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Research on the big-fish-little-pond effect has found that students with high rank in a low rank school have more favorable academic self-concepts than students with low rank in a high rank school. The big-fish-little pond effect has been primarily studied in school settings. Further, it remains unknown whether the effect generalizes to a racial-ethnic context, despite the fact that people often compare themselves with other members of their racial group and compare their racial group to other groups. The current research filled this gap by having White and Black participants (N = 107 and 106) complete a social perception test and receive feedback indicating that they had high rank in a racial group that performed relatively poorly or low rank in a racial group that performed relatively well. Because African Americans identify more strongly with their racial group than European Americans, I hypothesized that a significant big-fish-little-pond effect would only occur among White participants. However, results indicated that a significant and large big-fish-little-pond effect was obtained for both White and Black participants. That is, participants in both racial groups focused mostly on their performance relative to people of their own race during self-evaluation. Broadly, the current research contributes to the social comparison literature by demonstrating how self-evaluations are impacted by intergroup and intragroup comparisons involving race-ethnicity.

RACE-ETHNICITY AND THE BIG-FISH-LITTLE-POND EFFECT

by

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CHAPTER I

INTRODUCTION

The self-concept is a key component of personality and is associated with several measures of psychological adjustment, including depression, happiness, and motivation (Marsh & Seaton, 2015). Previous research has examined how students' rank in relation to other students at their school and their schools' rank in relation to other schools impacts students' academic self-concepts. Specifically, research on the frog-pond or big-fish-little-pond effect (BFLPE) suggests that students with high rank in a low rank school have more favorable academic self-concepts than students with low rank in a high rank school (Marsh & Parker, 1984; Zell & Alicke, 2009). Therefore, an average student will have lower academic self-evaluations when they attend a high ability school as opposed to a low ability school. Since the BFLPE has been primarily studied in school settings, it remains unknown whether it generalizes to other contexts. Specifically, it remains unknown whether the BFLPE generalizes to a racial-ethnic context, despite the fact that people often compare themselves to group members (Festinger, 1954; Suls & Wheeler, 2017) and often compare their social groups to other groups (Smith et al., 2012, 2020).

The present research will address this gap by examining how European Americans' and African Americans' self-evaluations are impacted when they simultaneously compare themselves to others in their racial-ethnic group (intragroup comparison) and their racial-ethnic group to a different racial-ethnic group (intergroup

comparison). Understanding how people of different races are impacted by intragroup and intergroup social comparisons is imperative given the racial diversity of the United States. The US population is made up of about 75% European Americans, with African Americans and Hispanic Americans making up about 13% and 19%, respectively (U.S. Census Bureau, 2019). In 2018, White non-Hispanic students made up about 53% of the school population and Black students and Hispanic students made up about 15% and 23%, respectively (U.S. Census Bureau, 2018). Thus, people are likely to engage in social comparisons that involve both racial ingroup and racial outgroup members and it is important to understand the impact of these comparisons on self-evaluations and affect.

Research on the BFLPE demonstrates that students focus more on intragroup comparisons indicating the student's own performance relative to classmates than intergroup comparisons indicating their school's performance relative to other schools (Marsh et al., 2014; Zell & Alicke, 2020). Informed by BFLPE research, the present study will examine the effects of intragroup and intergroup social comparisons on self-evaluations and affective reactions in a racial-ethnic context. Doing so will allow me to test whether the BFLPE extends from a school context to a racial-ethnic context. Additionally, it will allow me to explore whether the magnitude of the BFLPE differs between African Americans and European Americans in a racial-ethnic context.

Social Comparison

According to social comparison theory (Festinger, 1954), comparisons with others are a primary source of information that people use during self-evaluation of one's opinions and abilities. People strive for superiority when it comes to abilities and

frequently use others as a point of reference to evaluate the status of their abilities and performance (Wheeler & Suls, 2020). Although other information sources influence self-evaluations of ability, such as temporal comparison (i.e., comparing one's present performance to one's past performance in the same domain) and dimensional comparison (i.e., comparing one's performance in a domain to one's performance in a different domain), research suggests that social comparison often has the strongest influence on self-evaluations and is therefore a fundamental contributor to the self-concept (Van Yperen & Leander, 2014; Zell & Strickhouser, 2020).

Extensive research suggests that people are prone to engage in social comparisons and that these comparisons have a significant impact on a variety of outcomes, especially self-evaluations and affect (Alicke et al., 2013; Suls & Wheeler, 2017). A recent meta-analysis of 57 studies found that social comparisons had a small to medium impact on self-evaluations of ability and affect, such that self-evaluations and affect were more negative after comparing to a person who performed better than the participant (i.e., upward comparison) than after comparing to a person who performed worse than the participant (i.e., downward comparison; Gerber et al., 2018). Furthermore, favorable and unfavorable social comparisons trigger changes in reward-related brain activity, suggesting that social comparison effects extend beyond self-evaluations and affect (Bault et al., 2011; Fliessbach et al., 2007). Finally, social comparisons that indicate status in important groups are significantly associated with mental and physical health (Anderson et al., 2015; Zell et al., 2018).

Social comparisons can occur both within and between groups. Specifically, people engage in *intragroup comparisons* when they compare themselves to other members of a social group. For example, people may compare their own performance to the performance of other people in their school, workplace, family, country, or racial group. People with high rank in social groups have more favorable self-evaluations and affect than people with low rank (Alicke et al., 2013; Zell & Alicke, 2020). Additionally, people engage in *intergroup comparisons* by comparing the performance of an ingroup ("us") to relevant outgroups ("them"). People in high-rank groups generally have more favorable self-evaluations and affect than people in low-rank groups (Hirt et al., 1992; Zell & Alicke, 2009).

Big-Fish-Little-Pond Effect

The BFLPE is a type of social comparison that involves both intragroup and intergroup comparisons. Students compare themselves with others at their school (intragroup comparison) and compare their school with other schools (intergroup comparison). According to the BFLPE, academic self-concepts are positively associated with individual achievement and negatively associated with class average achievement (Marsh & Parker, 1984; Marsh & Seaton, 2015). Thus, students with high rank in a low-rank school perceive themselves more favorably than students with low rank in a high-rank school. For example, in one of the first studies documenting the BFLPE, over 2,000 students completed an academic self-concept measure and an academic ability measure, which consisted of intelligence, reading comprehension, and vocabulary tests (Marsh,

1987). Students in low-ability schools had higher academic self-concepts than equally able students in high-ability schools.

Research demonstrates that the BFLPE generalizes across different age groups and student populations. For example, the BFLPE was found in 4th grade students (Marsh et al., 2015), high school students (Marsh et al., 2007), gifted students (Marsh et al., 1995), academically disadvantaged students (Marsh et al., 2006), and in over 65 countries, such as Australia, Mexico, France, and Serbia (Nagengast & Marsh, 2012; Marsh et al., 2019). A recent meta-analysis that examined the BFLPE across 33 studies, including over a million participants from different age and cultural groups, obtained a medium-sized BFLPE (Fang et al., 2018). Moreover, a significant BFLPE was found among students in Asia, North America, Europe, Oceania, and other locations. Although most studies on the BFLPE are correlational in nature, experiments also provide causal evidence (e.g., Zell & Alicke, 2009; Zell & Lesick, 2020). Results from these experiments indicate that participants evaluate themselves more favorably when they are told that their performance ranked above average in a below average school as opposed to below average in an above average school. Altogether, these data suggest that the BFLPE is a robust, if not universal, phenomenon.

The BFLPE likely occurs because intragroup or local comparisons have a stronger impact on self-evaluations than intergroup or general comparisons (Zell & Alicke, 2010). For example, students who received both intragroup and intergroup comparisons focused more on the intragroup comparison, such that self-evaluations and affect were more dependent on how they performed at their school than how their school performed in

comparison to other schools (Zell & Alicke, 2009). Because intragroup comparisons involve people who are physically or relationally close, they are more local than intergroup comparisons, resulting in a stronger impact. Consistent with this argument, the BFLPE is larger when classrooms are the reference group rather than schools (Marsh et al., 2014), illustrating that the more local a comparison is (i.e. classroom reference group rather than school reference group) the stronger the BFLPE.

Not only is the BFLPE linked with self-evaluations, but research indicates that it also extends to positive emotions, such as pride and enjoyment, as well as negative emotions, such as anxiety and shame (Pekrun et al., 2019; Zell & Alicke, 2009). Regarding individual achievement and group achievement, success leads to positive emotions and failure leads to negative emotions. However, consistent with the BFLPE, individual achievement has a stronger impact on emotions than group achievement. Additionally, research indicates that the BFLPE on emotion is mediated by the self-concept (Pekrun et al., 2019, Study 2-3). In sum, these results indicate that the BFLPE obtains on both self-evaluations and emotions.

Although the vast majority of studies on the BFLPE involved academic groups (i.e., classes or schools), one study suggests that the BFLPE may extend to minimal groups, that is, groups defined by arbitrary criteria (Alicke et al., 2010). Each experimental session had 10 participants who were randomly divided into two groups of 5 by drawing letters out of a hat. Participants then completed a lie detection test and were told that they ranked best in their 5-person group but 6th overall (big-fish-little-pond; BFLP) or worst in their 5-person group but 5th overall (little-fish-big-pond; LFBP). Thus,

participants either ranked best in a group that performed relatively poorly or worst in a group that performed relatively well. Consistent with the BFLPE, participants in the BFLP condition had significantly higher self-evaluations than participants in the LFBP condition. Therefore, this study supports the BFLPE outside of an academic context and in a minimal group context. This suggests that the BFLPE may extend to other contexts, such as a racial-ethnic context.

Race-Ethnicity and the BFLPE

The BFLPE has been thoroughly studied with schools and classes as the reference group. However, the BFLPE may manifest in other contexts, such as those that involve race-ethnicity. Given the racial diversity of the US population (U.S. Census Bureau, 2018, 2019), Americans are likely to engage in social comparisons that involve race-ethnicity. Specifically, Americans may compare themselves with other members of their racial ingroup as well as compare their racial group to other racial groups. Therefore, the BFLPE, which includes both intergroup and intragroup comparisons, may extend beyond schools to a racial-ethnic context.

However, although people may neglect intergroup comparison information during self-evaluations in a school context, three theories suggest that intergroup comparisons may have a stronger impact in a racial-ethnic context. First, according to social identity theory, people quickly and commonly identify themselves with social groups and base self-evaluations on the standing of important group identities, such as their race-ethnicity (Ellemers & Haslam, 2012; Hogg, 2016). Second, according to relative deprivation theory, people feel deprived, resentful, and a sense of injustice after comparing a group

that they identify with, such as their racial-ethnic group, to another group that is better off (Smith et al., 2012, 2020). Third, according to theory and research on stereotype threat, activating the stereotype that one's racial-ethnic group is inferior to other groups negatively impacts emotions and performance, especially when the performance task is important (Spencer et al., 2016; Steele, 1997). Thus, social identity, relative deprivation, and stereotype threat theories suggest that people make intergroup comparisons involving race-ethnicity and that these comparisons impact self-evaluations and affect.

Previous research indicates that the BFLPE is robust across different cultural and racial-ethnic groups when examined in a school context (Fang et al., 2018; Marsh et al., 2019). However, the magnitude of the BFLPE may vary across racial groups when examined in a racial-ethnic context. African Americans tend to identify more strongly with their racial group than do European Americans (Nelson et al., 2013; Strickhouser et al., 2019) and those who identify more with their social group may feel heightened deprivation and anger when that group is disadvantaged (Richeson & Sommers, 2016). For example, research indicates that native-born Muslims report more relative deprivation than foreign-born Muslims, likely because native-born Muslims identify more strongly with their group than foreign-born Muslims (Obaidi et al., 2019). Additionally, people who strongly identify with their group are impacted more by group successes and failures than those who do not (see Dovidio & Jones, 2019). Therefore, whereas European Americans may focus primarily on their individual performance and neglect their racial group's performance during self-evaluation (strong BFLPE), African Americans may focus equally on both their individual performance and their racial

group's performance (no BFLPE). Thus, race-ethnicity may moderate the BFLPE when examined in a racial-ethnic context.

Consistent with this argument, research indicates that the BFLPE is reduced when people strongly identify with their group (Gardner et al., 2002, Study 2). Undergraduates at Northwestern University took a social perception test and received manipulated performance feedback. Participants in a BFLP condition were told that they performed as well or better than 85% of the other students at their university, but students at their university did poorly in comparison to other universities. Participants in a LFBP condition were told that they performed as well or better than 15% of other students at their university, but students at their university did well in comparison to students at other universities. The BFLPE was very large for women but was significantly reduced and not statistically significant for men. Additional analyses suggested that this pattern occurred because men more strongly identified with their school than women.

Other research also suggests that the BFLPE in an academic context is reduced when people strongly value their social groups (McFarland & Buehler, 1995, Study 2). Undergraduates at Simon Fraser University (SFU) completed a collective self-esteem scale, which examined the degree to which the participants valued their social groups in general. Then, participants completed a social perception test and were either told that they performed as well or better than 70% of SFU students, but SFU students did poorly in comparison to students at the University of British Columbia (UBC; BFLP condition) or that they performed as well or better than 30% of SFU students, but SFU students did well in comparison to UBC students (LFBP condition). The BFLPE was very large

among participants who had low collective self-esteem (i.e., those who weakly valued their social groups) but was significantly reduced and not statistically significant for participants with high collective self-esteem (i.e., those who strongly valued their social groups). Similarly, a follow-up study found that the BFLPE was reduced among students from collectivist cultures, presumably because collectivists value their ingroup more so than individualists (McFarland & Buehler, Study 3).

Lastly, research indicates that the BFLPE is reduced when people receive feedback about a social group that they strongly identify with (McFarland & Buehler, 1995, Study 4). Participants rated the degree to which they held a strong positive bond with seven social groups (i.e., people of the same gender, age, ethnic background, socioeconomic level, religion, education, and major). After completing a social perceptiveness test, participants were given feedback about the group that they valued most or least (14% of participants received feedback about their racial group). In the BFLP condition, participants were told that they performed as well or better than 70% of their group members and that their group performed poorly overall (i.e., worse than people in other groups). In the LFBP condition, participants were told that they performed as well or better than 30% of their group members and that their group performed well overall (i.e., better than people in other groups). A significant and large BFLPE was obtained among participants who received feedback about their least valued group. However, a nonsignificant and small BFLPE was obtained among participants who received feedback about their most valued group. These results suggest that the BFLPE is reduced when people receive feedback about a group for which they have a

strong positive bond. Taken together, research suggests that people who strongly identify with relevant groups may show no BFLPE.

The Present Research

The vast majority of studies on the BFLPE have set the reference group as the participant's school or classroom. However, according to social identity (Ellemers & Haslam, 2012), relative deprivation (Smith et al., 2012, 2020), and stereotype threat theories (Steele, 1997) people frequently engage in intergroup social comparisons, including those based on race. Thus, the present research had participants compare themselves to others in their racial group and compare their racial group to another racial group. Previous studies found that people who strongly identify with their university or with groups in general show no BFLPE (Gardner et al., 2002; McFarland & Buehler, 1995). Therefore, because African Americans identify more strongly with their racial group than European Americans (Nelson et al., 2013; Strickhouser et al., 2019), African Americans should focus less on their individual performance and more on their racial group's performance than European Americans, resulting in a nonsignificant BFLPE.

To test this possibility, the current research used a 2 (racial group: African American, European American) by 2 (feedback condition: BFLP, LFBP) between-subjects design. Participants first took a social perception test and then received manipulated feedback about their performance. In the BFLP condition, participants were told that they performed much better than others in their racial group and that their racial group performed much worse than another racial group. In the LFBP condition, participants were told that they performed much worse than others in their racial group

and that their racial group performed much better than another racial group.

Because European Americans do not strongly identify with their race, White participants should focus primarily on their rank relative to European Americans, resulting in a large BFLPE (hypothesis 1). That is, White participants' self-evaluations and affect will be more dependent on how their performance compares to other European Americans than how European Americans compare to African Americans. Conversely, because African Americans identify strongly with their racial group, Black participants' self-evaluations and affect in the BFLP condition should be similar to Black participants' self-evaluations and affect in the LFBP condition, illustrating no BFLPE (hypothesis 2).

CHAPTER II

METHOD

Below, I report how I determined my sample size and all data exclusions, manipulations, and measures in the study. All materials, data, supplemental analyses, and a pre-registration are publicly available at https://osf.io/d57ha/?view_only=e95e0898c2474980bbf64e8f59127663.

Participants

Participants were recruited via Prolific Academic, which includes a screening tool that allows researchers to recruit specific demographic groups, such as racial-ethnic groups. Specifically, participation was restricted to those who met the following criteria: identify as Black/African American or White/Caucasian American, identify as female or male, born in the United States, reside in the United States currently, first language is English, 18—39 years old, have a study approval rate above 80%, and indicated that they are comfortable participating in deception studies. I used a balanced design to ensure that I had approximately the same number of Black women, Black men, White women, and White men in our total sample. Prolific Academic participants have been found to produce better quality data than other online platforms (Peer et al., 2017). Participants were given $0.85 to participate in the 7-minute study.

A total of 308 participants were recruited via Prolific. I excluded a total of 95

participants for failing the individual manipulation check (11), the group manipulation check (41), the attention check (18), the suspicion check (22), or failing to complete all study measures (15). After data exclusions, there were 213 total participants. In terms of gender, 106 participants identified as female, 105 identified as male, and 1 identified as other. In terms of race-ethnicity, 107 participants identified as White and 106 identified as Black. The average age was 28.97 years old with a standard deviation of 5.37. A power analysis conducted before the study using G*Power indicated that the planned minimum sample size of 210 participants would provide 95% power to detect a medium effect (f = .25, df numerator = 1, groups = 4, alpha level = .05). Prior research examining moderation of the BFLPE across demographic groups obtained large interaction effects (f = .52 for Gardner et al., 2002 and f = .58 for McFarland & Buehler, 1995). Thus, I anticipated a medium effect for the critical 2 X 2 interaction in this study.

Procedures

Social Perception Test

Participants completed the study online using Qualtrics. Participants were told that the purpose of the study was to measure their social perceptiveness, which was described as the ability to make accurate judgments about other people, and to examine whether European Americans and African Americans differ in their social perceptiveness. Participants next saw 40 faces (20 women, 20 men; 10 White, 10 Black, 10 Hispanic, and 10 Asian), which were taken from the Chicago Face database (Ma et al., 2015; see Appendix B). All faces had a neutral expression. Participants were asked to judge each face based on extraversion, religion, and sexual orientation, using a 2-point

scale (1 = *extravert, religious, straight*, 2 = *introvert, not religious, gay/lesbian*; see Appendix C). Faces were presented one at a time and in a randomized order. Participants made all three judgments for each face before moving to the next target. Previous research found that people evidence above-chance accuracy when judging personality (Little & Perrett, 2007), religion (Rule et al., 2010), and sexual orientation from faces (Rule & Ambady, 2008).

Performance Feedback

Participants were randomly assigned to one of two feedback conditions (see Appendix D). Participants in the BFLP condition were told that they ranked much better than members of their racial group and that their racial group performed much worse than the opposing racial group. For example, White participants in this condition were told that they ranked much better than other European Americans and that European Americans performed much worse than African Americans. Participants in the LFBP condition were told that they ranked much worse than members of their racial group and that their racial group performed much better than the opposing racial group. For example, Black participants in this condition were told that they ranked much worse than other African Americans and that African Americans performed much better than European Americans. The order of the two feedback conditions was fixed such that intragroup comparison information was provided before intergroup comparison information.

Dependent Measures

After reviewing the feedback, participants completed several dependent measures

(see Appendix E). First, participants completed a 3-item measure of self-evaluations (α = 0.86), which asked them to evaluate their performance, ability, and task-specific ability (e.g., *How well do you think you performed on the social perception test?*; Zell & Strickhouser, 2020) using a 7-point scale (1 = *very poorly/bad*, 7 = *very well/good*). Second, participants completed a 6-item measure of performance-related affect (α = 0.86; e.g., *How satisfied do you feel about your performance on the social perception test?*; Zell & Strickhouser, 2020) using a 7-point scale (1 = *not at all*, 7 = *extremely*), which indicated how satisfied, proud, sad, discouraged, happy, and distressed they felt about their performance.

Afterward, participants completed two exploratory measures, a 3-item group-evaluations scale (α = 0.90; e.g., *As a group, how well did African Americans (European Americans) perform on the social perception test?;* Zell & Alicke, 2009) using a 7-point scale (1 = *very poorly/bad*, 7 = *very well/good*), a 4-item racial identity relevance measure (α = 0.80; e.g., *I often regret that I belong to my racial group.*; Crocker et al., 1999) using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), and a 1-item group SES measure (e.g., *How would you rate the status of African Americans in comparison to European Americans*; adapted from Adler et al., 2000) using a 7-point scale (1 = *much lower status*, 7 = *much higher status*).

Participants also completed an attention check, which asked them to click the third option in a 7-point rating scale, and two manipulation checks, which asked participants whether they performed much better or much worse than other same-race participants (intragroup comparison manipulation check) and whether their racial group

performed much better or much worse than the other group (intergroup comparison manipulation check; see Appendix F). Additionally, participants were asked an open-ended question about whether they had suspicion about any part of the study (*Did anything about the study seem suspicious?*). I coded responses based on whether the participant indicated suspicion about the performance feedback. Lastly, participants were asked a set of demographic questions, including their gender, age, and race/ethnicity.

Data Exclusions

As per my pre-registration, the following exclusions were applied: 15 participants for failing to complete all study measures, 11 participants for failing the individual manipulation check, 41 participants for failing the group manipulation check, 18 participants for failing the attention check, and 22 participants for failing the suspicion check. I coded the suspicion check based on whether the participants reported any suspicion about the performance feedback being made up (e.g., "Yes. I believe the rankings were made up."). The pattern of results for self-evaluations and performance-related affect was similar when excluded participants were retained (see below for additional details).

CHAPTER III

RESULTS

There were no significant effects of gender in this research. Thus, gender is not discussed further. Zero-order correlations among measures are provided in Appendix A: Table 1.

Self-Evaluations

A 2 (participant race: African American, European American) X 2 (feedback condition: BFLP, LFBP) analysis of variance was conducted on self-evaluations. There was a significant main effect of feedback condition, $F(1, 209) = 90.18$, $p < .001$, $\eta_p^2 = 0.30$ (see Appendix A: Figure 1). Across racial groups, self-evaluations were more positive when participants were in the BFLP condition ($M = 4.83$, $SD = 1.24$) than the LFBP condition ($M = 3.08$, $SD = 1.44$). However, there was a nonsignificant main effect of race, $F(1, 209) = 1.33$, $p = .250$, $\eta_p^2 = 0.01$, and a nonsignificant interaction of race and feedback condition, $F(1, 209) = 1.71$, $p = .193$, $\eta_p^2 = 0.01$. Planned comparisons examined the effect of feedback condition within each racial group. Consistent with hypothesis 1, there was a significant and very large BFLPE for European Americans, $t(209) = 5.81$, $p < .001$, $d = 1.19$. In contrast with hypothesis 2, however, there was also a significant and very large BFLPE for African Americans, $t(209) = 7.62$, $p < .001$, $d = 1.40$. Results for self-evaluations did not change substantially when excluded participants were retained (see Appendix A: Table 2). Specifically, a 2 (participant race) X 2

(feedback condition) ANOVA yielded a significant and large main effect of feedback condition, $F(1, 288) = 108.66$, $p < .001$, η_p^2

= 0.27, a small but significant main effect of race, $F(1, 288) = 4.41$, $p = .037$, $\eta_p^2 = 0.02$, and a non-significant interaction of race and feedback condition, $F(1, 288) = 1.69$, $p = .194$, $\eta_p^2 = 0.01$.

Performance-Related Affect

Parallel results were obtained for performance-related affect (see Appendix A: Figure 2). Specifically, a 2 (participant race) X 2 (feedback condition) ANOVA yielded a significant main effect of feedback condition, $F(1, 209) = 33.102$, $p < .001$, $\eta_p^2 = 0.14$. Across racial groups, affect was more positive in the BFLP condition ($M = 5.12$, $SD = 1.25$) than in the LFBP condition ($M = 4.11$, $SD = 1.33$). However, there was a non-significant main effect of race, $F(1, 209) = 0.83$, $p = .362$, $\eta_p^2 < 0.01$, and a nonsignificant interaction of race and feedback condition, $F(1, 209) = 2.99$, $p = .085$, $\eta_p^2 = 0.01$. Consistent with hypothesis 1, there was a significant and medium BFLPE for European Americans, $t(209) = 2.85$, $p = .005$, $d = 0.58$. Contrary to hypothesis 2, however, there was a significant and large BFLPE for African Americans, $t(209) = 5.28$, $p < .001$, $d = 0.98$.

The pattern of results for performance-related affect was similar when excluded participants were retained (see Appendix A: Table 2). Specifically, there was a nonsignificant main effect of race, $F(1, 288) = 2.70$, $p = .102$, $\eta_p^2 = 0.01$, and a significant main effect of feedback condition, $F(1, 288) = 40.97$, $p < .001$, $\eta_p^2 = 0.13$. The interaction between race and feedback condition did reach statistical significance, but the effect size was very small and similar to that obtained in the primary analysis, $F(1, 288) = 5.29$, $p =$

.022, $\eta_p^2 = 0.02$. Therefore, the change in significance likely resulted merely from an increase in statistical power.

Group-Evaluations

There was a significant but small main effect of race, $F(1, 209) = 4.24$, $p = .041$, $\eta_p^2 = 0.02$ (see Appendix A: Figure 3). Across feedback conditions, Black participants rated their racial group more favorably ($M = 4.34$, $SD = 1.86$) than White participants ($M = 4.03$, $SD = 1.61$). Additionally there was a significant and very large main effect of feedback condition, $F(1, 209) = 198.65$, $p < .001$, $\eta_p^2 = 0.49$. Across racial groups, participants rated their racial group much more favorably when they were in the LBFP condition ($M = 5.39$, $SD = 1.21$) than the BFLP condition ($M = 2.99$, $SD = 1.32$). Lastly, there was a significant interaction, $F(1, 209) = 5.53$, $p = .020$, $\eta_p^2 = 0.03$. In the BFLP condition, there was no significant effect of race on group-evaluations, $t(209) = 0.21$, $p = .836$, $d = 0.04$. In the LFBP condition, however, there was a significant difference, $t(209) = -3.11$, $p = .002$, $d = 0.65$. Specifically, Black participants in the LFBP condition rated their racial group more favorably than White participants.

Racial Identity Relevance

Consistent with previous research (Nelson et al., 2013; Strickhouser et al., 2019), a significant main effect of race was obtained, $F(1, 209) = 41.016$, $p < .001$, $\eta_p^2 = 0.16$ (see Appendix A: Table 3). Across feedback conditions, Black participants identified more with their race ($M = 5.95$, $SD = 1.17$) than White participants ($M = 4.89$, $SD = 1.24$). No significant main effect of feedback condition, $F(1, 209) = 2.28$, $p = .132$, $\eta_p^2 =$

0.01 or interaction of race and feedback condition was found, $F(1, 209) = 0.18$, $p = .676$, $\eta_p^2 < 0.01$.

Group SES

Lastly, there was a significant main effect of race for group SES, $F(1, 209) = 4.168$, $p = .042$, $\eta_p^2 = 0.02$. Across feedback conditions, Black participants rated the status of African Americans ($M = 3.39$, $SD = 1.32$) more favorably than White participants ($M = 3.04$, $SD = 1.20$; see Appendix A: Table 3). However, no significant main effect of feedback condition, $F(1, 209) = 1.95$, $p = .164$, $\eta_p^2 = 0.01$, or interaction of race and feedback condition was found, $F(1, 209) = 0.30$, $p = .584$, $\eta_p^2 < 0.01$.

Moderated Mediation Analyses

Previous research indicates that the BFLPE is reduced among people who strongly value their social group (Gardner et al., 2002; McFarland & Buehler, 1995). Accordingly, I conducted a moderated mediation analysis that examined whether the effect of feedback condition on self-evaluations was moderated by race and mediated by racial identity relevance. To conduct this analysis, I used PROCESS Model 8 with 5,000 bootstrapped samples (Hayes, 2018, see Appendix A: Figure 4). Feedback condition was entered as the independent variable, race was entered as the moderator, racial identity relevance was entered as the mediator, and self-evaluations was entered as the dependent variable. The index of moderated mediation for self-evaluations was not significant, $b = -0.02$, $SE = 0.06$, 95% CI [-0.15, 0.08]. This result indicated that there was no significant indirect effect between feedback condition and self-evaluations that was moderated by race and mediated by racial identity relevance.

The same moderated mediation analysis was conducted on performance-related affect to determine whether the effect of feedback condition on performance-related affect was moderated by race and mediated by racial identity relevance (see Appendix A: Figure 5). The index of moderated mediation for performance-related affect was not significant, b = -0.03, SE = 0.08, 95% CI [-0.21, 0.13], indicating that there was no significant indirect effect between feedback condition and affect that was moderated by race and mediated by racial identity relevance.

CHAPTER IV

GENERAL DISCUSSION

Research on the BFLPE demonstrates that students focus more on intragroup comparisons indicating the student's own performance relative to classmates than intergroup comparisons indicating their school's performance relative to other schools (Marsh et al., 2014; Zell & Alicke, 2020). Therefore, students with high rank in a low rank school have more favorable academic self-concepts (Marsh & Parker, 1984), self-evaluations (Zell & Alicke, 2009), and affect (Pekrun et al., 2019) than students with low rank in a high rank school. However, the vast majority of studies on the BFLPE have set the reference group as either the student's school or classroom. Thus, it remains unknown whether the effect generalizes to a racial-ethnic context. Addressing this gap is necessary because of the racial diversity of the United States (U.S. Census Bureau, 2019) as well as the fact that people often compare themselves with other group members and compare their social groups to other groups (Smith et al., 2020; Suls & Wheeler, 2017).

I argued based on social identity theory (Ellemers & Haslam, 2012; Hogg, 2016), relative deprivation theory (Smith et al., 2012, 2020), and research on stereotype threat (Spencer et al., 2016; Steele, 1997) that people make intergroup comparisons involving race-ethnicity and that these comparisons impact self-evaluations and affect.

Additionally, previous research indicated that the BFLPE was nonsignificant when people received feedback about a group that they strongly identified with (Gardner et al., 2002; McFarland & Buehler, 1995). Black people tend to identify more with their racial group than White people. Therefore, I hypothesized that White participants would show a significant BFLPE (hypothesis 1), but that Black participants would show a nonsignificant BFLPE (hypothesis 2).

In the present research, White and Black participants completed a social perception test, were given intragroup and intergroup comparison feedback about their performance, and completed several dependent measures, including a measure of self-evaluations and performance-related affect. Consistent with hypothesis 1, there was a statistically significant and medium-to-large BFLPE for White participants on self-evaluations and affect. Specifically, White participants in the BFLP condition evaluated themselves more favorably and felt better about their performance than White participants in the LFBP condition. However, in contrast with hypothesis 2, there was also a statistically significant and large BFLPE for Black participants. Specifically, Black participants in the BFLP condition evaluated themselves more favorably and felt better about their performance than Black participants in the LFBP condition. Although not significantly different, the effect of feedback condition on self-evaluations and affect was slightly larger among Black participants (d = 1.40; d = 0.98) than White participants (d = 1.19; d = 0.58). Taken together, these results suggest that the BFLPE extends to a racial-ethnic context for both White and Black participants.

My exploratory analyses also led to some significant findings. Consistent with previous research (Nelson et al., 2013; Strickhouser et al., 2019), there was a significant and large effect of race on racial identity relevance, such that Black participants identified more strongly with their racial group than White participants. However, the relationship between feedback condition and self-evaluations was not moderated by race and mediated by racial identity relevance. The same was found for performance-related affect. Therefore, the BFLPE was evident for both White and Black participants, despite Black participants identifying more strongly with their racial group. These results suggest that the magnitude of the BFLPE is not affected by the degree to which people identify with their group.

Exploratory analyses also indicated that there was a significant and very large main effect of feedback condition on group-evaluations. Specifically, participants in the LFBP condition rated their group much more favorably than participants in the BFLP condition. These results indicate that participants understood and retained group rank information, ruling out the possibility that participants ignored or misunderstood it. Additionally, Black participants evaluated the status of African Americans in society more favorably than White participants. However, the difference between racial groups was relatively small. Further, both White and Black participants perceived African Americans' status to be lower than European Americans. Future research is needed to better understand these differences in ratings of group SES.

Implications

The present study contributes to the BFLPE literature in several ways. First, it replicates the BFLPE in an experimental setting. Most of the research on the BFLPE has utilized correlational designs, which prevents causal conclusions (Fang et al., 2018; Marsh & Seaton, 2015). Initially, a few experiments provided causal support for the BFLPE (Gardner et al., 2002; McFarland & Buehler, 1995; Zell & Alicke, 2009), but these experiments had low statistical power, with samples ranging from 10 to 30 participants per condition. Recently, three experiments replicated the BFLPE, with sample sizes of about 45 participants per condition, after exclusions (Zell & Lesick, 2020). The present study had about 50 participants per condition, after exclusions. Therefore, the present research joins only a small number of experimental studies that provide causal evidence for the BFLPE, and by using a relatively high-powered design, it increases confidence in the reliability of these findings.

Second, the present research is, to my knowledge, the first study that focuses on the BFLPE in a racial-ethnic context. Most research on the BFLPE set the reference group as either the students' class or school (Marsh et al., 2007, 2014). There have only been two studies that examined the BFLPE outside of an academic context, setting the reference group as either a minimal group (Alicke et al., 2010) or a select social group rated as highly important or unimportant by the participant (e.g., age, gender, or ethnicity; McFarland & Buehler, 1995, Study 4). The present study found consistent evidence for the BFLPE in a racial-ethnic context, which suggests that the BFLPE may extend beyond an academic context to other contexts. In short, the present research joins a small number

of studies that have studied the BFLPE outside of an academic context and is the only study that has obtained a BFLPE in a racial-ethnic context.

Third, the present research demonstrates that the BFLPE is evident among people with high and low racial identity relevance. Although prior research found that the BFLPE is nonsignificant among people who strongly identify with their group (Gardner et al., 2002; McFarland & Buehler, 1995), the present research indicated that the BFLPE was evident regardless of racial identity relevance. The present study's results are consistent with correlational research on the universality of the BFLPE. Specifically, prior research in an academic context obtained a significant BFLPE across age, academic ability, socioeconomic status, and across a variety of countries and cultures (Fang et al., 2018; Marsh & Seaton, 2015). The present research focused on the BFLPE in a racial-ethnic context and found that it replicated across both White and Black adults in the United States.

Limitations

Although the current study extended research on the BFLPE to a racial-ethnic context, the current study did have limitations. First, I planned to counterbalance the feedback, but due to a technical error, the feedback was provided in a fixed order. Specifically, all participants were shown the individual feedback before the group feedback. Therefore, participants may have focused more on the feedback that was shown first (i.e., individual feedback), making the individual feedback more impactful. However, previous research found a BFLPE even when the individual and group feedback were counterbalanced (Zell & Alicke, 2009; Zell & Lesick, 2020). Additionally,

only participants who correctly answered feedback manipulation checks were included in the analyses and the group-evaluation results indicated that participants did understand the group feedback. Therefore, it is unlikely that counterbalancing the feedback would have significantly changed the present study's results.

Second, by having only BFLP and LFBP conditions, I was unable to make conclusions about the impact of intergroup comparison feedback when provided alone. Having two control conditions, where participants only receive feedback stating that their racial group either performed much better or much worse than a different group, would allow me to test whether intergroup comparison feedback is more impactful in a racial-ethnic context for Black participants than White participants. Although intergroup comparisons had no effect on self-evaluations when provided alongside intragroup comparisons, intergroup comparisons may have an effect when provided alone (Zell & Alicke, 2009), and this effect may be especially pronounced for those who strongly identify with their group.

Lastly, the intergroup comparison feedback was limited to two racial groups. Specifically, participants were told that their racial group performed either much better or much worse than a different racial group. It is possible that intergroup comparison feedback would be more impactful if it involved a larger set of groups. For example, participants could be told that their racial group had high rank or low rank in relation to several groups. Previous research indicates that participants neglect intergroup comparison feedback, resulting in a BFLPE, both when this feedback compares the participant's group to one other group (McFarland & Buehler, 1995, Study 2; Alicke et

al., 2010) or several groups (Gardner et al., 2002; Zell & Lesick, 2020). Nonetheless, it remains possible that limiting intergroup comparison feedback to only two groups decreases its impact when examined in a racial-ethnic context.

Future Directions

Future research should examine whether the BFLPE extends to other contexts in which people identify strongly with their group, such as other racial-ethnic, gender, religious, and cultural groups. In particular, future research may compare Hispanic Americans and European Americans, females and males, as well as people in different religions or countries. The present research argues that the BFLPE is not only evident in an academic context, but also in a racial-ethnic context. Research in other group contexts is necessary to determine whether the BFLPE is a universal effect, that occurs across a variety of contexts. One direct extension of the present research would be to examine whether the BFLPE in a racial-ethnic context obtains when examining other racial-ethnic minority groups in the United States, including Asian and Hispanic Americans. Racial minority group members may identify more strongly with their race than White people (Strickhouser et al., 2019) and thus provide another opportunity to test whether group identification moderates the BFLPE in a racial-ethnic context. Although more research is needed, the present work suggests that the BFLPE may extend to other contexts in which people receive both intragroup and intergroup social comparison information.

Additionally, future studies should directly replicate prior research that examined whether strength of group identification moderates the BFLPE. Previous research that explored moderation of the BFLPE across participants with high versus low group

identification had sample sizes ranging from 10 to 20 participants per condition (Gardner et al., 2002, Study 2; McFarland & Buehler, 1995, Study 2-4). It is possible that due to low statistical power, prior research may have obtained a false positive result, suggesting that participants with high versus low group identification yielded a smaller BFLPE. However, the present research contained 213 total participants, reaching 95% statistical power, and had over 50 participants in each condition. Despite having higher statistical power, the present study did not find the moderation effect that previous studies obtained. Directly replicating prior research with larger samples will help clarify whether group identification moderates the strength of the BFLPE.

Future research is also needed to clarify the meaning of our exploratory results, specifically group-evaluations and group SES. The present research found that Black participants rated their racial group significantly more positively in the LFBP condition than did White participants and also that Black participants evaluated their group's SES significantly more favorably than White participants. The present research is unable to explain why these results occurred. Therefore, future research that focuses on the impact of intragroup and intergroup comparisons on group-evaluations, in addition to research that focuses on group SES ratings, is needed.

Finally, future research should examine whether changes to the study's setting or instructions would significantly impact results. Specifically conducting the present research in an in-person setting would increase control of the study environment. However, the present research found a large BFLPE for both White and Black participants in an online setting, which suggests that conducting the study in an in-person

setting is not necessary to obtain a BFLPE. Future research may also want to provide a more detailed introduction to the social perception test. Informing participants that people have above-chance accuracy when judging personality (Little & Perrett, 2007), religion (Rule et al., 2010), and sexual orientation from faces (Rule & Ambady, 2008) may increase the believability of the test and thus lower exclusions due to suspicion.

Conclusions

The present study contributes to the BFLPE literature by being the first to examine the BFLPE in a racial-ethnic context. Results indicated that the BFLPE extends to a racial-ethnic context for both European Americans and African Americans. Future research is needed to understand why a large BFLPE occurs in a racial-ethnic context, even among those who strongly identify with their racial group. Moreover, although results of the present study indicated that the BFLPE extends to a racial-ethnic context, it remains to be seen whether the BFLPE extends to other contexts in which people strongly identify with their social groups (e.g., gender, religion, and country). In sum, future research is needed to identify the contexts in which the BFLPE obtains and the conditions under which it is moderated by group identification.

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APPENDIX A.

TABLES AND FIGURES

Table 1

Zero-Order Correlations among Measures by Race

	1	**2**	**3**	**4**	**5**	**6**
1. Feedback Condition	–	.52**	.28**	-.62**	.07	-.14
2. Self-Evaluations	.58**	–	.67**	-.22 *	.22*	-.04
3. Affect	.44**	.66**	–	-.14	.28**	-.03
4. Group-Evaluations	-.76**	-.48**	-.44**	–	.04	.25**
5. Racial-Identification	.14	.11	.22*	-.10	–	.11
6. Group SES	-.06	.02	.01	.02	.003	–

Note. Correlations for White participants are above the diagonal. Correlations for Black participants are below the diagonal. Feedback condition was coded 1 (BFLP) and 0 (LFBP). * $p < .05$, ** $p < .01$

Table 2

Means (SD) Before and After Exclusions

Condition	Before Exclusions	After Exclusions
Self-Evaluations		
Black, BFLP	5.13 (1.22)	5.06 (1.28)
Black, LFBP	3.26 (1.63)	3.07 (1.54)
White, BFLP	4.59 (1.19)	4.60 (1.16)
White, LFBP	3.14 (1.35)	3.10 (1.35)
Affect		
Black, BFLP	5.37 (1.68)	5.35 (1.21)
Black, LFBP	4.08 (1.48)	4.04 (1.47)
White, BFLP	4.79 (1.24)	4.89 (1.27)
White, LFBP	4.18 (1.17)	4.18 (1.18)

Note. BFLP = big-fish-little-pond, LFBP = little-fish-big-pond.

Table 3

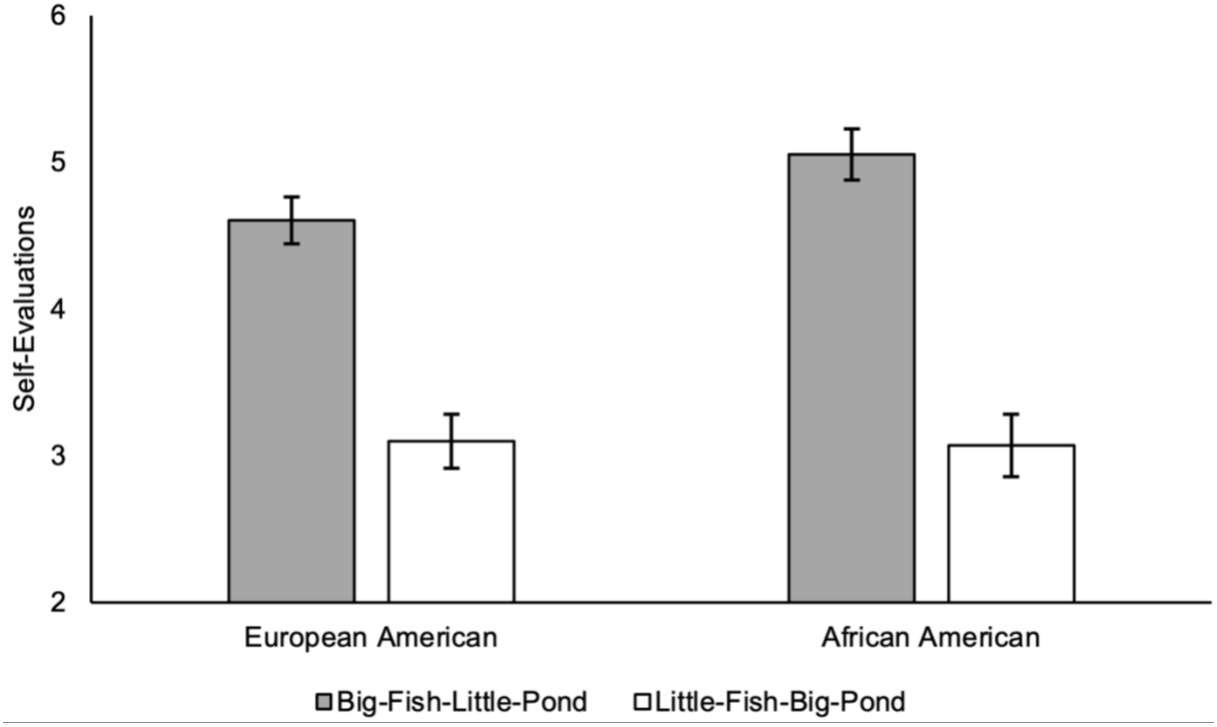
Means (SD) for Exploratory Measures by Condition

Condition	Racial Identification	Group SES
Black, BFLP	6.10 (1.17)	3.31 (1.21)
Black, LFBP	5.78 (1.15)	3.46 (1.43)
White, BFLP	4.98 (1.19)	2.87 (1.14)
White, LFBP	4.80 (1.30)	3.20 (1.23)

Note. BFLP = big-fish-little-pond, LFBP = little-fish-big-pond.

Figure 1

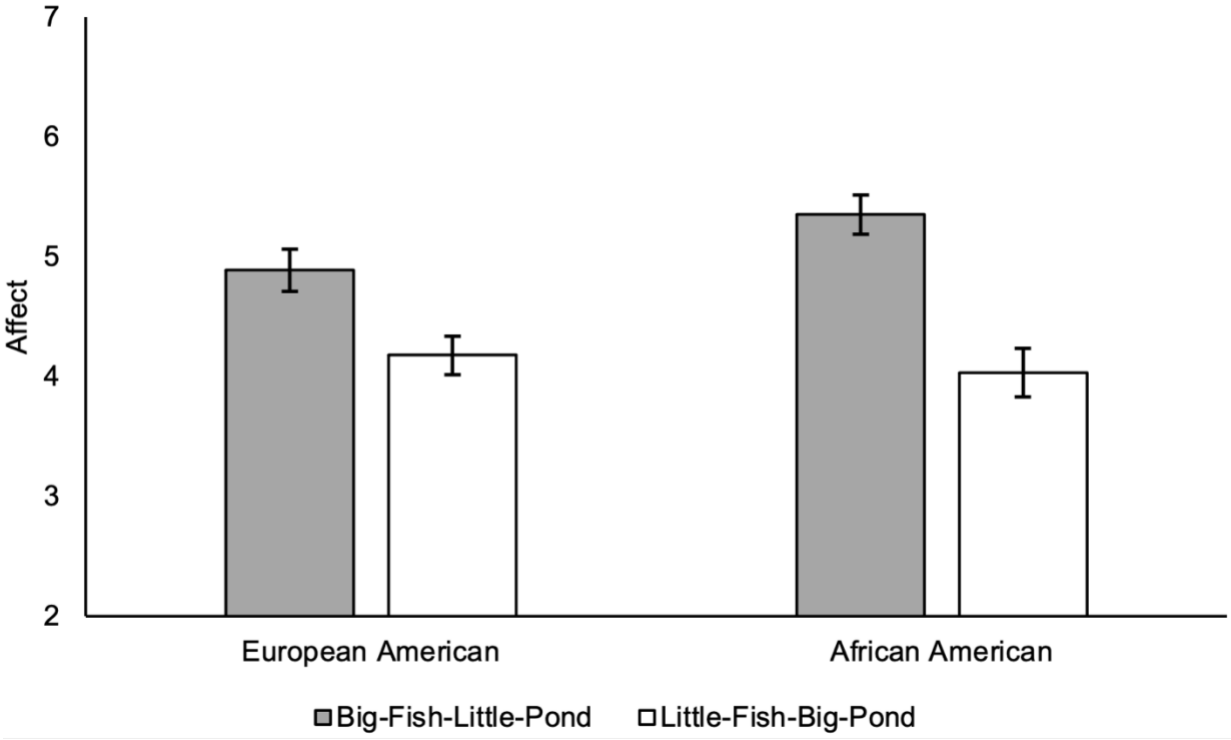
Self-Evaluations by Race and Feedback Condition



Note. Error bars are ± 1 *SEM*.

Figure 2

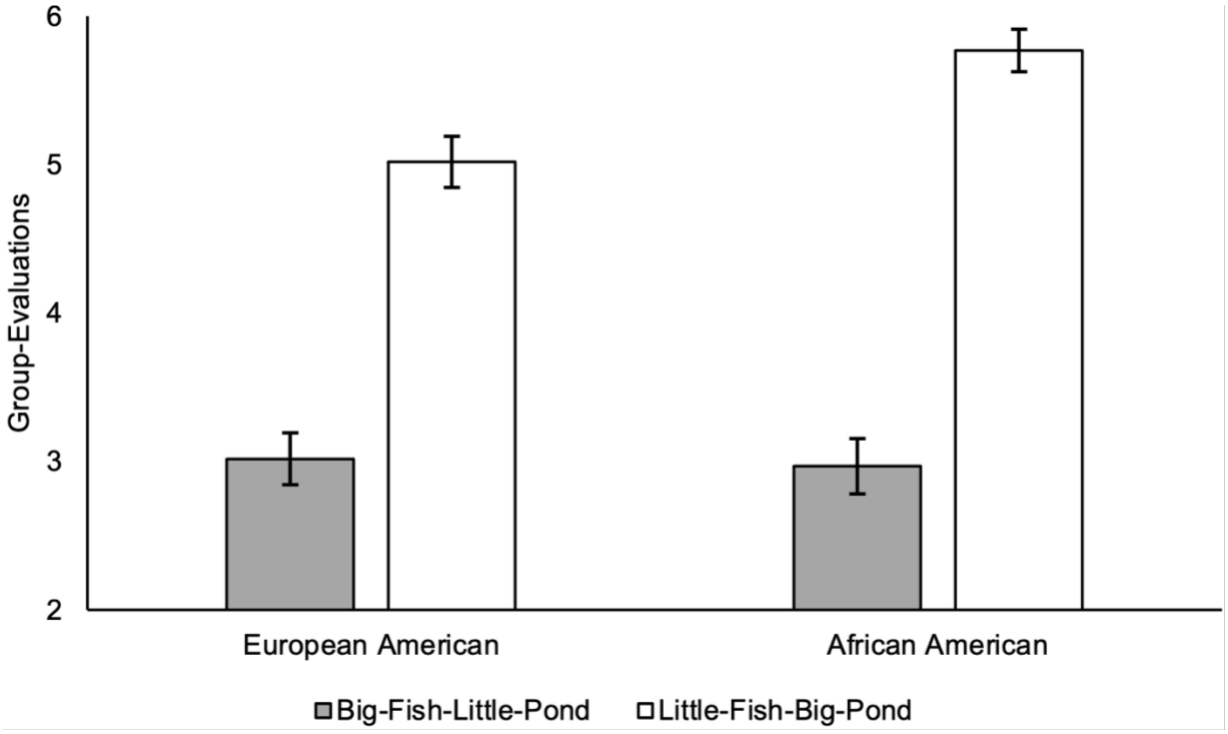
Performance-Related Affect by Race and Feedback Condition



Note. Error bars are ± 1 *SEM*.

Figure 3

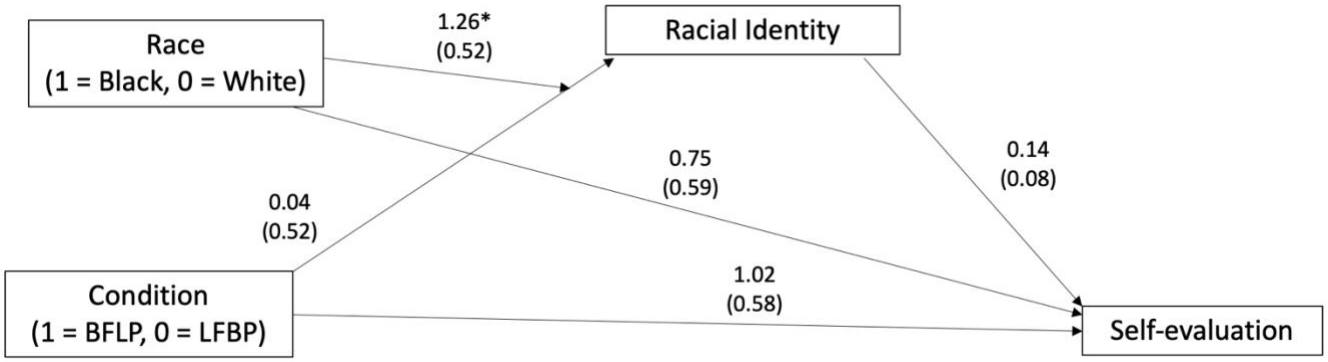
Group-Evaluations by Race and Feedback Condition



Note. Error bars are ± 1 *SEM*.

Figure 4

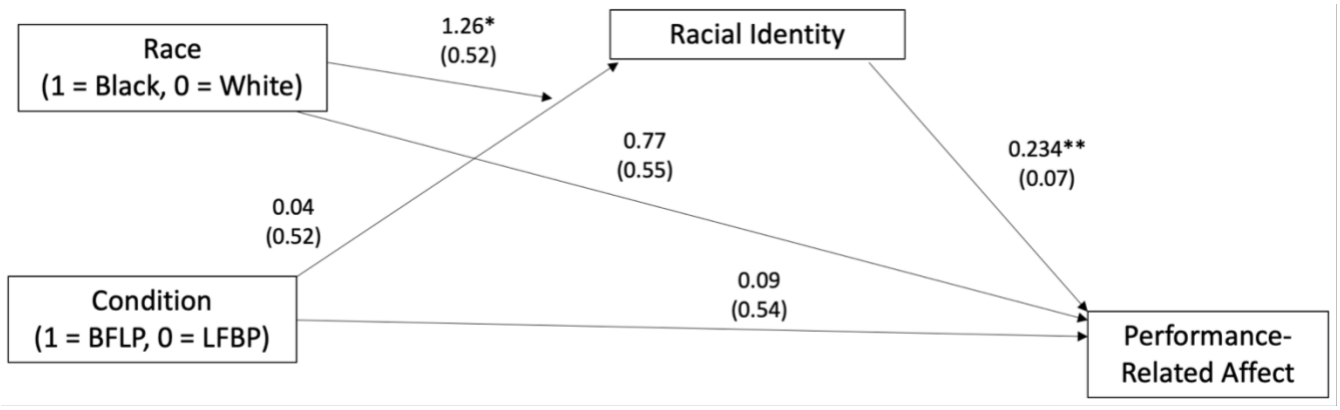
Moderated Mediation Analysis for Self-Evaluations



Note. Model depicts the indirect effect of condition on self-evaluations through racial identity, moderated by race. Unstandardized path estimates are above lines (standard errors are in parentheses). * $p < .05$. BFLP = big-fish-little-pond, LFBP = little-fish-big-pond.

Figure 5

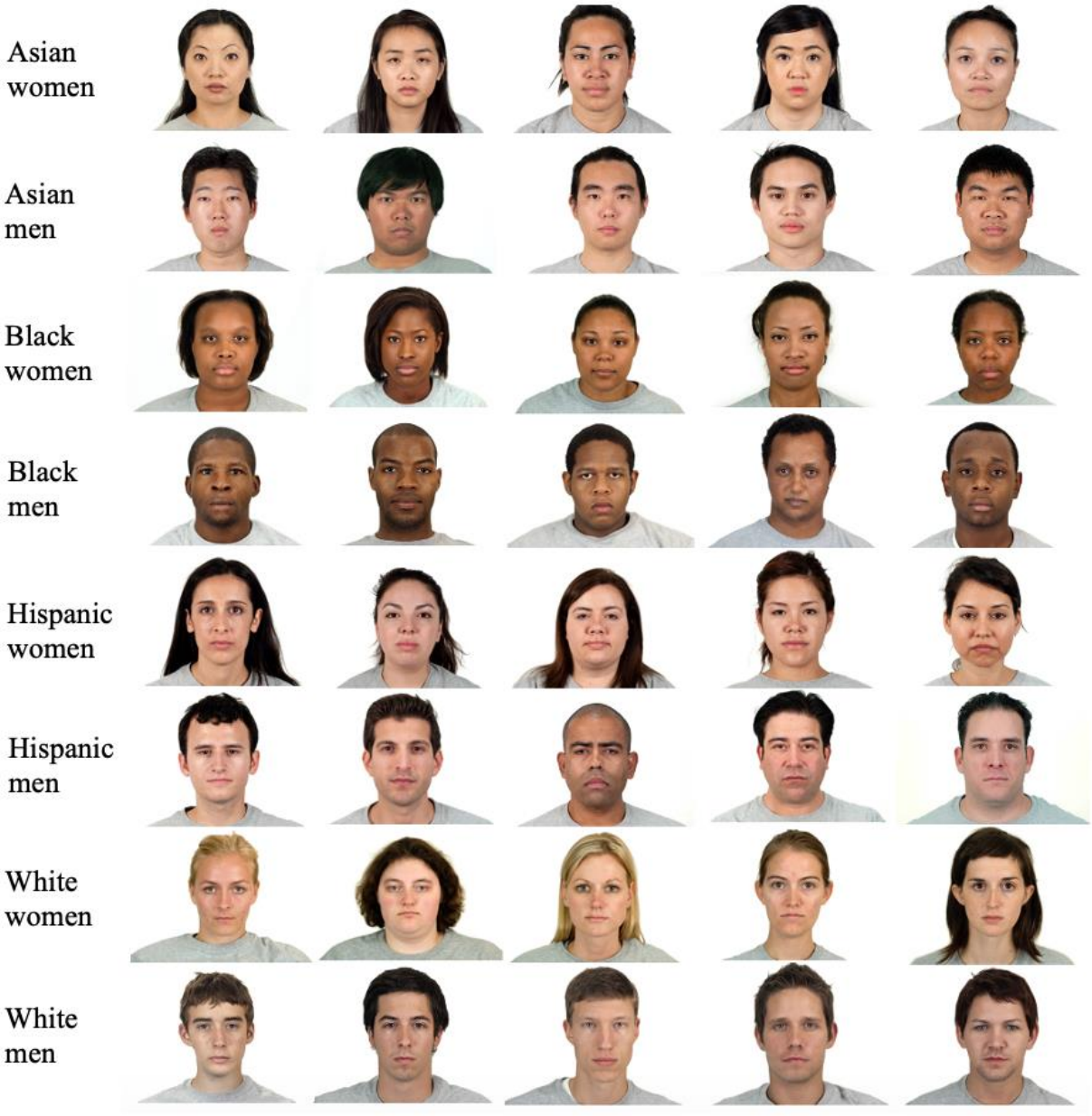
Moderated Mediation Analysis for Performance-Related Affect



Note. Model depicts the indirect effect of condition on performance-related affect through racial identity, moderated by race. Unstandardized path estimates are above lines (standard errors are in parentheses). * $p < .05$, ** $p < .01$ BFLP = big-fish-little-pond, LFBP = little-fish-big-pond.

APPENDIX B.

SOCIAL PERCEPTION TEST FACES



APPENDIX C.

SOCIAL PERCEPTION TEST QUESTIONS

Social Perception Judgments (3-items per face)

- Do you believe this person is extraverted or introverted?
- Do you believe this person is religious or not religious?
- Do you believe this person is straight or gay/lesbian?

APPENDIX D.

FEEDBACK CONDITIONS

Condition 1 (Black participant, big-fish-little-pond)

You ranked MUCH BETTER than other African Americans.
236 African Americans have participated so far.

African Americans have performed MUCH WORSE than European Americans.
241 European Americans have participated so far.

Condition 2 (Black participant, little-fish-big-pond)

You ranked MUCH WORSE than other African Americans.
236 African Americans have participated so far.

African Americans have performed MUCH BETTER than European Americans.
241 European Americans have participated so far.

Condition 3 (White participant, big-fish-little-pond)

You ranked MUCH BETTER than other European Americans.
236 European Americans have participated so far.

European Americans have performed MUCH WORSE than African Americans.
241 African Americans have participated so far.

Condition 4 (White participant, little-fish-big-pond)

You ranked MUCH WORSE than other European Americans.
236 European Americans have participated so far.

European Americans have performed MUCH BETTER than African Americans.
241 African Americans have participated so far.

APPENDIX E.

DEPENDENT MEASURES

Self-Evaluations (3-items; Zell & Strickhouser, 2020)

1 = very poorly/bad, 7 = very well/good

- How well do you think you performed on the social perception test?
- How would you rate your social perceptiveness?
- How would you rate your social perceptiveness as measured by this test?

Performance-Related Affect (6-items; Zell & Strickhouser, 2020)

1 = not at all, 7 = extremely

- How **satisfied** do you feel about your performance on the social perception test?
- How **proud** do you feel about your performance on the social perception test?
- How **sad** do you feel about your performance on the social perception test?
- How **discouraged** do you feel about your performance on the social perception test?
- How **happy** do you feel about your performance on the social perception test?
- How **distressed** do you feel about your performance on the social perception test?

Group-Evaluations (3-items; Zell & Alicke, 2009)

1 = very poorly/bad, 7 = very well/good

- As a group, how well did African Americans (European Americans) perform on the social perception test?
- As a group, how would you rate the social perceptiveness of African Americans (European Americans)?
- As a group, how would you rate the social perceptiveness of African Americans (European Americans) as measured by this test?

Racial Identity Relevance (4-items; Crocker et al., 1999)

1 = strongly disagree, 7 = strongly agree

- I often regret that I belong to my racial group
- In general, I'm glad to be a member of my racial group

- Overall, I often feel that my racial group is not worthwhile
- I feel good about other members of my racial group

Group SES scale (1-item; adapted from Adler et al., 2000)

1 = much lower status, 7 = much higher status

How would you rate the status of African Americans in comparison to European Americans? Groups with high status have the most money, most education, and best jobs. Groups with low status have the least money, least education, and worst jobs.

APPENDIX F.

DEMOGRAPHICS AND PARTICIPANT CHECKS

What is your Prolific ID?

Did you perform much better or much worse than African (European) Americans on the social perception test?
Did African (European) Americans perform much better or much worse than European (African) Americans on the social perception test?

What is your age?
What is your gender? [male, female, other]
What is your race/ethnicity? [White/Caucasian, Black/African American, Latino/Hispanic, Asian, Native American or Alaskan Native, Other]
Are you a Native English speaker? [yes, no]

Please click the third circle from the left in the scale below. This is just to screen out random clicking (1 = strongly disagree, 7 = strongly agree).

Do you have any general questions or comments about this study? Please describe or type NO.
Do you know what the purpose of this study was? Please describe or type NO.
Did anything about the study seem suspicious? Please describe or type NO.