacy on creative

performance. Our work may have uncovered one effect in a complex chain of events that reinforce themselves through a feedback loop. This means that long-term benefits of cultural self-efficacy may be even greater than our studies suggest. More research is needed to investigate the potential virtuous circle of the relationship between cultural self-efficacy and creativity in intercultural settings.

From a practical standpoint, our findings suggest that individuals, schools, universities, human resource specialists, and organizations that wish to improve their creativity can capitalize on cultural self-efficacy. Investing on developing cultural self-efficacy could indeed lead to enhanced individual and collective creativity in intercultural contexts. The content of training modules aimed at fostering cultural self-efficacy could be based on the sources of self-efficacy described by SCT, such as performance accomplishments, vicarious experiences, verbal persuasion and emotional arousal (Bandura, 1986). Previous research suggests that cultural self-efficacy can be developed indirectly via cultural intelligence development through travel abroad (Rehg, Gundlach, & Grigorian, 2012), international experience (Petersdotter, Niehoff & Freund, 2017), learning and engagement in significant culture-related events known as cultural trigger events (Reichard et al., 2015), intercultural training (Cushner & Brislin, 1996) and more specifically intercultural contact-based training and attribution training (MacNab, Brislin & Worthley, 2012). Another research avenue that may contribute to the development of cultural self-efficacy in a more direct manner concerns methods that have been shown to target and specifically enhance the motivational dimension of cultural intelligence; including experiential training and learning (Alexandra, 2018; MacNab et al., 2012; Taras et al., 2013) and interactive and role play simulation exercises (Ozcelik & Paprika, 2010). Altogether, training exercises in which students would engage in intercultural interactions, observe intercultural interactions, remember successful intercultural interactions, or associate positive emotions with

intercultural interactions could be expected to facilitate cultural self-efficacy beliefs and ultimately creativity in intercultural settings.

Limitations and future research

Our studies also have limitations that should be addressed in future research. Although preliminary, findings of Study 1 suggest that dyadic creativity may only be as high as the creative self-efficacy of the *weaker* dyad member allows it to be. As already mentioned before, this could indicate a possible inhibitory effect of the weaker dyad member on the creative potential of the stronger dyad member. However, our study design does not allow to draw definitive conclusions here. Future research could use population scores of cultural self-efficacy as an anchor, and compare high-low dyads (i.e., dyads in which one member has a relatively high cultural self-efficacy, and the other member a relatively low cultural self-efficacy), with dyads in which both members are relatively high on cultural self-efficacy. Such a design would allow testing whether high-low dyads have a lower joint creative performance than high-high dyads. Moreover, if there is an inhibitory effect of the weaker dyad members, it would be interesting to investigate the mechanism: Do stronger dyad members for example actively dial down their creative potential, or are they perhaps less stimulated by their partner at a cognitive and/or psycho-social level? Future research could also investigate the conditions under which stronger dyad members ‘lift’ the creative potential of the weaker dyad members.

In Study 2, we did not measure trait levels of cultural self-efficacy. It may be possible that our self-efficacy manipulation mostly benefitted individuals with relatively low levels of self-efficacy, and that participants with relatively high trait levels of cultural self-efficacy were less affected by the experimental manipulation. This would be consistent with previous studies that found that self-efficacy manipulations do not easily affect participants with higher trait levels of self-efficacy (Eden & Aviram, 1993). Faced with obstacles or negative

feedback, individuals with high trait levels of self-efficacy appear to rely on psychological resources to cope with negative experiences. The fact that we do not have information on the trait levels of cultural self-efficacy in our sample makes it therefore difficult to know the true size of the effect of manipulating cultural self-efficacy on creativity. Indeed, the effect size that we found may be an under- or overestimation of the true effect size. Future research should therefore measure trait levels of cultural self-efficacy as well.

Finally, we encourage researchers to investigate the boundary conditions of the relationship between cultural self-efficacy and creativity in intercultural contexts. An interesting moderator could be the level of cultural distance between dyadic partners. Cultural distance can be defined as the level of differences between two cultures regarding values, communication styles, lifestyles, etc. (Shenkar, 2001; Sousa & Bradley, 2008). In general, the greater the cultural distance between two individuals, the more difficult social interactions are (Shenkar, 2001; Sousa & Bradley, 2008). It is therefore possible that there could be a threshold in the positive relationship between cultural self-efficacy and joint creativity, that we were not able to observe with our studies. The two studies described in our paper could be adapted to test this hypothesis. One option would be to replicate our studies by varying the level of cultural distance between participants. This would make it possible to observe at which levels of cultural difference the association between cultural self-efficacy and creativity emerges. Uncovering boundary conditions of the effect could contribute to a better understanding of the relationship between cultural self-efficacy and creativity in intercultural contexts, and it could have important theoretical and practical implications. On a more general note, throughout our studies creativity was assessed via tasks that actually measure participants' divergent thinking potential. It is important to highlight that creativity is not limited to divergent thinking. Future studies should replicate the presented studies using a variety of tasks that adequately and extensively measure participants' creative potential.

Considering the effects of globalization and the rise of intercultural interactions, discovering ways to foster positive and creative intercultural exchanges is important. Our study findings suggest that proactive effort aimed to increase individuals' cultural self-efficacy may result in visible changes in creativity.

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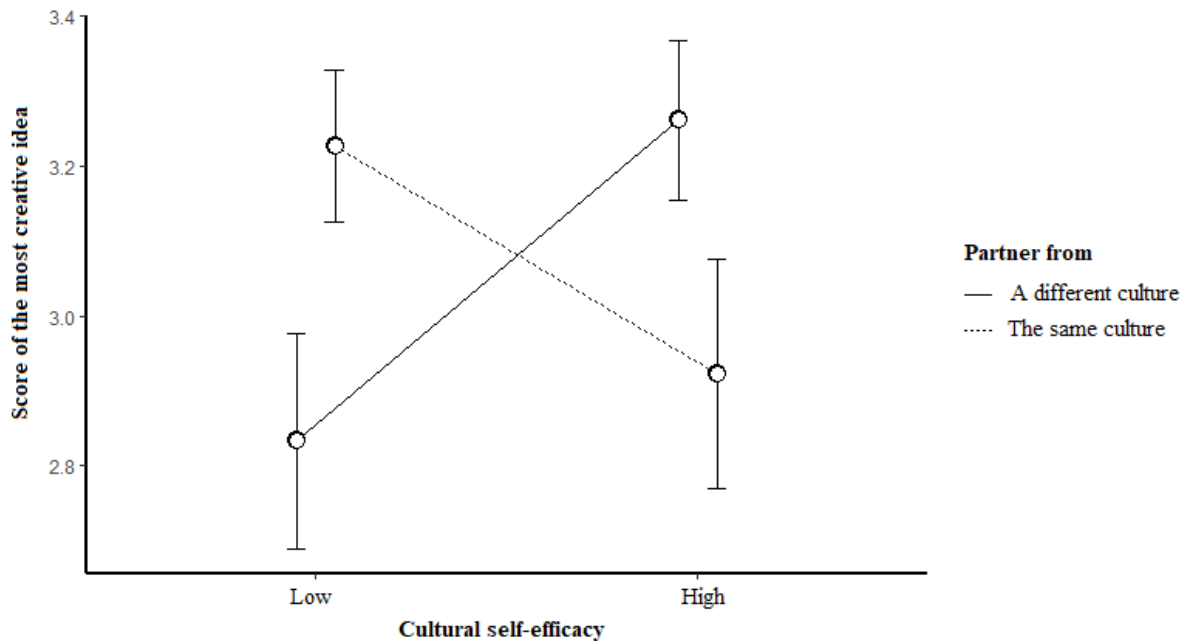
Table 1*Study 1. Descriptive Statistics*

	Mean	Standard Deviation	1	2	3	4	5
1. Average dyad cultural self-efficacy	3.92	0.46	-				
2. Stronger member cultural self-efficacy	4.24	0.51	0.88***	-			
3. Weaker member cultural self-efficacy	3.59	0.53	0.89***	0.56***	-		
4. Dyad most creative idea	3.42	0.85	0.25†	0.15	0.29*	-	
5. Average dyad creativity	2.33	0.49	0.31*	0.23	0.31*	0.79***	-
6. Dyad Fluency	6.31	2.45	0.35**	0.25†	0.37**	0.41**	0.14

Note. $N = 55$ dyads; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 1

Score of the most creative idea as a function of cultural self-efficacy (Low vs. High) and cultural background of dyad partner (Different vs. Same).



¹ For the purpose of the current study the scenarios depicted intercultural interactions between: British and Middle Easterners, Americans and Venezuelans, Malaysians and Chinese-Malaysians, Americans and Hawaiians, and Swedes and Spaniards. The cultural scenarios were selected in order to represent a variety of cultures and countries that differ in regard to their cultural values including power distance, individualism vs. collectivism, masculinity vs. femininity, uncertainty avoidance, long vs. short-term orientation, and restraint vs. indulgence (Cushner & Brislin, 1996).