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NOTE FROM THE EDITORS-IN-CHIEF

Dear Readers,

It is with immense joy and pride that we present to you the 10th edition of the Undergraduate Research Journal of Psychology at the University of California, Los Angeles. Our team of dedicated, research-minded undergraduates, graduates, and professionals worked diligently to bring you yet another compelling display of the accomplishments of rising scientists in the field of psychology.

Our Marketing and Finance team worked hard to support URJP through their fundraising efforts, while also promoting our club by making informative and artistic visuals on our social media platforms. Our Submissions and Workshops team helped our journal reach outstanding new heights, as they successfully garnered nearly one hundred undergraduate research paper submissions from all over the world. Meanwhile, they also worked hard internally to strengthen our team members by crafting informative workshops. Next, we owe a tremendous amount of gratitude to members of our Editing team, who have again managed the incredible task of critically reviewing, discussing, and editing undergraduate research. We extend a special thanks to our Editor Leads, Michelle, Cheryl, and Gio who balanced editing duties with managing micro and macro teams of undergraduates and graduate students to a high degree of professionalism. Finally, we give our immense thanks to the incredible graduate students and our faculty advisor, Aaron Blaisdell, who offer their invaluable support to our journal year after year. They go above and beyond by donating time to URJP. From providing their expertise when editing papers, to serving as vulnerable panel members during workshops, to acting as mentors to many of our members, our organization would not be possible without them.

Our team recognizes that the publication of these ten articles comes at a challenging time in our modern world. Our authors have produced this work despite being faced with calamity: a global pandemic, immense political strife, and the pervasive spread of disinformation. It is therefore a great spark of hope that this year our team is able to deliver to you four of the very best displays of undergraduate psychology research seeking to discover insights to understanding and solving tangible issues in our world.

It is most commendable that in each article you will find insights to problems from those of identities who can access and speak to these issues themselves. Inside, you will find a scientific review of how yoga may help with the issue of eating disorders from a yoga teacher and mental health researcher, an analysis of ethnic incongruence's impact on attitudes for Asian Americans from an Asian American researcher, how academic belonging impacts achievement from a Latinx rising professional, and how microaggressions in the workplace impact those of color from a Nigerian studying abroad in Canada. We celebrate the work these authors have produced as undergraduates, and are immensely excited to continue following their bright careers.

Without further ado, let us present our tenth edition, we hope you enjoy reading it as much as we have enjoyed working to create it.

Sincerely,

Maxfield Gormley & Leyla Boyar

Editors-in-Chief

PREFACE

Wave-Ananda Baskerville, M.A.

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Clinical Psychology

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It is my honor to write a preface for the tenth volume of The Undergraduate Research Journal of Psychology (URJP) at the University of California, Los Angeles (UCLA). The URJP aims to promote and disseminate undergraduate student excellence in psychological research. Specifically, the organization makes the research publication process more accessible to the undergraduate community. Given that approximately 8.8% of undergraduates report having authored a peer- reviewed publication (Gin et al., 2018), making this pivotal process in science accessible is vital to the development of undergraduate researchers and the larger scientific community.

As part of the publication process, the URJP provides undergraduate authors a collaborative peer- reviewed platform. The peer-reviewed process is to evaluate a submitted manuscript's quality and suitability for publication. First, undergraduate researchers submitted their manuscripts. Fellow peers alongside graduate students in the field of psychology then reviewed the submitted manuscripts and provided authors with constructive feedback to advance the caliber and accessibility of their scientific work. The authors then addressed the reviewers comments and responded to their feedback. Based on the revisions and responses from the authors, the manuscripts were either rejected or accepted for publication in the URJP. Despite the effortful nature of the peer-reviewed process, the undergraduate researchers showcased in this volume underwent this core process in service of confirming the validity of their work and advancing scientific knowledge by sharing their scientific work with the field. The research within the present volume represents the breadth of the field of psychological science, which should be noted as a unique and considerable strength. The field of psychology includes many branches, and it is remarkable for a journal to capture the diversity of the field. A few of the prevalent areas of psychology represented in this volume include clinical psychology, social psychology, and educational psychology. The present journal's inclusion of impactful work from different areas of psychology captures the intersectional and the interdisciplinary nature of the field. Thus, reading through the research showcased on the following pages provides a richness that allows readers to immerse themselves in the breadth and depth of psychology.

Another notable strength is the topical research focus on mental disorders with high morbidity and on underrepresented groups. The prevalence and morbidity of eating disorders and depression in the United States makes research on these topics crucial. For example, one article in this volume thoroughly explores the prevention and treatment of eating disorders. Another, rigorously investigates the etiology of depression, specifically examining different control strategies. Additionally, research focused on the lived experiences of underrepresented populations is indispensable. An article within this volume comprehensively investigates intergroup attitude change among Asian Americans. Another article craftily examines the impact of racial microaggressions on interpersonal trust in the workplace. Together, the work within this edition provides thoughtful scientific insights into these topics and impactful advancement in the field of psychology.

It is with enthusiasm that I invite readers to proceed in immersing themselves in the rich, rigorous accepted work included in the tenth volume of URJP at UCLA. I encourage readers to thoroughly engage in the research and contemplate the future directions outlined by the authors.

Warmly,

Wave-Ananda Baskerville

Wave-Ananda Baskerville

Daniel Mesa-Buitrago, BA Clark University

Daniel Mesa-Buitrago graduated from Baruch College in 2022 with a bachelors in Psychology. While at Baruch, he spent three years working alongside the Social Psychology Lab as a research assistant and lab manager. Currently, he is a second year clinical psychology PhD student at Clark University, working alongside the Young Minds and Social Contexts Lab and the Mental Health, Culture, and Community Research Program. Broadley, his current research explores the intersection between different facets of ethnic/racial identity and socioeconomic class identity in Latinx individuals in order to better understand their mental health functioning within academic domains and psychotherapy. He hopes to apply his research within his clinical practice to help foster a more just and equitable experience for Latinx and other minority individuals across both domains.

Was there a particular experience that sparked your research interests?

I wouldn't say there was a singular experience, but my first year working with the Baruch College Social Psychology Lab and Dr. Catherine Good really helped pinpoint where my passion within research lies. Our work there focused primarily on how various contingencies of academic belonging (e.g., effort vs achievement based) could have an impact on performance related outcomes and the experiences of minority. Understanding the importance of structural factors and their effect on the individual really interested me and so I wanted to expand on that branch of research by factoring in the potential role that one's identity played. While these interests are quite the departure from the current paper, both interests are held with the intention of better understanding and hopefully helping to improve the individual experience.

Who has been the most influential person in your life?

Can't pick one, but without a doubt both of my parents. They modelled what it meant to work hard towards ones goals with consistency and discipline. Emulating their work ethic is how I approach all of my goals, big or small. More importantly, they both served as valuable pillars of support throughout my life, both professionally and personally. While they are my parents, they're also two people that I consider to be my closest friends.

What is your greatest accomplishment?

I'd say it's probably getting into the PhD program at Clark. My acceptance into the program felt like an achievement not only for myself as an individual, but a collective achievement for those who mentored me, invested in my growth, and supported me in every capacity. The moment was the culmination of a three year long collaborative effort amongst myself and various mentors who believed in my goals and my ability to work towards them and learn along the process.

Where do you see yourself in 10 years?

I see myself working to assist in the mental health journeys of Latinx and other minoritized individuals and communities within the United States. Ideally this would encompass a variety of roles such as direct clinical work with individuals and communities, community outreach and education, and legal advocacy. Further I'd like to help other underrepresented youth within psychology achieve their own goals by maintaining some form of mentorship role through teaching or supervising.

Control Strategies and Adulthood Depression: The Moderating Role of Age

Daniel Mesa-Buitrago

Clark University

Research illustrates how the way people seek to control personal goal attainment via different control strategies (e.g., primary and secondary) can influence the onset of adulthood depression. Research exploring these relationships is extensive but limited in exploring how they may differ across stages of adult development and has not considered certain subtypes of control strategies. Using a nationally representative sample from the Midlife in the United States study, we explored how different control strategies relate to depression across adulthood and examined whether age moderated this relationship. The results revealed that specific control strategies, such as compensatory primary control, acted as protective factors against depression, while others, like compensatory secondary control (goal adjustment), were found to be associated with increased depressive symptomology. Further, the moderation analysis demonstrated that the ability to maintain a motivational commitment to a goal was predictive of lower depression in young and middle adulthood, whereas a higher ability to disengage from unattainable goals was predictive of higher depression in young adulthood. We discuss the implications that these findings have in furthering our understanding of control strategies and depression, and how they may be used in applied settings such as in psychotherapy.

Keywords: Control strategies, depression, predictive ability, moderation, age

The adaptive management and attainment of personal goals across the adult lifespan is a critical component for healthy development. Failure to obtain these personal goals can lead to the onset of negative mental health outcomes such as depression, in which case the individual must be able to successfully disengage and focus their mental resources elsewhere in order to preserve their psychological well-being. In this paper, we explore the relationship between lifespan developmental control strategies and depressive symptomology among an age varied adult sample.

Control Strategies and Successful Lifespan Development

The motivational theory of life-span development (MTLD) is a theoretical model which details a framework for exploring individual agency throughout development (Heckhausen et al., 2010). Consistent with other action-oriented developmental approaches, this model views the individual as having an active role in shaping their own development (Brandtstadter, 1998; Freund & Baltes, 2002; J. Heckhausen, 1999; Lerner & Busch-Rossnagel, 1981). Specifically, the underlying idea of the MTLD is that throughout life, individuals seek to control their own development through action cycles involving either engaging or disengaging from developmental goals. This

process of engaging or disengaging from a chosen goal, then activates a set of appropriate control strategies (J. Heckhausen, 1999; Wrosch & Heckhausen, 1999).

These control strategies consist of two distinct subtypes: primary and secondary control. Primary control refers to processes directed at changing and controlling the external environment to be in line with oneself or one's wishes. In contrast, secondary control refers to processes that aim to conform oneself with the external environment and circumstances (Rothbaum et al., 1982). Primary and secondary control strategies both involve cognition and action, however primary control is mainly conceptualized as tangible action, whereas secondary control is typically seen as an internal cognition. The main purpose of both primary and secondary control is to facilitate the attainment of goals and the disengagement of goals that are no longer realistic, or unattainable, respectively. (Heckhausen, 1999).

Whether a goal is deemed attainable or not is dependent on a myriad of factors which include time and resources. Ultimately, life is short, and resources are scarce, so individuals must assess whether the investment of their time and resources to a particular goal is worth sustaining. There may be constraints related to why a goal becomes unattainable, such as loss of bodily function, or new familial responsibilities, or

perhaps, constraint is related to the contextual environment that the individual finds themselves in (Baltes & Baltes, 1990).

Of the control strategies, there are three that serve to directly facilitate goal attainment. First, selective primary control involves the investment of internal resources such as time and effort to achieve a goal (e.g., training daily to run a marathon, attending class and taking notes). Next, compensatory primary control refers to the use of external resources such as recruiting others or using technical aids to achieve a goal (e.g., lip reading to compensate for a hearing disability). Lastly, selective secondary control involves internal cognitive strategies aimed at increasing one's motivational commitment to a chosen goal by enhancing its value, while devaluing possible alternative goals (e.g., valuing alternative goals as less important than the primary goal) (Wrosch, 2002).

Goal disengagement strategies, namely compensatory secondary control (CSC), differ in that they facilitate goal attainment indirectly. This is accomplished through the process of disengaging from an unattainable goal to then reinvesting resources into a new, more obtainable goal to protect oneself from possible failure. CSC involves distinct protective mental strategies that are employed in the face of failure. These protective strategies fall into three distinct groups. One, CSC - disengagement is the strategy of disengaging from a now unattainable goal. Two, CSC - self protection involves mental strategies used to protect against feelings of failure in obtaining a goal such as avoiding self blame and focusing on potential success in other domains. Three, CSC - goal adjustment involves adjusting one's goals to an attainable alternative when the original is deemed unattainable.

An important consideration with the MTLD is the proposed hypothetical life-span trajectories for both primary and secondary control potential. According to this model primary control striving, or our desire to control the external environment, acts as the dominant motivator of behavior across the lifespan. Our potential to exert this control, or our primary control potential increases up until midlife (35-60 years of age) where adults have the greatest ability to exert control (Lachman et al., 2015; Heckhausen, 1999). During this stage, the ability to enact primary control plateaus, and as the individual continues to age from midlife to old age, their ability to exert primary control decreases over time into old age despite primary control striving staying constant (Heckhausen, 1999). This decrease in primary control potential in old age stems from the general nature of aging. Older age is often related to an increase in developmental constraints and irreversible age-related losses and health issues which would limit the individual's ability to exert primary control (Baltes, 1987; Heckhausen et al., 2010). As the discrepancy between primary control potential and primary control striving widens in older age the individual must recruit secondary control strategies to maintain a motivational commitment to their selected goals and thus maintain their primary control striving. Moreover, as certain goals become unattainable due to age-related limitations, the individual must disengage from them in favor of pursuing more age-adapted goals. In this process individuals resort to secondary control strategies of adjusting expectations and values or simply disengaging (Heckhausen et al., 2010).

Control Strategies and Depression Across Adulthood

Depression is defined as a mood disorder that is characterized by suppressed mood, reduced ability to experience pleasure (i.e., anhedonia), decreased energy, and feelings of guilt or low self-worth. The World Health Organization identifies depression as the leading cause for disability in the world, with over 322,000,000 people suffering from the disorder globally (World Health Organization, 2008; Geneva: World Health Organization; 2017). The National Health Interview Survey found that when excluding those in emerging adulthood, the ratio of adults who experienced either mild, moderate, or severe symptoms of depression in the past two weeks was highest among those aged 45–64 at 18.4%, followed by those 65 and over also at 18.4%, and lastly, by those aged 30– 44 at 16.8% (Villarroel MA, Terlizzi EP, 2020). With depression being prevalent across the entirety of adulthood, researchers have aimed to explore how factors like control strategies and age relate to depression. Existing research has been able to detail how certain control strategies relate to depression as well as the role that age has in these associations.

The successful attainment of important life goals (e.g., working towards upward growth in the job environment, starting a family) is of critical importance for successful development among adults across the lifespan. To achieve one's goals, selective and compensatory primary control strategies must be employed. However, if one's perceived ability to assert primary control strategies over their environment is threatened or reduced due to new physical or cognitive resource constraints, then the individual now faces an increased risk of failure to obtain their goals. Given that depressive symptomology may emerge in the wake of failing to obtain a goal, selective and compensatory primary control strategies are then negatively associated with depression. Research has supported this notion by establishing that both selective and compensatory primary control improve health and functional capacity by virtue of reducing depressive symptomology (e.g., Pakenham, 1999; Wrosch et al., 2002; Wrosch, Miller et al., 2007). Similarly, Gitlin, Hauck, Dennis, and Schulz (2007) found that within a sample of African Americans, primary control striving for maintaining day-to-day activities was protective against the development of depression for those who struggle with functional disabilities. Since selective secondary control facilitates goal attainment similarly to selective and compensatory primary control, it functions in the same way when regarding depression by reducing the risk of depression for individuals with high levels of selective secondary control (Wrosch et al., 2002). Thus, all three goal engagement strategies (eg., selective primary control, compensatory primary control, and selective secondary control) are protective against depressive symptomology.

When individuals face loss of control or a chosen goal now becomes unattainable (eg., decreased fertility at midlife, college major being too difficult), they can maintain their subjective well-being and combat depressive symptomology by disengaging from the goals that have been rendered unattainable and then re-investing those mental resources back into other goals (Brandtstadter & Rothermund, 1994; Carver, La Voie, Kuhl, & Ganellen, 1988; de Rijk, Le Blance, Schaufeli, & de Jonge, 1998; J. Heckhausen et al., 2001; Thompson et al., 2006; Wallace & Bergeman, 1997; Wrosch et al., 2005; Wrosch & Heckhausen, 1999; De de Pontet, 2007; Wrosch, Scheier, Miller et al., 2003; Wrosch & Miller, 2009). This process allows for the maintenance of primary control potential because, although attainment of a goal was failed, reinvestment of resources, and engagement into a new goal provides further opportunity to enact primary control and achieve this newly selected goal. Although the relationship between CSC - goal disengagement and depression is clear, research has not explored the relationship between the other specific CSC types (e.g., self protection and goal adjustment). However, using conceptually parallel research we can make assumptions about how these CSC types may relate to depression. For example, self blame in the context of a traumatic experience such as sexual abuse, has been linked to increased depression (Alix, et al., 2019). Aspects of Cognitive Behavioral Therapy (CBT) focus on thought challenging by reminding the individual of their strengths and talents. Thus, since CSC - self protection involves strategies, such as blame avoidance, and focusing on successes in other domains, we can infer that there is a negative association between CSC - self protection and depression. Similarly, although the process of goal adjustment is relatively unexplored, research has identified how re-engaging into attainable goals after disengaging from an unattainable goal is protective against depression.

Although the current literature demonstrates that both primary and secondary control strategies are adaptive behaviors that may combat depression by maintaining levels of primary control striving, less is known about how age may impact the relationship between control strategies and depression. Consistent with the developmental trajectory of both primary and secondary control, it is known that the adaptive value of each control strategy may differ with age (Heckhausen et al., 2010). When primary control potential decreases with age after midlife, secondary control becomes increasingly important to goal attainment in older age by maintaining existing primary control (Heckhausen et al., 1999). Additionally, as goals become increasingly unattainable in older age, secondary control also gains importance by enabling the individual to disengage from unattainable goals and reinvest their cognitive resources into more pursuable endeavors. Therefore, age may impact the relationship between control strategies and depression such that certain control strategies may predict lower depression only in certain age groups. For example, higher primary control may be more protective against depression in younger aged adults compared to older aged adults because of the available resources which facilitate primary control such as time, energy, and physical/cognitive capabilities. In contrast, higher capacity for secondary control strategies may be more protective against depression in older age due to the increased need for both positive appraisals in the face of failure, and the ability to disengage from unattainable goals as they become more present.

The Present Study

Although existing research has established a relationship between control strategies and depression, it has its limitations. First, research has not explored how all primary and secondary control strategies relate to depression in one cohesive study. Secondly, the three distinct subtypes of compensatory secondary control (e.g., disengagement, self protection, goal adjustment) have been overlooked in existing literature regarding depression. Finally, research regarding control strategies and depression overlooks the role that age may have in moderating the existing relationship, and whether it is consistent with the developmental trajectories of primary and secondary control strategies.

Thus, the present study aims to build upon the existing body of work by exploring relationships between all control strategies and depression among an age varied adult sample. We hypothesized (a) an inverse relationship between goal engagement strategies and depression such that higher levels of goal engagement would predict lower depression scores. Similarly based on the adjacent literature we hypothesized that (b) compensatory secondary control and its sub-types would also predict lower depression. Both hypotheses are based upon the premise that the use of both primary and secondary control strategies at appropriate moments or action phases of goal attainment and disengagement are critical adaptive behaviors that may protect against depression by facilitating the pursuit of personal goals and maintaining levels of primary control striving. In considering the developmental trajectories of both primary and secondary control strategies we also hypothesized that (c) age would moderate the relationship between secondary control strategies and depression such that a higher capacity for secondary control strategies would be more protective against depression in older adults versus younger adults since the adaptiveness of secondary control strategies varies/increases with age. In contrast, we did not expect age to moderate the relationship between primary control strategies and depression since primary control striving stays constant throughout the lifespan meaning that primary control strategies would always be adaptive regardless of age.

Method

Participants and Data

This study utilized nationally representative data from the

Table 1

Mean, Standard Deviation, and Ranges of the Relevant Variables

Construct	*M*	*SD*	Minimum	Maximum
SPC	3.18	0.56	1.00	4.00
CPC	2.35	0.57	1.00	4.00
SSC	2.79	0.61	1.00	4.00
CSC Disengagement	2.45	0.50	1.00	4.00
CSC Self Protection	2.95	0.56	1.00	4.00
CSC Goal Adjustment	2.17	0.66	1.00	4.00
Age	50.5	14.4	23.00	76.00
Depression	0.79	1.94	0.00	7.00

Note: SPC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.

National Survey of Midlife Development in the United States (MIDUS) public dataset (Brim et al., 1996). Originally established from 1994-1995, the MIDUS study was conducted as a national longitudinal study regarding the health and well-being of midlife Americans. Initial MIDUS participants were selected through random-digit-dialing and included noninstitutionalized, English-speaking adults living in the contiguous 48 states. Data was collected from a sample of 4242 adults, aged 25 to 74, via an initial telephone interview and a follow-up mail questionnaire. The second wave of data collection included a total of 1255 participants and recruited them from 2004-2005. Then, in 2011, the MIDUS refresher recruited 3,577 participants, and was meant to serve as a replacement for the original MIDUS 1 baseline cohort.

The analysis sample for the present study consisted of data from the MIDUS refresher and included 3,577 participants (53.3% female, mean age = 50.5 years, SD = 14.4). The sample was roughly 95% White. Educational attainment across the sample was varied. 5.2% of participants had not graduated high school, 18% had obtained a GED or high school diploma, 18.3% had some college education, 12% graduated from a 2-year college or vocational school, 23.2% had graduated from a 4 or 5 year college program or bachelor's program, and lastly, 17.8% had graduate level education.

Measures

To administer a survey with such a wide scope, MIDUS researchers conducted a series of 6 pilot studies to create and test abbreviated measures of key psychological and social constructs. Given the extensive testing of the measures, there is high confidence in the validity and reliability of all the measures and variables used for analysis. In the present study primary and secondary control strategies, depression, and age were used as the primary variables. The measures included in this study are presented below, and Table 1 displays the relevant descriptive statistics.

Selective Primary Control [C1SSPCTR]: This 5-item scale captures one's perceived ability to exert selective primary control or invest internal cognitive resources in pursuit of a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "Even when I feel I have too much to do, I find a way to get it all done" (Cronbach's a = .784, N = 2703) (Heckhausen et al., 1998).

Compensatory Primary Control [C1SCPCTR]: This 5-item scale captures one's perceived ability to exert compensatory primary control or recruit others and technical aids in pursuit of a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "Asking for help comes naturally to me". Scales were constructed by calculating the mean of the values of the items in each scale. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension. (Cronbach's a = .749, N = 2700) (Heckhausen et al., 1998).

Selective Secondary Control [C1SSSCTR]: This 3-item scale captures one's perceived ability to maintain selective secondary control or motivational commitment to a chosen goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the

statement "When I have decided on a goal, I always keep in mind its beliefs". Scales were constructed by calculating the mean of the values of the items in each scale. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's a = .598, N = 2696) (Heckhausen et al., 1998).

Compensatory Secondary Control – Disengagement [C1SCSCDE]: This 6-item scale reflects one's perceived ability to disengage from unattainable goals. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "I stop thinking about a goal that has become unattainable and let it go". All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's a = .606, N= 2701) (Heckhausen et al., 1998).

Compensatory Secondary Control - Self Protection [C1SCSCSP]: This 5-item scale reflects one's perceived ability to create mental self protective strategies in the face of failure to obtain a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "I can find something positive, even in the worst situations". All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's a = .714, N = 2703) (Heckhausen et al., 1998).

Compensatory Secondary Control - Adjustment of Goals [C1SCSCAG]: This 3 item scale measures one's perceived ability to adjust their goals to a more obtainable alternative. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "To avoid disappointments, I don't set my goals too high".

All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's a = .570, N = 2702) (Heckhausen et al., 1998).

Depression: This depression scale consisted of two 7 item subscales for depressed affect ([C1PDEPAF]) and anhedonia ([C1PANHED]) that were administered via telephone interview. For the depressed affect items, participants were primed with the stem statement "During two weeks in the past 12 months, when you felt sad, blue, or depressed, did you…" and were then asked to give yes or no responses to the provided statements. Sample depressed affect items include "have more trouble falling asleep than usual?". For the anhedonia items, participants were primed with the stem statement "During two weeks in the past 12 months, when you lost interest in most things, did you…" and were then asked to give yes or no responses to the provided statements. Sample anhedonia items include "feel down on yourself, no good, or worthless?". Scores from each subscale were totaled from 0-7 and then averaged to create a composite depression score ([C1PDEPRE]) between 0-7 (WHO 1990).

Statistical Analyses

First, to obtain associations between all variables we ran a Pearson's correlation analysis.

Second, to test the hypothesis of both primary and secondary control strategies being predictive of lower depression, we regressed our depression variable on each of the individual primary and secondary control strategies using a linear regression model.

Third, to examine whether age moderated the relationships between control strategies and depression, we used a simple moderation analysis to look at the interactions between each individual control strategy and age in relation to

Table 2

Correlations Between All Control Strategies, Depression, and Age

Construct	1	2	3	4	5	6	7	8
1. SPC	-							
2. CPC	.13**	-						
3. SSC	.54**	.20**	-					
4. CSC Disengagement	.10**	.18**	.21**	-				
5. CSC Self Protection	.57**	.25**	.47**	.34**	-			
6. CSC Goal Adjustment	-.17**	-.02	-.09**	.36**	-.06**	-		
7. Depression	-.09**	-.10**	-.05**	.01	-.11**	.12**	-	
8. Age	.03	.04*	-.01	.16**	.4*	.02	-.11**	-

Note: SPC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.
*p < .05. ** p < .01.

Table 3

Predictive Validity: Standardized Regression Coefficients

				Predictor Variable			
Criterion	SPC	CPC	SSC	CSC - Disengagement	CSC - Self Protection	CSC -Goal Adjustment	Adj. $R^!$
Depression	-.02	-.07**	.02	.01	-.09**	.11**	.02

*Note: S*PC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.
p < .05. ** *p* < .01.

depression. Furthermore, we used a simple slopes graph to further visualize the significant interactions. For the purposes of this analysis, the age variable was divided into three groups. The minimum age group was 24 years of age, the median age group was 51 years of age, and the maximum age group was 76 years of age. The two primary reasons for setting these age groups parameters were because of theoretical justifications, and because of our anticipated effect sizes for our analysis. Theoretically, the selected age groupings effectively reflect ages within distinct developmental stages, young adulthood, midlife, and late adulthood. Regarding the anticipated effect sizes, given previous literature we expected to find small effects. Utilizing the upper and lower extremes of age allowed us to better detect our effects by utilizing data points that deviated further from the mean. Doing so remains theoretically sound as age is not a static variable and is constantly changing. Thus, while our age groupings reflect the upper and lower bounds of the sample, in the population people may be older than 76 or younger than 24. This fact allows for the findings from our analyses to be applied to a more general sense within the population, as the upper and lower bounds are not the "extremes" within the population.

Measures

Correlations. Results from the Pearson's correlation analysis indicated that there were several correlated variables (see Table 2). Notably, both primary control strategies, selective secondary control, CSC – disengagement, and CSC – self protection were all positively correlated with each other at varying magnitudes. Interestingly, CSC – goal adjustment was negatively associated with all other control strategies except for CSC – disengagement, which it was positively correlated with. Looking at depression, there were negative correlations with selective primary control, compensatory primary control, selective secondary control, and CSC – self protection. It was unrelated to CSC – disengagement, and positively related to CSC – goal adjustment. Finally, depression was also negatively associated with age, indicating that within our sample, younger participants reported greater depression scores.

Predictive validity. Inconsistent with our hypothesis

regarding all goal engagement strategies being predictive of depression, the regression models revealed that only compensatory primary control strategies were predictive of depression (β = -.07, SE = .07, p < .001). Specifically, greater compensatory primary control strategies predicted lower depression scores. The analysis also showed that all but one of the compensatory secondary control strategies were significant predictors of depression. Consistent with our hypothesis, as the use of compensatory secondary control - self protection strategies increased, depression scores decreased (β = -.09, SE = .08, p < .001). In contrast, as compensatory secondary control - goal adjustment strategies increased, depression scores also increased (β = .11, SE = .06, p < .001) which was inconsistent with our prediction. See Table 3 for all of the coefficients.

Moderation Analysis. The moderation analysis revealed that only secondary control strategies were moderated by age. Firstly, there was a significant interaction between selective secondary control and age when predicting depression (β = .00187, SE = 7.36e-4, p = .011) such that higher levels of selective secondary control predicted lower levels of depression for participants in the minimum age group (23 years old) and the median age group (51 years old) but not for those in the maximum age group (76 years old) (see figure 1) . Furthermore, results showed another significant interaction between compensatory secondary control - disengagement and age when predicting depression (β = .00189, SE = 8.78e-4, p = .031) such that higher levels of compensatory secondary control - disengagement were predictive of higher levels of depression only for participants in the minimum age group (23 years old) but not for those in the median or maximum group (51 and 76 years old, respectively) (see figure 2). Although secondary control strategies being moderated by age was in-line with our hypothesis, we did not predict selective secondary control to be more protective against depression in younger and middle age as opposed to older age, nor did we expect goal disengagement to act as a risk factor for depression in younger age.
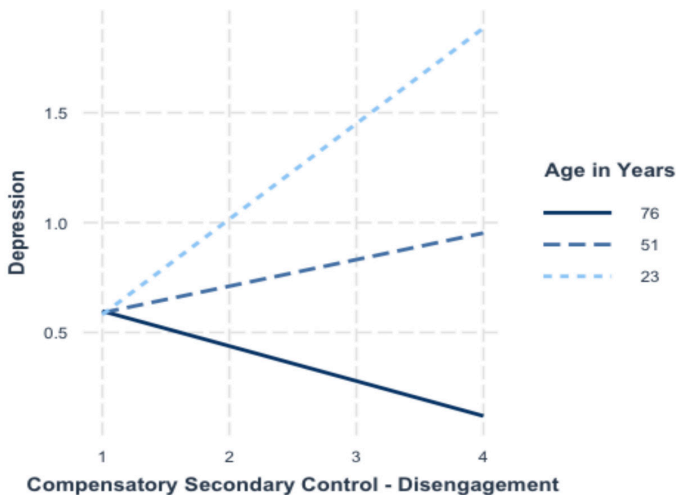
Figure 1

Interaction between selective secondary control and age when predicting depression.
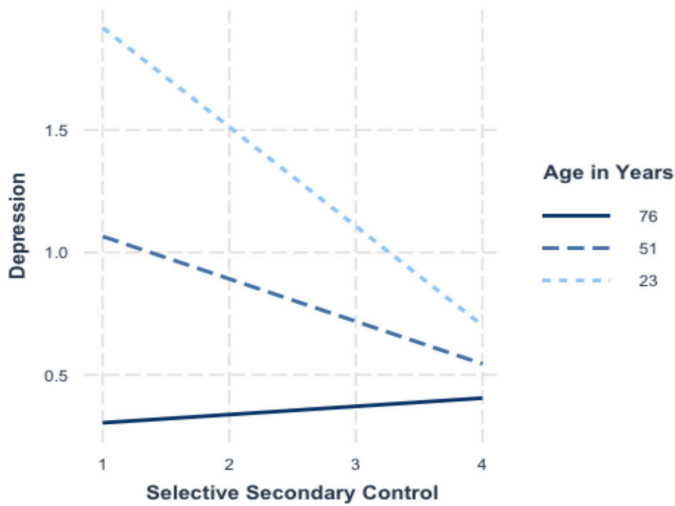
Note: Values across the X and Y axes indicate score ranges for both variables.

Figure 2

Interaction between compensatory secondary control – disengagement and age when predicting depression.

Note: Values across the X and Y axes indicate score ranges for both variables.

Discussion

This study aimed to investigate the relationship between primary and secondary control strategies and depression, as well as to explore how age moderated such relationships. Findings revealed that certain primary and secondary control strategies were both predictive of depression, namely compensatory primary control, CSC – self protection, and CSC – goal adjustment. Furthermore, partially confirming our hypothesis,

we found that only the relationship between secondary control strategies and depression were significantly moderated by age, namely selective secondary control, and CSC - disengagement.

Control Strategies as Predictors of Depression

Results from the regression analysis were inconsistent with our original hypothesis surrounding goal engagement strategies. We believed that based on the literature, all goal engagement strategies would predict lower depression scores. Of these goal engagement strategies, only compensatory primary control strategies were predictive of lower depression. This inconsistency with the literature is surprising since compensatory primary control serves as a supplementary function to selective primary control which was not found to be a significant predictor of depression. Furthermore, selective secondary control, which also serves as a goal engagement strategy, was not a significant predictor either. Overall, this suggests that one's ability to recruit help from others may be important in protecting oneself from depression. Numerous correlational and longitudinal studies have supported this notion and have found that social support across adulthood is critical in protecting against depression (Gariépy, et al., 2018; Holahan & Holahan, et al., 1987). Thus, we can infer that individuals who lack the ability to recruit the help of others or technical aids will have or develop a weaker social support system, which increases risk of depression. Conversely, those who have a strong ability to recruit external help from others, will likely have or develop a stronger social support system, which could reduce risk of depression.

The findings from the regression analysis were also inconsistent with our hypothesis regarding compensatory secondary control strategies predicting lower depression. Firstly, CSC - disengagement alone was not a significant predictor of depression. Secondly, findings show that the hypothesized negative association between secondary control strategies and depression only held true for CSC - self protection. Thus, a higher perceived ability to create adaptive mental strategies such as avoiding self-blame and focusing on success in other domains when faced with failure in obtaining a goal predicted lower depression. This mirrors adjacent literature that establishes the same predictive relationship between blame avoidance in the context of traumatic experiences (E.g., sexual abuse), and depression (Alix, et al., 2019). In contrast, CSC - goal adjustment was positively associated with depression, meaning that a higher perceived ability for adjusting one's goals to a more obtainable alternative was predictive of higher depression. This finding is interesting as it suggests that there may be a fundamental difference between adjusting one's goals versus the act of disengaging and then re-engaging into a distinctly separate yet more attainable goal. CSC - goal adjustment, as measured by the scale used in the MIDUS study, reflects an almost negative outlook on adjusting one's goals to something easier to obtain. The measure items are framed in a way that make goal adjustment seem like an outcome stemming from

one's own inability to succeed in a particular domain (E.g., "When my expectations are not being met, I lower my expectations.", "To avoid disappointments, I don't set my goals too high."). This view of goal adjustment being a result of one's own inability or failure, is different to how goal re-engagement is conceptualized. Where goal adjustment may be seen as "I have to adjust my goals because I failed," goal re-engagement can be seen as a coping strategy for when an individual fails to obtain their original goal. Specifically, since failure to obtain one's goals can lead to feelings of distress and depression, an individual can cope by re-engaging into something more obtainable, thus negating feelings of failure by now accomplishing their new goal (Strauman, 2002). For example, someone who has a now unattainable goal of running 10 miles and adjusts their goal to only 5 miles, may feel as if the need to adjust their goals or lower their expectations serves as a reminder of their own failure/limitations, thus, causing them distress. Comparatively, the same person could instead choose to first disengage completely from their goal of 10 miles and re-engage into a separate more obtainable goal like learning how to play a new instrument or reading a new novel. Engaging in a new goal could be protective against feelings of distress and depression as it provides a clean slate from the individual's past failure. These findings suggest that research moving forward should explore these two constructs as separate psychological mechanisms.

The Moderating Roles of Age

Consistent with our final hypothesis, the findings from the moderation analysis showed that only secondary control strategies had a significant interaction with age when predicting depression. The first interaction was between selective secondary control and age such that a higher perceived ability for enacting selective secondary control strategies or maintaining a motivational commitment to chosen goals predicted lower depression in young adults (23 years old), and in middle aged adults (51 years old). Although this confirms our hypothesis, it challenges our original explanation. Since secondary control strategies become more necessary in later adult development due to a natural decline in primary control, we believed that the secondary control strategies would be more predictive of lower depression in older age. However, the interaction between selective secondary control and age shows the inverse of this. One explanation for these findings could have to do with how goal selection changes at different stages of adulthood. Typically, people in young adulthood have a more varied goal selection that encompasses multiple domains. These goals tend to be more long term and gain oriented in general (i.e., career goals or owning a home) (Penningroth & Scott, 2012). Having several longer-term goals requires a greater sustained motivational commitment to successfully attain them and reap the psychological benefits of doing so (e.g., greater perceived self-efficacy, positive emotional response). A lack of motivation could lead to a premature

disengagement from these long-term goals which could lead to feelings of failure and possibly depression. So, since these long-term goals require a sustained motivational commitment, selective secondary control then becomes critical in achieving these goals and maintaining emotional/psychological well-being. While research exploring changes in motivational domains have varied findings, studies have consistently found that younger aged adults tend to have greater motivations related to growth and advancement (Cornwell et al., 2022). Maintaining these motivations through selective secondary control then becomes essential for the successful attainment of these growth-oriented goals. In contrast, older adults have a narrower goal selection which include shorter term goals that are focused primarily on maintenance/loss prevention (e.g., continued participation in their church group) (Penningroth & Scott, 2012). Perhaps, these shorter-term goals require less of a motivational commitment to successfully be attained thus, selective secondary control becomes less critical as a protective factor against depression via the process of goal attainment. Further research on this front is required.

Although the initial regression revealed no main effect between goal disengagement and depression, the moderation analysis revealed that there was a significant interaction between CSC - disengagement and age when predicting depression. The analysis showed that a higher perceived ability to disengage from unattainable goals was predictive of higher depression in young adults (23 years old) but not for middle aged and older (51 and 76, respectively). We had predicted that secondary control strategies would be predictive of lower depression in older age, however these findings demonstrate the opposite in that CSC - disengagement predicted higher depression in younger age. This relationship could be explained by how perceptions of goal attainment expectations can change across the lifespan. Younger individuals are often taught to pursue longer term, more ambitious goals since they generally have more cognitive (e.g., long term and short term memory) and physical resources (E.g., physical health, and being able bodied) available to them (Penningroth & Scott, 2012; Murman, 2015). Thus, younger people may expect to be relatively successful in obtaining their chosen goals. So, when they perceive a goal to now be unattainable, they will be met with feelings of failure, and may disengage from their goals. Although disengagement is generally seen as a coping strategy, the very act of having to disengage from a goal that was perceived as readily obtainable may be a trigger for continued feelings of failure and subsequent depression. As shown by the previous moderation analysis, the ability to maintain a motivational commitment to and stick with your original goal is more adaptive when compared to disengaging in young adulthood. In contrast, an individual in older age may face a decline in both cognitive and physical resources that are essential in successful goal pursuit (Murman, 2015; Heckhausen, 1999). This lack of resources could lead to the presence of unattainable goals becoming more frequent. Thus, being able to successfully disengage from these more

frequent and expected unattainable goals and then reinvesting those limited resources elsewhere would in theory become more adaptive and beneficial in older age – or so we thought. As mentioned prior, the moderation analysis revealed that disengagement was not a significant predictor for depression at all in both middle and older age.

Limitations

There are several limitations within this study that should be addressed in future work. The first is with the selected sample. The MIDUS study and data is approximately 95% White with a mean household income of over $80,000. While this pre-existing dataset offered a large and easily accessible sample, it is not representative of most adults within the United States.

Second, this research is non-experimental in design thus findings are only correlational. The nature of this correlational study means that it does not determine change over time between control strategies and depression, nor directionality of the relationship. Theoretically it would be important to pinpoint whether control strategies are driving the experiences in (or lack thereof) of depression, or if depression is driving the control strategy utilization.

Lastly, the data used for this study was from the MIDUS refresher which spanned from 2011-2014. As of 2023, this data set is nearly a decade old. Given the domestic and global changes seen within the last 10 years, findings may not be generalizable to a modern sample of participants.

Future Directions

Given the limitations, future research should aim to utilize a more representative sample regarding racial/ethnic make-up of the participants. It should also aim to recruit participants from a more diverse economic status to better reflect the financial standing of the average American. Finally, in terms of generalizability, a more recent sample is needed due to the sociocultural and political changes both domestic and globally over the last decade.

Future work should also aim to conduct longitudinal analysis using structural equation modeling to determine change over time between control strategies and depression, establish directionality, as well as to establish the causal factors that are driving changes in the relationships between control strategies and depression across the adult lifespan.

Future research should explore the differences between both constructs of goal adjustment and goal re-engagement to better understand how they function in regard to healthy and adaptive development. This study demonstrated that there may be a fundamental difference between compensatory secondary control - goal adjustment and the act of goal re-engagement. Although both serve the purpose of focusing one's cognitive resources on a more obtainable goal, the existing literature paired with our findings suggest that where goal re-engagement is generally protective against feelings of failure and depression, goal adjustment may promote feelings of failure and depression since it is a direct result of one's own shortcomings. Similarly, research should continue to explore the compensatory secondary control subtypes to build a more general consensus on how they function in regard to goal attainment and adaptive development.

Lastly, future research should aim to implement our understanding of how control strategies relate to depression at different stages of adult development into the applied setting. Findings demonstrate how the relationship between control strategies and depression may differ depending on age, so a therapy that targets the development of different control strategies depending on the age of the individual may prove to be efficacious. For example, someone in early adulthood suffering from depression may benefit from a therapy that aims to enhance and maintain a motivational commitment to a chosen goal, or from a therapy that seeks to reduce goal disengagement. The use of a therapy model that targets control strategies, namely Primary and Secondary Control Enhancement Therapy (PASCET), has been used in the past, but has been targeted specifically at youth patients. PASCET methods aim to reduce mild-to-moderate child depression through an eight-session cognitive-behavioral intervention that aims to develop both primary and secondary control coping skills such as identifying and conscientiously engaging in activities that the child finds mood enhancing as well as identifying and modifying depressogenic thoughts (Weisz, et al., 1997). Guidelines and methods from PASCET could be adapted for use in adults suffering from depression, and certain primary and secondary control coping skills could be emphasized depending on the individual's age.

Conclusion

Building on previous research surrounding the motivational theory of life-span development, this present research expands our understanding of how primary and secondary control strategies relate to depression across the adult life span. This study sought to explore three primary hypothesis (a) goal engagement strategies (eg., selective and compensatory primary control, selective secondary control) and depression would exhibit a negative relationship (b) compensatory secondary control and its sub-types (eg., disengagement, self protection, goal adjustment) would also be negatively related to depression (c) age would moderate the relationship between secondary control strategies and depression but not the relationship between primary control strategies and depression. Our findings challenge the current literature by demonstrating how primary and secondary control strategies that are generally thought of as protective factors against depression, can be related to higher depression, as was the case with compensatory secondary control – goal adjustment and goal disengagement. We also found that the adaptiveness of secondary control strategies do not all follow the same

developmental trajectory outlined by the motivational theory of life-span development. Whereas the model outlines secondary control strategies to be more adaptive in older age, we found that selective secondary control was only a protective factor against depression in young and middle adulthood, and that goal disengagement was a risk factor for depression in young adulthood. Ultimately, our research underscores the importance of closely considering age as a factor when determining the adaptiveness of developmental control strategies across adulthood and emphasizes the need for further research to develop a generalizable consensus on the role of control strategies as protective/risk factors for depression.

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Rachel graduated from Case Western Reserve University with Majors in Psychology and Spanish, and minors in Biology and Chemistry. Throughout her undergraduate career, Rachel's research interests spanned from eating disorders, to opioid abuse and Neonatal Opioid Withdrawal Syndrome. Outside of academics, she is a passionate yoga teacher and practitioner, an interest which stemmed the focus of this research project. Rachel is now a student at the University of Pittsburgh School of Medicine.

Was there a particular experience that sparked your research interests?

As a yoga teacher, I personally have experienced the benefits of a regular yoga practice. However, I have also seen and met many people who practice yoga and have a disordered relationship with food. I wanted to study this question, to see if there is a compilation of evidence which suggests whether yoga helps or hurts people with eating disorders, and how to address this issue in practice.

Who has been the most influential person in your life?

I am grateful for all of the influential people who have helped shape me into the person I am today. Especially, I would like to note my parents who encourage me to pursue my passion, my brother who helped me uncover a love for research, and my professor Dr. Demaree who supported my pursuit of my own research interests in this capstone project.

What is your greatest accomplishment?

I ran the Pittsburgh Marathon this past May and qualified for the Boston Marathon, a dream I've been chasing for many years. I am incredibly proud to have reached this milestone, and am excited to seek others in the future.

Where do you see yourself in 10 years?

In 10 years, I hope to be a successful physician working every day to help improve the lives of those around me with compassion, support and a determination to make healthcare a more equitable and accessible resource for society.

Understanding the Effects of Yoga on Eating Disorder Treatment and Prevention

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Eating disorders (ED) are a prevalent issue in the United States and across the globe. The digital age has exacerbated this issue in young women, as well as in men, children, and gender minorities. Effective methods of supporting individuals through recovery from an ED are essential in this time where disordered eating behaviors are on the rise. Yoga has been understood for many years as a helpful technique in improving stress and mental health. By utilizing the yogic themes of internal reflection and positive embodiment, yoga instructors can create a safe environment for individuals to improve their mindset to a more positive self-view. Researchers have uncovered data which suggests that yoga helps improve body awareness and body satisfaction, and even helps reduce disordered eating behaviors. While more research is necessary to establish the impact of yoga on eating disorder prevention and treatment, it has been seen to improve body positivity and other ED symptoms as well as help prevent development of eating disorders in youth and the general population.

Keywords: Yoga, Eating Disorder, Stress, Body Satisfaction, Eating Disorder Prevention

Today, social media usage is impacting society's understanding of beauty. Social media use is directly associated with body image disturbance (Saiphoo & Vahedi, 2019), and cultural norms of beauty have led girls in the United States to desire thinner bodies as early as six years of age (Morris & Katzman, 2003). With the prevalence of weight loss advertisements, photoshopped role models, and a general culture favoring being "thin," the rate of eating disorders has increased between the years 2000 and 2018 (Galmiche et al., 2003). Eating disorders (ED) are associated with a preoccupation with food, weight, and appearance, especially in relation to body shape (Black & Grant, 2014). While the understanding of ED and ED treatment is constantly changing, it is essential to address this issue with a large range of resources for individuals recovering from ED, as well as encourage activities that support a healthy mindset towards body image to prevent the development of disordered eating behaviors.

Yoga is an ancient tradition which focuses on connecting the mind, body and spirit (Malhotra, 2017). Through this connection, an individual can create a greater understanding and acceptance of the self. Vinyasa yoga, or power yoga, is a healing exercise that involves energetic movement and gentle stretches. Yoga can also include more relaxed styles such as Hatha yoga, slow flow, or Yoga Nidra (De Michelis, 2007). All of these styles are practiced with a focus on postures and breath, while some involve spiritual queuing and meditation. While the similar teachings across the different styles of yoga allow studies with varying styles to be compared, different styles of yoga may produce different results and should be considered when examining the impact yoga has on ED. Previous studies have suggested that yoga practice can help reduce stress in many populations (Chong et al., 2011; Zope & Zope, 2013; Riley & Park, 2015). In addition to stress reduction, it is theorized that yogic teachings can help improve the mindset of an individual, encouraging body awareness and body-acceptance (Perey & Cook-Cottone, 2020). Yoga, therefore, can provide a resource for individuals to navigate the toxic messages found in everyday life, improving recovery from an ED and preventing development of ED in individuals.

Introduction to Eating Disorders

Eating disorders encompass a broad spectrum of psychological disorders. There are two main classes of ED studied by yoga researchers: Anorexia Nervosa and Bulimia Nervosa (Neumark-Sztainer, 2014). Anorexia Nervosa (AN) is classified as the avoidance or restriction of food intake, fear of gaining weight and distorted body image (Black & Grant, 2014, p. 223). Individuals with AN often examine their body in the mirror, obsessively weigh themselves, and refuse to maintain their body weight at a healthy level (Black & Grant, 2014, p. 223). Symptoms may include emaciation, a relentless pursuit of thinness, osteopenia or osteoporosis, anemia, low blood pressure, and, in severe cases, starvation, multiorgan failure, and death (Black & Grant, 2014, p. 224). AN is most common in women, and the median age of illness onset for AN is 18 years (Hudson et al.,

2007).

Bulimia Nervosa (BN) is characterized by binge/purge cycles where an individual consumes a large amount of food in a small window of time (binge) and attempts to remove the food via vomiting, laxatives, diuretics or excessive exercise (purge) (Black & Grant, 2014, p. 226). Due to acid vomit, individuals with BN experience a chronically inflamed sore throat, worn tooth enamel, acid reflux disorder, dehydration and electrolyte imbalance (Black & Grant, 2014, p. 226). Similar to AN, individuals with BN are extremely concerned with the weight and shape of their body. Likewise, the median age of onset for BN is 18 years (Hudson et al., 2007).

Eating disorders are a form of mental illness that is highly prevalent worldwide. In a global examination of confirmed eating disorder diagnoses, it was found that the weighted mean percentages of ED in a lifetime are 8.4% for women and 2.2% for men (Galmiche et al., 2003). Examining this percentage over the course of 18 years, the same study found that the rate of ED as reported in the weighted mean of ED disorders across the world has increased from 3.5% in 2000 and to 7.8% in 2018. In a bottom-up cost of illness analysis, which examines the cost of healthcare services utilized to treat a specific disease in an individual, it was determined that from the 2018-2019 fiscal year, 64.7 billion dollars were spent on ED treatments, an individual cost of $11,808 per person (Streatfeild et al., 2021). The rising prevalence of ED, and the extensive cost of the disorder indicates a public health crisis which must be addressed.

The impact of ED on the life of an individual is inflated with the psychiatric comorbidity of patients with ED and anxiety disorders, mood disorders, impulse control disorders, substance use disorders and other mental health issues (Hudson et al., 2007). In 2020, a study of 4,895 patients diagnosed with AN, BN or EDONS found that 6.7% had previously attempted suicide which resulted in hospitalization (Cliffe et al., 2020). Comorbidity with other disorders including personality disorder, depression, bipolar disorder, and substance abuse significantly increased the risk of suicide in these patients (Cliffe et al., 2020). The severe impact of ED and comorbid conditions on the lives of individuals warrants innovative methods to improve the quality of life of those suffering from ED.

Introduction to the History of Yoga and Yoga as Psychological Treatment

Yoga classes are guided by the Yoga Sutras, an ancient text written by Patanjali around 400 CE (Malhotra, 2017). The word "yoga" is derived from yui, which means to yoke (Carrera, 2006). While in English this is often used to refer to harnessing animals to a cart, the act of yoking can also refer to harnessing the power of the senses to control the mind (Carrera, 2006). The Yoga Sutras encourage people to pursue nonattachment through yoga. Attachment and nonattachment are related to schemas, or mental sets. The human brain uses schemas to group together things and ideas in which one's well-being

attaches to unrelated objects or ideas (Carrera, 2006). Associations are made within the brain that prompt individuals that a tangible thing or idea is "needed." Such needs can be physical such as, "I need a promotion" or "I need a new car." It can also be ideal: "I need to be perfect" or "I need to be thin." According to Patanjali, attachment limits individuals from understanding the yogic principle that you alone are enough (Carrera, 2006).Yoga seeks to supersede attachment through connection with the body and the breath and enter a higher, transcendent state (Carrera, 2006).

Studies into the effects of yoga are extensive, however many lack external reliability, have high attrition bias and small sample sizes which leave many questions remaining. Nevertheless, many studies agree that yoga has a positive impact on individuals, reducing psychological and biological indicators of stress (Chong et al., 2011; Zope & Zope, 2013; Riley & Park, 2015). In a narrative review by Pascoe et al. (2021), it was found that yoga generally improves self-compassion and decreases rumination, a cycle of negative thinking. This is also shown by the study completed by La Rocque et al. (2021) who studied bikram yoga and its efficacy in comparison to aerobic exercise. This examination of 53 women suggested that yoga helps interrupt negative thinking (La Rocque et al., 2021). The benefits of yoga have been studied in the general population, individuals with PTSD, cancer patients and even patients with schizophrenia (Riley & Park, 2015). This paper will specifically examine how these positive effects play a role in eating disorder treatment and prevention.

Research Behind Yoga and Eating Disorders

Theoretical Framework

The theory behind yoga practice and eating disorder treatment are closely associated. Eating disorders are often based in the discomfort of an individual within their own body (Black & Grant, 2014), causing a baseline disconnection, neglect and judgment of one's own body. Symptoms such as negative affect, poor interoceptive awareness and self-objectification all contribute towards generating a negative body image. According to Cook-Cottone and Douglass, their bodies are often the sole focus of the minds of individuals with ED, they see it from a very distorted and negative perspective (2017). With an emphasis on internal connection and nonattachment, yoga can be used in conjunction with conventional therapy and treatment practices to help improve this mindset.

Internal connection is important in developing a positive embodiment, a central concept in ED recovery. Positive embodiment is the development of an internal understanding of the body (Cook-Cottone & Douglass, 2017). Through developing body awareness, body responsiveness, body connectedness, body appreciation and body satisfaction (methods of discovering internal connection), an individual achieves positive embodiment (Perey & Cook-Cottone, 2020). This can help individuals with ED alter their mindsets from a negative

appreciation of their body to a positive one. Cook-Cottone and Douglas (2017) theorize that achieving positive embodiment is essential to reaching full ED recovery. By improving the relationship between the individual and their body, the need to resort to disordered eating behaviors as a coping mechanism for negative body image can be reduced.

In order to study ED, ED symptoms need to be measured. The most common measures used are the Eating Disorder Examination (EDE) and the Eating Disorder Examination Questionnaire (EDE-Q) (Guest, 2000). The EDE can be examined as global scores, and individual sub-scores. Both measures have high validity, reliability, and generalizability, and additional subscales in restraint, eating concern, weight concern, and shape concern (Guest, 2000). Scales that are also of high importance are the Eating Attitude Test, Eating Disorder Inventory, and Weight Concern Scale, which quantify symptoms that indicate how much an individual worries about their weight, body size or shape, participates in disordered eating such as eating too much, too little, or counting calories, binges, purges or skips a meal. Other outcome variables such as self-concept, self-compassion, body awareness and body acceptance will be addressed in relation to positive embodiment. An increase in any of these variables indicates an increase in positive embodiment (Perey & Cook-Cottone, 2020). Conversely, an increase in self-criticism is indicative of less positive embodiment.

Discussion

Upon examination of the current literature exploring the relationship between yoga and eating disorders, a number of studies have concluded that yoga treatment can improve eating disorders and related symptoms. Cari and colleagues (2010) found that one hour of yoga instruction received two times per week reduced Global-EDE scores over the course of eight weeks, and post-session measures showed a significant reduction in food preoccupation (Carei et al., 2010). Similarly, another study found that 90 minutes of hatha yoga received two times a week for eleven weeks lead to a reduction in global-EDE scores, with significant results in the restriction, weight concern, and eating concern sub-scores (Karlsen et al., 2018). In the procedure, participants had the opportunity to attend 22 sessions over three months. The average number of sessions attended over the course of the study was 13.75 (Karlsen et al., 2018). When examining the effectiveness of five to eight, 60 minute Kripalu yoga sessions on individuals with BN or BED over the course of eight weeks, Brennan et al. (2020) found a reduction in frequency of binge eating episodes and self-criticism as well as a significant increase in emotional regulation and self-compassion in the yoga-treatment group. These three studies relied on outpatient treatment plans, which resulted in high attrition and variation among class attendance. However, even in controlling for these inconsistencies, the results discussed remained statistically significant.

Studies of inpatient treatment of ED also found significant positive changes after yoga treatment. Ganga &

Chandrasekaran (2015) completed a study examining patients with AN, and found that 1 hour of hatha yoga in the morning for six weeks led to a significant reduction in anxiety and a more positive self concept. Similarly, Pacanowski et al. (2017) examined the short term effect of pre-dinner 50 minute yoga sessions for 5 days and found that between days 3 and 5, pre-meal negative affect had increased significantly in the yoga group. Because of the inpatient format of these studies, variation amongst lifestyle between the groups was consistent, and fewer individuals dropped out of the studies.

In contrast to the studies above, some studies concluded contradicting results. A review completed in 2019 did not find a definite relationship between yoga treatment and eating disorders. In an examination of twelve trials involving 495 patients in total, effect sizes between yoga and control groups were generally found to be small to moderately sized (d=0.02 to d=2.15) which the authors concluded provided little evidence of the effectiveness of yoga as a treatment method (Ostermann et al., 2019). Outcome measures examined in these studies included the EDE as well as Eating Attitude Test, Eating Disorder Inventory, Weight Concern Scale, Body Mass Index, Profile of Mood States scale, and others (Ostermann et al., 2019). While the study reported little to no change in eating-related symptoms, depression (BDI) and anxiety (STAI-S), the yoga condition group had a decrease in Global-EDE scores over the course of the study. In another study of women with body dissatisfaction, an indicator of ED, results on the Global-EDE scale did not change between the control group and the group which participated in yoga once a week for 45 minutes over the course of 6 weeks (Mitchell et al., 2007). There are a few important differences between this study and the others. Primarily, this study had the shortest duration and the most infrequent distribution of yoga classes (45 minutes once a week over 6 weeks, in comparison to 60-90 minute classes multiple times a week). Additionally, this study did not indicate that traditional yogic themes of internal reflection and positive embodiment were emphasized throughout the class. The duration/distribution of yoga classes and avoidance of philosophy could have confounded the study's conclusion that there was no improvement of body awareness or body acceptance (Perey & Cook-Cottone, 2020). Thus, the participants might not have had the same experience as those in studies which emphasized yoga philosophy (Brennan et al., 2020; Carei et al., 2010; Karlsen et al., 2018; Pacanowski et al., 2017). Pacanowski et al. (2017) also reported no change in Global-EDE scores, however, due to the short duration of the study (5 days), a change in these scores was not expected. The authors of the study speculated that had the study been continued for a longer period of time, there would possibly have been a change in these scores.

Case Report Discussion

Randomized controlled trials are the most effective method of establishing a causational relationship between

yoga practice and eating disorder symptoms, however anecdotes can add further understanding to the reasons why yoga is an effective tool in eating disorder treatment. In a case report of a 38 year old woman suffering from AN, the patient reported that "yoga recovered the soul contact which she lost and she had learned to perceive and feel herself again." She described how her eating disorder was a method of avoiding traumatic experiences and numbing the pain. Amidst the thralls of her ED, she "did everything to not perceive her body." However, group yoga added a grounding aspect which allowed her to face her traumas and not "run away." In describing yoga the woman said, "you have a different approach to yourself, and you can track and perceive yourself on another level, without being negative as it was before." Participating in yoga, her BMI steadily increased to a healthy level from 15.75 to 20.2, while simultaneously feeling more comfortable with her own body (Ostermann et al., 2019).

As a psychiatrist and certified yoga instructor, Robin Boudette published an account of her experience with yoga as a therapeutic treatment for individuals with ED (Boudette, 2006). In a personal examination of patient responses to yoga therapy, she found some common results; her patients benefited from comparing their struggles in life to the challenges they faced in yoga classes. She described that, in some cases, words are not sufficient to change the thought process of an ED patient from a generally negative self-view point to a more positive one. In addition to therapy, yoga enhances the physical, mental and emotional connection to the body, further helping the patient reach self acceptance (CookCottone, 2020). In her classes, she encourages yoga students to be aware of negative thoughts such as "I can't do this" or "I'll never be good at that," and reflect on the frequency of these thoughts. Such internal reflection provides the patient with the opportunity to examine how helpful negative thoughts are, and their personal relation to overall productivity.

Yoga and ED Prevention

While yoga can be helpful in treating ED, it is also possible that yoga can aid the prevention of disordered eating behaviors, and body dysmorphia. Disordered eating behaviors are positively correlated with body dissatisfaction (Delaney & Anthis, 2010). Developing a foundational appreciation of body awareness and body satisfaction can decrease the likelihood of developing eating disorder behaviors in an attempt to change one's appearance. In a systematic review of twelve cross sectional studies on yoga practitioners, it was found that those who practiced yoga were more likely to exhibit healthier eating habits, higher body positivity, body satisfaction, body awareness, and fewer eating disorders (Domingues & Carmo, 2019).

Yoga in Children/Adolescents

Research suggests that young girls begin to worry about thinness as early as six years of age. As children mature, both boys and girls can develop body dissatisfaction, with young girls desiring to weigh less, and boys desiring to "bulk up" (Morris & Katzman, 2003). Body dissatisfaction can easily lead to disordered eating behaviors, with the presence of AN in girls 15-19 around 0.48%, and BN 1-5% (Morris & Katzman, 2003). Many reviews had proposed a link between the media portrayal of the ideal body image as a strong contributor to body dissatisfaction and eating disorders (Derenne & Beresin, 2018; Benowitz-Fredericks et al., 2012; Hinojo-Lucena et al., 2019). A study examining responses to images of the "ideal body" found that children under 18 responded with a more dramatic change in negative body image than those of 19 or older (Morris & Katzman, 2003). With social media impacting children at young ages, developing practices to teach children positive embodiment is getting more pertinent to encourage healthy eating behaviors.

Yoga has been suggested to improve positive embodiment in adults while also being used as a preventative measure in children. The research on the effectiveness of yoga treatment on youth's body image is limited, however. One study conducted by Halliwell et al. (2018) examined the impact of replacing one of two gym classes a week with a 40 minute yoga session in primary schools. With a total sample size of 344 students, varying from age 9 to11 and across four different schools, the study examined changes in students' body esteem, body surveillance, body appreciation, and mood over a four week period. Baseline measurements of the study confirmed common gender differences as girls exhibited lower body esteem and higher negative affect than boys. The study found an increase in esteem, mood and appreciation across both the treatment and the control groups, and a decrease in body surveillance, which suggested that physical activity as a component of primary school curriculum helped improve these qualities in students, but it did not show variation between the yoga intervention and the traditional physical education (PE) group (Halliwell et al., 2018). Possible explanation for the lack of differentiation is the low frequency of yoga sessions. The students who participated in the yoga class generally enjoyed it and were willing to continue after the study, which suggests increasing the duration and frequency of yoga classes could be a helpful adjustment for young children (Halliwell et al., 2018). Further research should be conducted to examine if a greater frequency of yoga sessions would create an even greater effect on the treatment condition.

Another pilot study examined the impact of yoga treatment in school with a sample size of 12 students, ten girls and two boys, who had initially low levels of body satisfaction. The intervention group participated in thirty minutes, three times per week of yoga. The results showed that the children in the yoga group had increased body satisfaction (p<0.01), which suggests that children can benefit from weekly yoga intervention (Clance et al., 1980).

Finally, a study consisting of 49 students examined yoga intervention in emotional distress, prosocial behavior and

attitudes towards violence in high-risk youth and found that a weekly yoga program led to significant reductions in anxiety, depression, and global psychological distress. While not directly related to body image, or eating disorders, improving anxiety and depression in youth can help improve common comorbidities with ED, and therefore help individuals with ED (Frank et al., 2014).

Overall, more research is needed to determine the efficacy of yoga in schools as a prevention method for youth with deflated body image and high risk of eating disorders. Despite the lack of information, many studies suggest that yoga interventions in PE classes at schools could be beneficial in improving body satisfaction and other eating disorder related factors, and therefore reduce risk of eating disorder development later on in life.

Limitations of Current Research

Though the studies provide profound insights about yoga's impact on body satisfaction, and clinical measures of ED symptoms, it is important to discuss the limitations of current research on the topic. Yoga research, which generally requires long time frames (2+ months) and active participation from participants, suffers from small sample sizes and high attrition rates. The sample sizes of the studies mentioned above range from n=30 (Ganga & Chandrasekaran, 2015; Karlsen et al., 2018) to n=93 (Mitchell et al., 2007). The largest rate of attrition was in the Karlsen et al. (2018) study, in which 37% of participants had discontinued the study by the end of the 6 month period. The smallest attrition reported was 2 out of 38 participants failing to complete the study (Pacanowski et al., 2017). Additionally, the Ganga & Chandrasekaran (2015) study provided no information on attrition rates.

The rate of attrition is important, as the choice to discontinue the study might be related to negative experiences in the yoga treatment condition. Carei et al. (2010) reported four participants lost to attrition, evenly distributed across the control and treatment groups. These participants were not statistically different at baseline than those included in the study. One of the dropouts provided a reason for attrition, claiming "disinterest in yoga" as the primary motivation. Brennan et al. (2020) had 19 participants drop out (26% of the total sample size). While these individuals also had statistically similar baseline measures to those who completed the study, two reported shame about their body size as a reason for discontinuation. Another individual said that the group yoga classes were triggering because they knew everyone in the classroom had an ED. Finally, Pacanowski et al. (2017) reported 2 dropouts who were statistically similar to the other individuals in the study, with the exception of an elevated mean age (N=42.5+/- 2.5 years). The negative effects of self-comparison during yoga class is one of the greatest concerns of researchers looking into this treatment. Citing reported discomfort in yoga classes, or exacerbation of illness including negative affect, self criticism or other eating disorder symptomatology

is important in understanding the negative impact yoga can have on individuals with ED and should be closely monitored.

Moreover, while the current body of research on yoga shows promising results on its effectiveness in promoting and maintaining mental health in various cases, there are still large gaps in the information presently available. The majority of yoga research involves young, white female practitioners. Female-identifying individuals make up the majority of the population suffering from ED, while male identifying individuals as well as gender and sexual minorities are also important populations of concern (Hudson et al., 2007; Nagata et al., 2020). 10.5% of transgender men and 8.1% of transgender women suffer from an eating disorder in their lifetime, yet research on yoga's effect in these communties is non-existent (Nagata et al., 2020). In fact, research suggests that media's representation of the yoga body creates an exclusionary environment for non-traditional bodies which could be harmful in the process of achieving positive embodiment (Webb et al., 2020). Though the percentage of eating disorders in male-identifying individuals is only 2.2%, this small percentage still represents a large number of individuals struggling with an ED in need of assistance (Hudson et al., 2007). Four males were included in Carei et al. (2010), and the rest of the studies discussed in this paper consisted entirely of female-identifying individuals. In order to develop a comprehensive understanding of the impact of yoga on ED, it is important that future research includes these populations.

Racial minorities are another population that is ignored by the current body of yoga research. As stated above, the majority of participants in the studies discussed are caucasian. The trial conducted by Mitchell et al. (2007) included the most diverse population, with 55.4% White, 25% Black, 4.3% Hispanic, 9.7% Asian, and 5.4% other race-identifying individuals. While the sample was more diverse, there was no analysis run to examine differences in results between various races or ethnicities. Though the understanding of ED presentation in minority groups is improving, there is still a need for more research to understand the differences in these populations. The reality in the United States is that the majority of yoga practitioners are middle class, white females (Ross et al., 2013). The sensation of self-comparison and judgment is often higher if one is the racial minority in a group (Ross et al., 2013). This could make yoga sessions counterproductive and even harmful for individuals suffering from ED. Therefore, it is essential for future research to be more inclusive of these underrepresented groups so that a greater understanding of its impact on various cultures can be established.

Conclusion and Future Directions

As more and more research is published on eating disorders and yoga, our understanding of their relationship is constantly changing. The current information available, while limited in many ways, suggests that yoga can improve ED symptoms by encouraging body positivity. Yoga is an

interactive treatment method which helps the practitioner take initiative in creating a more positive self-view. Yoga, therefore, can provide another resource for individuals to use in the process of recovery from an ED, or simply in preventing development of ED in children and adults. While this paper discusses Anorexia Nervosa and Bulimia Nervosa, and the studies examined look at these disorders individually, this paper examines yoga's impact on ED in general. It is not evident that yoga alone can treat individuals diagnosed with an eating disorder, but it can be a helpful additional method of treatment. Moreover, individuals who partake in yoga can build a preventative mental strength and appreciation for their body which can help them avoid resorting to ED related coping mechanisms in times of stress and depression.

Building on the current body of literature on yoga and ED, more information is needed to determine the optimal frequency and duration of yoga classes. Current literature varies greatly in total number, duration, type and frequency of classes. Replication studies to confirm current findings with more similar procedures would help to confirm the accuracy of obtained results. Additionally, with the sample pool for most yoga research limited to white women between 18 and 40, more information is also needed to understand the impact of yoga on children and gender and racial minorities. Confirming the effects of yoga on children can provide the opportunity to expand its use in physical education and possible preventative methods for young children. This could further help other gender and racial minorities find support in attending yoga classes for their own benefit. With the prevalence of ED and the difficulty of its treatment, it is essential that a variety of treatment and prevention resources are available to allow patients to find the methods that are effective for them. The findings of this paper suggest that yoga provides another avenue for patients to seek help and self-acceptance on their journey towards recovery.

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Onyinyechukwu Emmanuella Okwu, Honours Psychology - Research Intensive Specialization, Human Resources Management (Distinction), University of Waterloo

Emmanuella graduated with an honours degree in Psychology and Human Resources Management, with a research specialization from the University of Waterloo. During her undergraduate studies, she developed a passion for understanding how culture influences the workplace. She gained practical experience as a research assistant at the Culture at Work Lab at the University of Waterloo, where she engaged in projects exploring workplace intergroup relations. After graduating, Emmanuella transitioned into the role of a Diversity, Equity, and Inclusion (DE&I) professional, continuously expanding her knowledge and actively participating in research on the impact of various identities in the workplace. She is deeply passionate about this work and remains dedicated to fostering inclusive environments through research, advocacy, and practical initiatives. Emmanuella's goal is to make a positive impact by advancing DE&I practices and fostering inclusivity at all levels.

Was there a particular experience that sparked your research interests?

As a Nigerian studying abroad, I've had the privilege of meeting people from diverse cultures and backgrounds, which ignited my curiosity about how different cultures coexist in the workplace. I became increasingly aware of the challenges individuals face when it comes to discrimination and exclusion based on their unique identities and characteristics and I became deeply interested in exploring workplace culture and understanding the experiences of individuals from diverse backgrounds and identities.

Who has been the most influential person in your life?

My family has been incredibly influential in shaping who I am today. Their love, support, and values have taught me the importance of perseverance, dedication, and hard work. These principles continue to guide my behavior and drive me towards my goals. I am also grateful for the invaluable guidance and support I have received from Dr. Wendi Adair throughout my research and undergraduate journey. Dr. Adair has played a significant role in shaping my academic and research path, providing ongoing support and mentorship.

What is your greatest accomplishment?

My greatest accomplishment to date is graduating with honours and getting my research work published. Initially, I had doubts about excelling in research, but through dedication and support, I was able to overcome them. These accomplishments have not only boosted my confidence in my research abilities but have also opened doors to new opportunities and collaborations. They have strengthened my resolve to pursue further research, contribute to scientific advancements, and make a positive impact on society through my work.

Where do you see yourself in 10 years?

In 10 years, I see myself continuously working to improve and promote Diversity, Equity, and Inclusion (DE&I) to ensure that everyone's unique characteristics are valued and respected. I am passionate about creating inclusive environments and products for individuals from all backgrounds to thrive. I envision myself contributing to research in this field and driving evidence-based solutions for incorporating DE&I into organizations, product development, and society.

The impact of racial microaggressions on interpersonal trust in the workplace

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The prevalence of microaggressions in the workplace and its effect on overall well-being has been a growing topic of interest. Microaggressions are subtle forms of discrimination that are often unintentional but can still have a significant negative impact on individuals' mental health. This study examines the relationship between racial microaggressions and interpersonal trust in the workplace. We hypothesized a negative impact of racial microaggressions on interpersonal trust and a cross-sectional interaction between racial microaggressions, strength of racial identity, and perceptions of an organization's diversity and inclusion climate. The study utilized an online survey to collect data from (n = 196) US-based employees who self-identified as members of a marginalized community of color. The survey measured participants' experiences of workplace racial microaggressions, levels of interpersonal trust, salience of their ethnic identity, and perception of their organization's diversity climate. The results indicated that the experience of racial microaggressions in the workplace negatively impacted interpersonal trust and that strength of ethnic identity and organizational diversity climate are significant predictors of interpersonal trust. However, the cross-sectional interaction hypothesis was not supported. The practical implications of the findings highlight the importance of addressing microaggressions in the workplace, as they have a significant impact on interpersonal trust and can undermine diversity and inclusion efforts.

Keywords: racial microaggressions; organizational diversity climate; interpersonal trust; racial ethnic identity

Introduction

Interpersonal trust, commonly defined as the willingness to be vulnerable to others with the belief that this vulnerability will not be abused, has been identified as an element at the center of interpersonal relationships (McAllister, 1995). Interpersonal trust is a critical element that forms the core of successful relationships and is necessary for effective collaboration in organizations (Mayer, Davis & Schoorman, 1995; Gould-Williams & Davies, 2005). Cultural and ethnic differences have been identified as a significant factor that affects an individual's willingness to trust others (McAllister, 1995). The literature suggests that racial and ethnic minority groups tend to exhibit lower levels of trust, which is often associated with their experiences of historical and ongoing discrimination. As a result, they may be less likely to trust others. (Smith, 2010; Douds & Wu, 2018).

Diversity and inclusion are crucial for success, especially as the workforce becomes more culturally heterogeneous. When working in diverse environments with clear differences between individuals, there tends to be heightened levels of uncertainty, underscoring the need for trust as a crucial factor in effective collaboration (Liesch, Welch, & Buckley, 2011). This is especially important for individuals from different racial and ethnic backgrounds to work together effectively (Downey et al., 2015).

Despite the establishment of laws that protect marginalized groups from racial discrimination, subtle forms of discrimination still exist. These subtle forms of discrimination are called *racial microaggressions* and are often experienced by people of color in their everyday lives. Racial microaggressions are unintentional and subtle, they include verbal, behavioral, and environmental indignities that are directed towards historically stigmatized groups in society (Pierce, 1970; Sue, Capodilupo, Torino, Bucceri, Holder, Nadal, & Esquilin, 2007). Examples of racial microaggressions include assumptions about intelligence or criminality based on race, comments on language proficiency or country of origin, and statements that dismiss a person's racial identity and experiences. The extent to which a person of color assesses a situation as microaggressive could depend on their racial consciousness and sensitivity. People with a greater sense of racial identity may assess certain situations as being more microaggressive than people who have a lower sense of racial identity (Constantine & Sue, 2007).

Although there is a body of research on racial microaggressions, including its causes and impact on the well-being of people of color, literature on the extent to

Figure 1. The Theory of the Relationship Between Interpersonal Trust, Racial Microaggressions, Ethnic Identity, and Organizational Diversity Climate
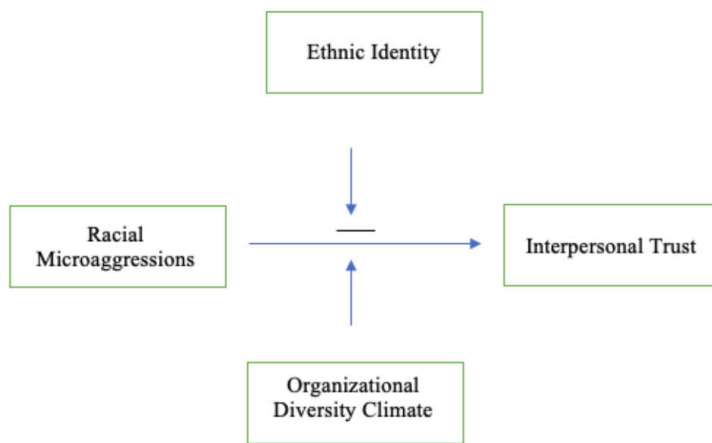
which this experience can affect interpersonal trust requires more investigation. In an effort to bridge this gap in literature, this study examines the relationship between perceived racial microaggressions and trust in the workplace among employees who identify as members of marginalized communities of color.

Interpersonal Trust

Interpersonal trust is a fundamental part of relationship building and intergroup relations; it is a strong predictor of interindividual and intergroup cooperation. (Vermue et al., 2019). Successful collaboration and achievement of personal and organizational goals are contingent on interdependence, and trust is integral to effective working relationships (Mayer et al., 1995). Literature has identified trust as an important precursor to a range of workplace outcomes including organizational commitment, high job satisfaction, high performance outcomes, and cooperation amongst team members (Cook & Wall, 1980; Guin et al., 2014; Sapp et al., 2019; Erdem et al., 2003; Whitener et al., 1998; Costa & Anderson, 2011).

Research indicates that group membership impacts the development of interpersonal trust, noting that people are more likely to trust members of their in-group compared to members of an out-group. However, initial low levels of trust for out-group members are not stable over time but are shaped by experiences with out-group members (Pettigrew, 1998; Allport et al., 1954). Positive interactions with members of the outgroup congruently change a person's attitude towards the members of that group resulting in more favorable perceptions and increased trust toward members of that group (Vermue et al., 2019). On the other hand, perceived dishonesty and the perceived experience of racial microaggressions often negatively impact the level of interpersonal trust in the workplace (Vermue et al., 2019). This study aims to examine

the variables that influence trust between co-workers.

Perceived Racial Microaggressions

Racism stems from beliefs of racial superiority, which often manifests as acts of discrimination, prejudice, bigotry, and violence towards marginalized groups. The experience of racism has been documented as a significant source of stress in the lives of people of color, causing both psychological distress and physical distress to the body in the forms of depression, anxiety, and hypertension (Harrell, 2000; Bynum et al., 2008; Williams, 2018; Pieterse & Carter, 2010). Although efforts have been made to address systemic racism, subtle forms of racial discrimination still occur in the everyday lives of marginalized groups (Pierce, 1970). One such subtle form of racial discrimination is *racial microaggression*, defined by Sue et al.(2007) as a: "Brief, commonplace verbal, behavioral, or environmental indignity, whether intentional or unintentional that communicates hostile, derogatory, slights towards people of color." The experience of racial microaggressions is not far from the workplace and it remains evident in peer-to-peer interactions, as well as leader-subordinate interactions (Rowe, 1990). For example, Sue et al. (2017) found that racial minorities could be excluded from workplace relationships because of their minority group memberships, putting them at a disadvantage in building lasting connections that could influence career growth. Additionally, they found that they are likely to be victims of procedural injustice that stems from racial bullying perpetrated by superiors.

Behaviours such as microaggressions violate norms of mutual respect and negatively impact the work behaviours, attitudes, and overall well-being of their victims (Schilpzand et al., 2016). The experience of racial microaggressions in the workplace also impacts retention rates, job satisfaction, and job performance (Sue et al., 2009; DeCuir-Gunby & Gunby, 2016; Hunter, 2011). Racial microaggressions are covert forms of racial discrimination which can sometimes go undetected or unpunished due to their subtle nature. However, racial microaggressions remain present in workplaces and can manifest during workplace interactions, creating negative workplace outcomes (Sue et al. 2009).

Sue et al. (2007) explain that racial microaggressions are subjective because those who commit these acts are often unaware of the impact of their words and actions. Therefore researchers studying racial microaggressions focus on understanding how victims perceive these acts using self-report measures (Williams, 2019; Mercer et al., 2011; Blume et al., 2012; Lin, 2011).

Contemporary discrimination is known to cause distrust in marginalized group members. Racial or ethnic bullying, which includes the use of racial slurs or derogatory comments, can lead to negative emotions and decreased trust in the workplace (Smith, 2010; Fox & Stallworth, 2005). The aim of this research study is to explore the relationship between the experience of racial microaggressions in the workplace

and interpersonal trust in co-workers. We anticipate a negative correlation between racial microaggressions and interpersonal trust: as individuals report experiencing more racial microaggressions, their reported levels of interpersonal trust will decrease. Moreover, this correlation will differ depending on an employee's ethnic identity and their organization's diversity climate, which will be further explored below.

Ethnic Group Identity

Although racial microaggressions are a prevalent experience for many individuals from ethnic minority backgrounds, there may be variations in how people of color perceive such encounters as discriminatory or negative. Previous studies have suggested that the extent to which an individual attends to race-based cues in their environment could be influenced by the strength of their ethnic identity. Ethnic identity refers to the part of an individual's self-concept that is shaped by perception of and emotional attachment to their ethnic group (Tajfel, 1981; Rotheram & Phiney, 1987).

An individual's ethnic identity is shaped by their commitment to the culture of an ethnic group, including the customs, values, beliefs, knowledge, art, and language of that ethnic group (Phinney & Ong, 2007; Triandis, 1994; Brett & Gelfand, 2006). This culture is passed down from generation to generation and plays a significant role in how individuals experience and interpret the world around them (Erez & Earley, 1993). The development of one's identity is influenced by various factors including racial, ethnic, and cultural socialization (Hughes et al., 2006). While race is a social construct that is used to create distinctions between people based on physical attributes, racial identity refers to a person's sense of self that is developed from their connection to their racial group (Smedley & Smedley, 2005; Broman, 2015). Racial and ethnic identities are overlapping constructs that reflect an individual's self-concept and are both influenced by cultural heritage (Woo, Fan, Tran, & Takeuchi, 2019). Hence, this study draws on the themes of racial identity and ethnic identity, using them interchangeably.

People's social categorization influences their perception and interpretation of events (Trepte & Loy, 2017). The importance a person places on their racial identity influences how they perceive situations with prejudice ingrained in them. Shelton and Sellers (2002) investigated the influence of racial identification on the attribution of racial discrimination to negative encounters. They discovered that African Americans who identified strongly with their race were more likely to ascribe an ambiguous discriminatory event to race, compared to those for whom race was a less significant aspect of their identity (Shelton & Shellers, 2002).

Prior research also shows that strength of ethnic/racial identity impacts the downstream effects of perceived racial discrimination, indicating that the level of a person's racial/ethnic identity could either alleviate or exacerbate the negative effects of racial discrimination (Sellers & Shelton, 2003).

Brondolo et al. (2019) indicate that racial identity development could enhance a person's pride and commitment to their racial group and help one create strategies for managing racial discrimination. Similarly, Sellers et al. (2003) found buffering effects of racial identity on the psychological burden of racial discrimination in African American students. They noted that individuals who identify race as a central part of their identity may develop coping strategies because they have had more experience dealing with racial microaggressions. This suggests that individuals with a strong racial identity can develop a sense of belonging and support that can be protective against the negative effects of discrimination. Concurrently, there is evidence that the strength of a person's racial/ethnic identity could exacerbate the negative effects of racial discrimination causing more psychological harm to the victims (Woo et al., 2019). This may occur because individuals with a strong racial/ethnic identity may be more invested in their group identity and therefore more likely to experience discrimination as a threat to their sense of self.

It is important to acknowledge the complex nature of the relationship between racial identity and discrimination, as it can have both protective and harmful effects on individuals. A person's strength of racial/ethnic identity might influence their perception of race-related stressors which could further influence the psychological burden of these stressors. Racial microaggressions are race-related stressors which could negatively impact interpersonal trust for people who attach high value to their racial/ethnic identity relative to those with a low strength of racial/ethnic identity.

Organizational Diversity Climate

An organization that values cultural diversity is one that embraces cultural diversity through a heterogeneous workforce, communicated through diversity strategies and practices that aim to attract and retain diverse talent while supporting employees from all backgrounds (Goyal & Shrivastava, 2013; Roberson, 2006; Downey et al., 2015; Hofhuis et al., 2016). Inclusion in the workplace is the extent to which employees feel as though they are represented in the mission and vision of the organization, the extent to which all people are involved in workgroups and are given the opportunity to take part in decision-making processes (Mor Barak, 2008).

Valuing diversity and implementing diversity practices in the workplace have been known to produce a range of positive outcomes at both the individual and organizational level, including improved job performance, retention, and knowledge sharing, amongst others (McKay et al., 2008; Konrad, 2006; Hofhuis et al., 2016). Within the context of this study, an organization's diversity climate will be treated as the perception of both diversity, communicated through diversity practices, and inclusion in the workplace.

Diversity and inclusion are different but overlapping concepts that influence the formation and sustenance of workplace relationships and can further influence the development

of trust in the workplace (Tzafrir et al., 2004; Purdie-Vaughns et al., 2008). Research by Stephanie Downey and her colleagues has shown that when employees feel included, they are more likely to trust their colleagues in a diverse work environment (Downey et al., 2015). A high diversity climate can create a sense of psychological safety for marginalized communities, which can further promote trust (Singh et al., 2013). Although experiences of racial microaggressions can negatively impact interpersonal trust, a strong organizational diversity climate might mitigate these effects relative to a weak diversity climate.

The Current Study

In summary, we predict that the experience of perceived racial microaggressions will have a negative impact on interpersonal trust in the workplace for people of color. Strength of racial/ethnic identity as well as organizational climate will moderate the effect of racial microaggressions on trust such that the negative effect of racial microaggressions on trust will be more pronounced for employees with a stronger ethnic identity and less pronounced in organizations where employees report a strong diversity climate. In other words, the proposed relationship will be stronger for employees with a high strength of racial identity within an organization with a low diversity climate and weaker for employees with a low strength of racial identity within an organization with a high diversity climate.

Method

Sample and Procedure

Participants

Data was collected from employees in the United States (N = 196). All participants were between the ages of 20 and 69 (M = 35.3, SD = 8.70) with 60.1% Male, 36.4% Female, and 1% other. Detailed demographic information can be referenced in Table 2 within the Appendix. Data was collected using an anonymous survey on Amazon Mechanical Turk titled "Interpersonal Relationships in the Workplace." The study aimed to capture the reported experience of racial microaggressions in marginalized group members. Therefore, only people who identified as a person of color were invited to participate. Participants also had to have been employed on a full-time basis at their current organization for at least two years (45% 2-5 years, 55% longer than 5 years). This measure was put in place to ensure that they could attest to their organization's diversity climate.

Procedure

The study employs a cross-sectional design to test the three-way interaction between perceived microaggressions,

strength of ethnic identity, and organizational diversity climate on interpersonal trust in the workplace. The survey consists of four sections, each of which assess different aspects of participants' workplace experiences. The first section uses the Multigroup Ethnic Identity Measure adapted from Phinney (1992) to assess participants' racial identity. The second section assesses participants' perceptions of workplace microaggressions using the Racial Microaggressions Scale (RMAS) adapted from Torres-Harding et al. (2012). The third section assessed participants' level of interpersonal trust in their workplace using a combined scale adapted from Cook and Wall (1980) and Ferres (2002). The fourth section assessed participants' perceptions of their organization's diversity and inclusion climate using a scale adapted from Downey et al. (2015).

Measures

Interpersonal Trust

To create a more comprehensive measure of interpersonal trust two previously validated scales were merged. The first scale included six items measuring interpersonal trust in co-workers taken from the 12-item New Work Attitude Measures of Trust, Organizational Commitment and Personal Need Non-Fulfilment (Cook & Wall, 1980). The scale showed a high Cronbach's alpha (α = .924). Sample items included: "If I get into difficulties, I know my co-workers will try and help me out," and "Most of my workmates can be relied upon to do as they say they will do." The second scale was the 12-item "Workplace Trust Questionnaire" (α = .961) (Ferres, 2002). Sample items included: "I feel that my co-workers are truthful in their dealings with me," and "I think that my co-workers act reliably from one moment to the next."). Participants' level of interpersonal trust was measured on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Both scales have been validated and psychometrically evaluated in various studies and found to have high internal consistency, reliability, and validity. The combined scale showed a high Cronbach's alpha of (α = .971) indicating a high internal consistency between items. Responses were recorded on a 7-point Likert Scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Perceived Racial Microaggressions

We used 29 items that examine the experience of microaggressive actions from the Racial Microaggressions Scale (Torres-Harding et al., 2012) to assess the frequency of experiencing racial microaggressions in the workplace. This scale assesses the experience of racial microaggressions using six factors. The invisibility factor measures the extent to which people are dismissed, devalued, ignored, and treated as lower class citizens because of their race. The criminality factor includes items that measure the extent to which criminal attributions are made to a person of color as well as the extent to which

they are treated as though they could be dangerous. The low achieving/undesirable culture factor contains items that assess the extent to which people of color are treated as incompetent because of their racial group and the extent to which people are treated according to negative racial stereotypes. The sexualization factor measures the extent to which people feel overly sexualized because of their racial background. The foreigner/not belonging factor contains items that measure the extent to which people are treated as though they do not belong to the country in which they reside and are seen as foreigners. Lastly, the environmental invalidations factor contains items that assess the perception of negative messages that stem from being the only person of one's racial group in a work setting and underrepresentation of one's racial group in positions of power (Torres-Harding et al., 2012). The goal of this study was to examine racial microaggressions that occurred in interpersonal relationships only. Thus, items that measured environmental invalidations were excluded from the perceived racial microaggressions scale.

The Microaggression Scale used offers a comprehensive method of assessing microaggressions that captures various forms and expressions of mistreatment and provides valuable information on the prevalence and impact of microaggressions. By using a validated survey measure, participants were able to report their experience of perceived microaggressions, regardless of their familiarity with the term itself. The scale showed a high Cronbach's alpha of (α = .975), indicating a high internal consistency between items. Sample items included: 'I am treated like a second-class citizen because of my race,' 'Others suggest that people of my racial background get unfair benefits,' and "Other people treat me like a criminal because of my race." Participants rated their experience of racial microaggressions on a continuum: 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often) and 5 (Always).

Racial Identity

Strength of Racial Identity was measured using the Multigroup Ethnic Identity Measure (MEIM) (Phinney, 1992). The MEIM offers a multifaceted approach to assessing ethnic identity by providing the means to explore and evaluate commitment across different dimensions of ethnic identity. Sample items include: "I have a lot of pride in my ethnic group," and "I have a strong sense of belonging to my own ethnic group." Participants responded to the survey question on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The scale showed a high Cronbach's alpha of (α = .924) indicating a high internal consistency between items.

Organizational Diversity Climate

Participants' perception of their organizations' diversity and inclusion climate was assessed using a scale from Downey et al. (2015) which offers a comprehensive assessment of an organization's diversity climate, providing valuable insights into individual perceptions, allowing for a nuanced understanding of their experiences. Sample items included: "I feel included in this company's definition of diversity," "All viewpoints, including those that differ from the majority opinion, are considered before decisions are made by this company," and "Everyone at this company, regardless of background and perspective, is encouraged to share their ideas openly." Responses were recorded on a 7-point Likert Scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale had a high Cronbach's alpha of (α = .964) indicating a high internal consistency between items.

Results

Descriptive Statistics by Race/Ethnicity

Table 1 shows descriptive data by race/ethnicity. On average, participants' trust in their colleagues was 5.40 (SD=1.09). No significant differences in trust were found between ethnic groups or gender.

Participants reported experiences of racial microaggressions was 2.13 (*SD* =1.0). However, the reported experience of racial microaggressions differed significantly across the ethnic groups, $F(8,187)$ = 3.15, $p < .001$. Due to the small sample size, post hoc tests for significant differences between groups were not conducted. Additionally, we investigated the difference in the experience of racial microaggressions by gender identity, but no significant differences were observed.

Participants reported an average strength of ethnic identity of 3.07 (SD=.55). An analysis of variance was performed to examine the differences in the strength of racial identity among ethnic groups and gender identity, but no significant differences were observed.

The participants' reported level of perceived diversity and inclusion strategies within their organizations was on average 5.12 (SD=1.13), with no significant differences across gender or ethnic groups.

Table 1. Means and standard deviations (in brackets) for all for survey scales by racial/ethnic group.

Ethnic Group	N	Racial Microaggressions	Interpersonal trust	Racial Identity	Diversity Climate
Indigenous (First Nations, Métis, or Inuit)	4	2.72 (0.68)	4.62 (1.46)	3.00 (0.45)	4.07 (1.44)
Black/African	91	2.32 (0.97)	5.35 (1.14)	3.17 (0.56)	5.17(1.16)
East Asian (e.g., Chinese, Japanese, Korean)	23	1.94 (0.81)	5.21 (1.08)	2.91 (0.52)	4.88 (1.07)
Southeast Asian (e.g., Filipino, Vietnamese)	17	1.67 (0.72)	5.74 (0.90)	2.92 (0.56)	5.34 (1.01)
South Asian (e.g., Pakistani, Indian)	9	2.04 (0.81)	5.46 (1.05)	3.06 (0.66)	4.95 (0.94)
Hispanic	41	1.89 (0.71)	5.53 (0.95)	3.00 (0.53)	5.16 (1.13)
Middle Eastern	5	1.73 (0.83)	5.22 (2.01)	2.93 (0.79)	4.94 (1.83)
West Indian/Caribbean	2	1.97 (1.32)	5.89 (0.24)	2.88 (0.05)	5.38 (0.06)
White	4	3.36 (0.57)	5.14 (0.21)	3.25 (0.3)	5.42 (0.17)
F (ethnic identity)	(8,187)	3.15	0.74	1.00	0.51

Correlation Analysis

Table 3 shows the results of correlation analysis for all variables in the study. Racial microaggressions and interpersonal trust were significantly negatively correlated, r (196) = -.324, $p < .001$. The greater participants' report of perceived racial microaggression in the workplace, the lower the report of interpersonal trust.

The correlation between strength of ethnic identity and racial microaggressions, was non-significant, r (196) = .024, $p < .001$. The reported experience of racial microaggressions did not differ significantly across people based on their strength of ethnic identity.

There was a moderate significant positive correlation between strength of ethnic identity and interpersonal trust, r (196) = .458, $p < .001$. The greater participants' reported strength of ethnic identity, the greater their interpersonal trust. Strength of ethnic identity was also significantly correlated with the perception of an organization's diversity climate, r (196) = .482, $p < .001$. As participants' reported ethnic identity increased, their perception of their organization's diversity climate increased.

Though weakly related, the experience of racial microaggressions was significantly correlated with the perception of an organization's diversity climate, r (196) = -.230, $p < .001$. As participants' experience of racial microaggressions increased, their perception of their organization's diversity climate decreased. Lastly, there was a strong relationship between organizational diversity climate and interpersonal trust, r (196) = .821, $p < .001$. This indicated that as participants' perception of their organization's diversity climate increased, their levels of interpersonal trust increased significantly.

Regression Analysis

Before testing our moderation hypothesis, a one-way ANOVA revealed a significant main effect of racial microaggressions on trust (F (77,118) = 1.47, $p = .031$) indicating that the experience of racial microaggressions in the workplace predicted the level of interpersonal trust in co-workers. To analyze our moderation hypothesis, a regression analysis was computed to examine whether racial identity and the perception of an organization's diversity and inclusion climate influenced the relationship between racial microaggressions and trust. First, the predictors were rescaled using mean centering.

Table 3. Descriptive statistics (M & SD) and inter-correlations for racial identity, racial microaggressions, interpersonal trust, and organizational diversity climate.

Scale	M (N = 198)	SD	1	2	3	4
1. Racial identity	3.07	0.55	(0.92)			
2. Racial microaggressions	2.13	1.00	.024	(0.98)		
3. Interpersonal trust	5.40	1.09	.458**	-.324**	(0.97)	
4. Organizational diversity climate	5.12	1.13	.482**	-.230**	.821**	(0.96)

Scale alpha reliabilities are included in the diagonal.

Notes: **$p < .001$

Main effects were entered in step one. The second step included two-way interaction terms and the hypothesized three-way interaction term was entered in the third step (Table 4).

The main effect model was significant (F (3,192) = 151.1, $p < .001$). There were three main effects in step one. 70% of the variance in interpersonal trust was accounted for by racial microaggressions, ethnic identity, and organizational diversity climate.

As expected, racial microaggressions were significantly related to trust (β = -.158, $p < .001$). The experience of racial microaggressions had a significant negative impact on interpersonal trust, indicating that employees who reported experiencing racial microaggressions in their workplace reported lower interpersonal trust in their co-workers.

Additionally, organizational diversity climate significantly predicted trust (β = .733, $p < .001$). Within organizations with a reported high diversity and inclusion climate, employees reported experiencing a greater level of trust.

Racial identity also significantly predicted interpersonal trust (β = .108, $p < .005$). Strength of racial identity was distinctively related to trust. The extent to which people identify with their racial/ethnic group identity meaningfully impacted their reported trust in their co-workers.

Although main effects were found across all variables, the predicted interaction was not detected. When two-way and three-way interaction terms were included, no significant interactions were identified. However, the main effects remained significant.

Exploratory Analysis

We examined potential variations in the predicted relationships across ethnic groups with a sample size greater than 20 which included the Blacks/Africans, East Asians, and Hispanic groups. For the Black/African group, the main effect model was significant (F (3,87) = 93.75, $p < .001$). 76% of the variance in interpersonal trust was accounted for by racial microaggressions, ethnic identity, and organizational diversity climate. There was a main effect of organizational diversity climate on interpersonal trust (β = .846, $p < .001$). However, the effects of perceived microaggressions (β = -.07, $p =$

.201) and strength of ethnic identity (β = .012, $p = .832$) were not significant.

For the East Asian group (refer to Table 5 in the Appendix), the main effect in model 1 was significant (F (3,19) = 49.5, $p < .001$), accounting for 89% of the variance in interpersonal trust. Model 2 distinctly predicted an additional 4% of the variance in interpersonal trust ($\Delta R^2 = .039$). No main effects of perceived microaggressions (β = -.113, $p = .182$) and strength of ethnic identity (β = .147, $p = .159$) were found on interpersonal trust in the workplace. However, there was a main effect of organizational diversity climate on interpersonal trust (β = .813, $p < .001$).

The two-way interaction term of ethnic identity with perceived racial microaggressions significantly predicted trust (β = .235, $p < .05$). There was a significant interaction between racial microaggressions and ethnic identity in predicting interpersonal trust such that compared to other groups, East Asians reported higher levels of trust in the presence of racial microaggressions and this effect was stronger when strength of ethnic identity was strong

For Hispanics, the main effect in model 1 was significant (F (3,37) = 15.26, $p < .001$). 55% of the variance in interpersonal trust is accounted for by racial microaggressions, ethnic identity, and organizational diversity climate. Consistent with the other two groups, strength of ethnic identity (β = .199, $p = .115$) had no significant main effects on interpersonal trust in the workplace. While perceived microaggressions (β = -.354, $p = .003$) and organizational diversity climate (β = .491, $p < .001$). had main effects on interpersonal trust.

Discussion

The present study investigated the relationships between perceived racial microaggressions, strength of ethnic identity, organizational diversity climate, and interpersonal trust in the workplace. The findings suggest that racial microaggressions negatively impact interpersonal trust, which is consistent with research on the negative impact of microaggressions on workplace relationships (Sue et al., 2007). To our knowledge, this study is the first to show a significant link between perceived racial microaggressions and interpersonal trust in the workplace. The finding that perceived racial microaggressions

Table 4. Regression analysis of interpersonal trust

Independent Variables	Step 1	95% CI		Step 2	95% CI		Step 3	95% CI	
		LL	UL		LL	UL		LL	UL
EI	0.11*	0.04	0.39	0.11*	0.04	0.4	0.12*	0.03	0.42
	(0.09)			(0.09)			(0.1)		
RMA	-0.16**	-0.29	-0.09	-0.16**	-0.29	-0.09	- 0.16**	-0.31	-0.09
	(0.05)			(0.05)			(0.06)		
OrgD	0.73**	0.62	0.8	0.74**	0.62	0.8	0.74**	0.62	0.8
	(0.05)			(0.05)			(0.05)		
RMA*EI				0.03	-0.16	0.30	0.03	-0.15	0.30
				(0.11)			(0.12)		
RMA*OrgD				-0.02	-0.13	0.09	-0.01	-0.13	0.10
				(0.06)			(0.06)		
RMA*EI*OrgD							0.02	-0.12	0.17
R^2	.702			.703			.707		
ΔR^2	.702			.001			.000		
F	151.1			89.97			74.65		
df	3,192			5,190			6,189		

Notes: **$p < .01$; *$p < .05$ Unstandardized regressions coefficients are reported, standard errors are in brackets; EI – Ethnic Identity, RMA - Racial Microaggressions, OrgD - Organizational Diversity Climate

negatively impacts interpersonal trust is consistent with the idea that the experience of racial discrimination in minority group members leads to lower trust (Wilkes & Wu, 2019). These findings also provide evidence that the experience of racial microaggressions negatively impacts interpersonal trust in the workplace.

The reported experience of racial microaggressions did not differ significantly across individuals based on their strength of ethnic identity, suggesting that the experience of racial microaggressions is not dependent on an individual's level of identification with their ethnic group.

There was a moderately significant positive correlation between strength of ethnic identity and interpersonal trust. This means that people with stronger ethnic identities tend to have higher levels of trust in their workplace relationships. This finding is consistent with research showing that strong group identities can promote positive intergroup relations providing evidence that a strong ethnic or racial group identity can be beneficial for promoting interpersonal trust (Martinez-Ebers et al., 2021).

According to the study, people with stronger ethnic identities tend to perceive their organization as more diverse when the organizational diversity climate is high. This finding is consistent with research showing that group identity can affect perceptions of diversity (Ashikali & Moraes, 2017). This effect suggests that individuals with stronger ethnic identities may be more likely to notice and appreciate an organization's efforts to promote diversity. In addition, having a stronger ethnic

identity may lead to having a greater sense of belonging and attachment toward the ethnic group and may therefore lead to valuing an organization that recognizes and supports cultural identity.

Though weakly related, the experience of racial microaggressions was negatively correlated with the perception of an organization's diversity climate. As the frequency of perceived racial microaggressions increased, the participant's perception of their organizations' diversity climate decreased. These results also suggest that the experience of racial microaggressions can create a hostile work environment, leading individuals to view their workplace as less diverse and inclusive (Chae et al., 2018). Thus, addressing microaggressions may be important to foster a positive diversity climate.

Lastly, there was a strong positive relationship between organizational diversity climate and interpersonal trust. This indicates that when people perceive their organization as diverse and inclusive, they tend to have higher levels of trust in their workplace relationships. This finding is consistent with research showing that a positive diversity climate can enhance workplace relationships (Cox & Blake, 1991). The results suggest that a positive diversity climate in organizations could create exposure to diverse perspectives, which can enhance workplace relationships and increase levels of trust among employees.

The findings do not show a three-way interaction between perceived racial microaggressions, organizational diversity climate, and strength of racial identity on trust. Possibly, no interaction was detected because the overall reported experience of racial microaggressions on the racial microaggressions scale was low and there was not enough variance in the results to observe interaction effects. This could be due to the structure of the Torres-Harding et al. (2012) Racial Microaggressions Scale. The experience of racial microaggressions can vary based on a person's racial group membership and research has shown that African Americans are more likely to experience the assumption of criminality compared to other racial groups while Asian Americans report more experiences of racial microaggressions in the foreigner/not belonging factor (Lewis & Neville, 2015; Sue & Capodilupo, 2008; Sue et al., 2007). The Racial Microaggressions Scale used may not have been comprehensive enough or sensitive enough to capture the full range of racial microaggressions that participants with different ethnic identities may have experienced. For instance, some microaggressions in the Racial Microaggressions Scale may be more prevalent or salient for some ethnic minorities, and therefore, the experiences of some ethnic minorities may not have been adequately captured.

Furthermore, the study suggests that while ethnic identity is an important predictor of interpersonal trust, it is not the only factor that influences trust in the workplace. Other contextual and individual factors such as diverse climate may also have an impact on interpersonal trust. This finding is consistent with the broader literature on interpersonal trust, which has identified various factors that contribute to trust, such as

communication patterns, perceptions of fairness, and personality traits (Dietz et al., 2010; Saunders et al., 2010). Furthermore, the study highlights that the diverse climate of an organization can also influence interpersonal trust. These findings are in line with previous studies that have linked interpersonal trust to organizational diversity climate and demonstrated that a positive diversity climate can improve employees' sense of belonging, psychological safety, and trust in both their colleagues and the organization as a whole (Downey et al., 2015; Kunze et al., 2011; Mayer et al., 2010). Organizations that prioritize creating a positive diversity climate may enhance interpersonal trust and ultimately promote positive outcomes in the workplace.

This study's noteworthy contribution is revealing that the effect of racial microaggressions on interpersonal trust varies across ethnic groups. Surprisingly, the exploratory analysis revealed that Black/Africans and East Asians' perception of racial microaggressions did not directly impact their level of workplace interpersonal trust. Previous research had linked perceived racial discrimination to reduced trust in minority group members, making this finding unexpected (Douds & Wu, 2018; Smith, 1997; Hausmann et al., 2013; Smith, 2010). While literature focusing specifically on the relationship between racial microaggressions or racial discrimination and trust is limited, this study underscores the importance of exploring group differences in the effects of racial microaggressions and identifying the contexts where members of different racial groups may experience these effects differently, such as in housing, healthcare, or education.

The findings indicate that the observed main effects were not specific to Black/African or East Asian participants but were applicable to the whole group of ethnicities in the sample. Literature has suggested that Black Americans may engage in code-switching in the workplace, temporarily altering their behavior or speech to enhance the comfort of others (McCluney et al., 2021). It is possible that employees who suppress their ethnic identity in workplace communication and appearance may experience fewer microaggressions. Additionally, there may be other ways in which employees build trust at work that mitigate the negative effects of perceived microaggressions on trust.

Interestingly, we see a statistically significant effect of racial microaggressions on interpersonal trust for the Hispanic participants. This indicates that the results seen from the effects of racial microaggressions on trust were greatly driven by the Hispanic participants. It is likely that Hispanics may attend to race-based cues more than Blacks/Africans and East Asians and this in turn aggravates the psychological impact of perceived racial microaggressions. Additionally, we see a significant interaction between strength of ethnic identity and racial microaggressions in predicting interpersonal trust in East Asians. East Asians' reported level of interpersonal trust was greater when they reported having a high strength of ethnic identity even in the presence of racial microaggressions. Thus, the experience of racial microaggressions has a strong

positive effect on trust when racial identity is high as opposed to when racial identity is low. These results suggest that the experience of racial microaggressions is not a salient predictor of East Asians' level of interpersonal trust, similar to other research that have found that Asians may not see racial discrimination as a salient issue (Smith 2010). Following these, future studies could take racial/ethnic identification into account while examining the negative effects of race-related stressors as these encounters could affect people differently.

Study Limitations

The Racial Microaggressions Scale utilized in the study may have limited the ability to fully capture the breadth of racial microaggressions experienced by participants with various ethnic identities, potentially impacting the ability to fully comprehend the relationship between ethnic identity and interpersonal trust. Moreover, the lack of participants' comprehension of what constitutes a microaggression could have also constrained the study. Participants may have encountered microaggressions but did not recognize them as such or did not report them due to a lack of awareness or understanding, leading to an underestimation of microaggressions in the workplace. Additionally, seeing as researchers have limited control over participants' behavior in online surveys, they can be vulnerable to various forms of fraudulent activities, including the use of bots which is also a limitation of this study.

Another limitation of this study was the use of four measurement scales for different concepts in one survey. Having participants respond to numerous inquiries about various concepts in a single survey may lead to respondent fatigue, which could affect the accuracy of their responses. Measuring multiple concepts at once could also increase the chances of response bias. Participants may answer questions in a manner they consider socially acceptable or may respond more positively to one concept if they have just given a favorable response to a related concept. Furthermore, the study's small sample size is another limitation. The relatively small sample size in this study (N = 196) may have resulted in no detection of three-way interaction effects. Additionally, the low distribution of the sample by racial groups, with significantly more participants in the Black/African, East Asian, and Hispanic groups than other groups, could have influenced the study's findings and generalizability. Future research should increase their sample size, resulting in a more representative sample and the ability to detect variations across ethnic groups that were not feasible in this study due to its low sample size.

Practical Implications

The effect that an organization's diversity and inclusion climate have on interpersonal trust has practical implications as it reveals one of the benefits of valuing diversity and inclusion in organizations. Although the mechanism by which this occurs is unclear from this study, organizations might find it worthwhile to not only create a diverse and inclusive workforce but to also ensure that the value of diversity and inclusion is communicated effectively as the perception of a high diversity climate could help maintain interpersonal trust in the workplace. Given the psychological burden that the experience of racial microaggressions places on racial minorities, Sue et al. (2019) recommends that members of the majority group could act as allies, actively helping in the eradication of prejudice in society using an action-oriented approach involving dialogue, openness, and social action. Within organizations, leaders could also act as allies to racial minorities, adopting micro-intervention skills that include educating and training employees to identify microaggressions and encouraging the reporting and addressing of racial microaggressions in the workplace when they occur (Sue et al., 2019). Organizations are also encouraged to facilitate and organize and promote differences with a focus on the formation of high-quality relationships among dissimilar others which could in turn foster interpersonal trust (Stevens et al., 2008). Additionally, communicating the value of diversity and inclusion could further promote trust within organizations (Downey, et al. 2015).

Future Directions

To further understand the relationship between racial microaggressions and interpersonal trust, future studies could explore the mechanism through which racial microaggressions influence interpersonal trust in the workplace. This could involve investigating how experiencing racial microaggressions may alter a person's attitude towards the perpetrator's racial group and subsequently affect levels of interpersonal trust towards that individual or group. Studies could also examine changes in interpersonal trust before and after the perception of a racial microaggression since trust is not stable over time.

The Racial Microaggressions Scale used in this study may not have captured the full range of microaggressions experienced by participants with different ethnic identities, potentially limiting the understanding of the relationship between ethnic identity and interpersonal trust. Thus, using a different scale to measure the experience of racial microaggressions could also provide additional insights. Researchers could use scales specifically created to measure the experience of racial microaggressions for specific racial groups. Further ensuring that participants understand what microaggressions are. A working definition can also be created as a reference point for participants to reflect on in future surveys.

The study found a robust effect of organizational diversity climate in predicting interpersonal trust, consistent with previous research (Downey et al., 2015). Future studies could examine which diversity initiatives foster trust among co-workers and investigate the mechanisms through which communicating diversity could enhance interpersonal trust within organizations.

It is important to note that the survey used a cross-sectional design, meaning that causal inferences cannot be made.

The study cannot conclude that the experience of racial microaggressions causes distrust in co-workers, nor determine directionality. Future studies could adopt an experimental design to test the direct effects of perceived racial microaggressions on interpersonal trust.

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Appendix

Table 2. Demographic Characteristics of Participants

Baseline Characteristics	n	%
Race/Ethnicity		
Indigenous	4	2%
Black/African	91	46.4%
East Asian	23	11.7%
Southeast Asian	17	8.7%
South Asian	9	4.6%
Hispanic	41	20.9%
Middle Eastern	5	2.6%
West Indian/Caribbean	2	1%
White (biracial)	4	2%
Gender		
Female	71	36.4%
Male	118	60.1%
Gender Queer	1	0.5%
Two-Spirited	1	0.5%
Tenure		
2-5 years	88	45%
More than 5 years	108	55%
Percentage of Racial minorities at organization		
Less than 20%	44	22.7%
20-50%	119	60.6%
More than 50%	33	16.7%

Note. N = 196. All participants were between the ages of 20 and 69 (M = 35.3, SD = 8.70)

Table 5. Regression analysis of interpersonal trust for East Asians

Independent Variables	Step 1	95% CI LL	95% CI UL	Step 2	95% CI LL	95% CI UL	Step 3	95% CI LL	95% CI UL
EI	0.15 (0.21)	-0.13	0.74	0.17 (0.18)	-0.04	0.73	0.15 (0.18)	-0.06	0.7
RMA	-0.11 (0.11)	-0.38	0.08	-0.05 (0.10)	-0.28	0.14	0.02 (0.11)	-0.22	0.26
OrgD	0.81** (0.10)	0.60	1.04	0.81** (0.10)	0.62	1.00	0.78** (0.10)	0.60	1.00
RMA*EI				0.17 (0.22)	-0.02	1.00	0.24* (0.26)	0.10	1.19
RMA*OrgD				0.06 (0.15)	-0.20	0.43	0.01 (0.16)	-0.31	0.37
RMA*EI*OrgD							-.124 (0.32)	-1.1	0.24
R^2	.887			.904			.908		
ΔR^2	.887			.039			.008		
F	49.50			44.32			37.40		
df	3,19			5,17			6,16		

Notes: **p < .01; *p < .05. Unstandardized regressions coefficients are reported, standard errors are in brackets; EI – Ethnic Identity, RMA - Racial Microaggressions, OrgD - Organizational Diversity Climate

Cherice Chan, BA in Psychology and Minor in Anthropology, University of California, Los Angeles (UCLA)

Cherice Chan graduated in 2022 from the University of California, Los Angeles (UCLA) with a B.A. in Psychology and a minor in Anthropology. As an undergraduate, she was a research assistant for the UCLA Memory and Lifespan Cognition Lab, UCLA Social Relations Lab, UCLA Middle and High School Diversity Project, and Emory University Goizueta Business School. After graduating, she served as the study coordinator and youth advisory board director for the BOBA Project at Brigham and Women's Hospital and Harvard Medical School, a research initiative about the racialized experiences of Asian American youth. She is currently a program coordinator for the DISCO Network at the University of Michigan Digital Studies Institute, an interdisciplinary network of scholars, artists, and practitioners that aim to challenge digital social and racial inequalities.

Was there a particular experience that sparked your research interests?

My research interests stem from my lived experience growing up in Toledo, Ohio as often the only Asian American in the room. As an undergraduate, I became passionate about learning about race and ethnicity from a variety of academic perspectives (e.g., psychology, anthropology, ethnic studies) and developing a critical lens to recognize systems of oppression, including within academia itself. During my time at UCLA, the COVID-19 pandemic sparked national discussions about anti-Asian violence and discrimination and my peers introduced me to the diversity of the Asian American community and their experiences. The culmination of these experiences inspired this current publication and my interest in using research to develop a deeper understanding of Asian American experiences of racial discrimination, racial socialization, and coalition building with other communities of color.

Who has been the most influential person in your life?

I am unable to name one person who has been the greatest influence in my life. As my dear friend Karen Madamba always says, "it takes a village". I would not be who I am today without my family: my dad, my mom, and my brother. They have always encouraged me to stay true to myself, try my best, explore my passions, and learn and grow in the face of challenges. I also am grateful for my dear friends and mentors who have been with me at each stage of my journey. They have provided unwavering support for me and my endeavors and have helped me find joy and hope even during times of difficulty.

What is your greatest accomplishment?

I think my greatest accomplishment has yet to come. But, one thing I am proud of is that I have been told that my words and actions have inspired those around me to think critically about the world, challenge injustice, and advocate for themselves and on the behalf of others.

Where do you see yourself in 10 years?

In 10 years, I hope to be in a role where I can lead diversity, equity, and inclusion initiatives and use my skill set to empower youth, disseminate research, and inform public policy. I hope that my work will have a lasting, positive impact for communities of color and make the world a more equitable and inclusive place.

Ethnic Incongruence Predicts Intergroup Attitude Change Among Asian American Youth

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The transition from middle school to high school can be challenging for youth of color, especially if they experience a decrease in the proportion of ethnic in-group members at school (i.e., ethnic incongruence). Although Asian American students are more likely to experience ethnic incongruence and face unique challenges in inter-ethnic contexts due to their societal status (e.g., the model minority myth), there is limited research on how ethnic incongruence may impact Asian American students' experiences, especially their intergroup relations with cross-ethnic peers. Experiencing ethnic incongruence was predicted to be associated with more negative intergroup attitudes among Asian American students. Asian American students' (N = 633) objective and subjective in-group representation and intergroup attitudes towards three ethnic outgroups (Black, Latinx, and White) were measured before and after their transition to high school. Multiple linear regressions were then conducted to test the association between ethnic incongruence and intergroup attitudes. Results indicated that while Asian American youth who experienced subjective ethnic incongruence had more negative attitudes towards Latinx peers, Asian American students who experienced objective ethnic incongruence had more positive attitudes towards Black peers. These results provide important insights about how intergroup dynamics may change across school transitions in multi-ethnic settings.

Keywords: ethnic incongruence, school transition, intergroup attitudes, Asian Americans

In 2020, children of color became the majority of the U.S. student population (Sáenz, 2020). As our schools continue to become more diverse, they have the potential to promote the development of positive intergroup attitudes by providing youth with additional opportunities to interact with members from diverse ethnic backgrounds. However, research has indicated that increasing school diversity alone does not necessarily lead to more positive intergroup attitudes or cross-ethnic peer relationships among adolescents (Juang et al., 2006; Juvonen et al., 2018). Evidence has been mixed concerning the benefits of school diversity on intergroup relations. For example, while adolescents who attend more diverse schools tend to feel a greater sense of safety (Juvonen et al., 2018), they also tend to rate their school's racial climate as more negative (Benner & Graham, 2013; Goldsmith, 2004). Given the complexity of intergroup relations at multi-ethnic schools, it is essential for researchers to better understand the nuanced relationship between diversity and intergroup attitude formation.

In the United States, students often experience several school transitions during their academic careers. As students navigate new school environments, they often experience challenges, including having to adjust to new academic and social expectations and norms (Venezia & Jaeger, 2013; Yeager et al.,

2016). Ethnic incongruence (i.e., a decrease in the number of ethnic in-group members at school) can exacerbate the normative challenges associated with school transitions, especially for students of color. Experiencing ethnic incongruence can create a heightened awareness of one's group membership or marginalized group status, which can, in turn, prevent marginalized students from feeling socially supported at school (Benner & Graham, 2007, Graham, 2018). However, very little is known about the impact of ethnic incongruence on intergroup relations, especially in multi-ethnic school contexts (Birtel et al., 2020). This gap is important to consider, as each individual student enters a new school environment with unique previous experiences of numerical representation (i.e. numerical majority or minority status in middle school). These experiences, especially ethnic incongruence, may influence the development of an individual's intergroup attitudes towards peers at a new school (Yip et al., 2019).

Ethnic Incongruence During the Middle to High School Transition

The transition to high school in the United States frequently comes with demographic changes: students typically attend

high schools that are more ethnically diverse (i.e., have fewer in-group members) than their middle schools (Frankenberg & Orfield, 2007; Orfield, 2001). Research suggests that for youth of color, experiencing a decrease in their in-group representation during the middle to high school transition is associated with negative psychosocial outcomes, such as decreased feelings of belonging and lower academic achievement (Benner & Graham, 2007, 2009; Morales-Chicas & Graham, 2017). Because ethnic identities become particularly salient for youth of color during the developmental period of early to mid-adolescence, experiencing ethnic incongruence is especially relevant during the middle-to-high school transition (Benner, 2011; Umaña-Taylor et al., 2014).

The transition to high school often introduces stressors that can make marginalized group status salient for youth of color, including academic tracking (i.e., separating students into distinct groups for classes by using metrics such as learning capability and English language proficiency). The increased prevalence of academic tracking practices in high school likely magnifies the challenges that accompany ethnic incongruence during a school transition, as they often reinforce ethnic disparities in academic achievement. The racialized nature of academic tracking often results in the overrepresentation of Asian and White students and underrepresentation of Black and Latinx students in advanced academic classes (Oakes, 2005). These racialized tracking practices can create discrepancies between classroom level and overall school level diversity, as youth are often either separated from or grouped with the majority of their same-ethnic peers at school.

Discrepancies between classroom-level and school-level diversity often lead youth to perceive a different proportion of in-group members at their school than the proportion reported by the institution (Ghavami et al., 2020; Kogachi & Graham, 2020). For example, a student who is on the same academic track as the majority of their same-ethnic peers is more likely to perceive higher in-group representation at school than a student who is separated from the majority of their same-ethnic peers. Therefore, the impact of ethnic incongruence may depend on a student's perceptions of their school's diversity, rather than objective or absolute measures of school diversity, such as reported school demographics. Early research supports that students' subjective experiences of diversity may be more predictive of their attitudes and behavior (e.g., Loeb & Hurd, 2017), but additional study is needed to better understand the differential effects of subjective and objective measures of diversity.

The uneven distribution of students in courses and limited availability of cross-ethnic peers in classrooms can hinder the development of positive intergroup relations even in diverse schools (Chen et al., 2020). Research has supported that when a student's classes are less diverse than the overall school diversity, they report more negative beliefs about the school's racial climate and express more negative attitudes towards other ethnic groups (Juvonen et al., 2018). These findings suggest that youth's perceptions of diversity in the classroom

and in the school can influence their intergroup attitudes, especially when academic tracking practices restrict the opportunity for meaningful cross-ethnic contact and may reinforce stereotypes about different ethnic groups. Considering the unique challenges of the transition from middle to high school, the current study investigates whether objective or subjective measures of ethnic incongruence during the middle-to-high school transition are associated with intergroup attitude change.

Numerical Minority Status Invokes Social Identity Threat

For youth of color, attending a school with low numbers of in-group members can increase the salience of their marginalized group status. According to self-categorization theory, individuals become more aware of their ethnic identity in contexts where there is greater ethnic diversity and lower numbers of in-group members (Turner et al., 1987). For example, ethnic minorities report being more aware of their ethnic identity in predominantly White contexts than ethnically diverse contexts (Sekaquaptewa et al., 2007). When low numerical representation increases the salience of one's marginalized group status, it often evokes feelings of social identity threat, or the concern that one's social identities will be devalued or stigmatized in a particular setting (Steele et al., 2002; Murphy et al., 2007).

Heightened awareness of a marginalized ethnic identity at school can be especially harmful for students of color. In school contexts where there are low numbers of in-group members, youth of color experience heightened academic stress and subsequently report higher social identity threats (Hanselman et al., 2014; Tyson, 2011). By making the marginalized status of one's group more salient, social identity threat undermines students of color's feelings of belonging, such that these students feel less accepted at schools where they are the numerical minority (Rozek & Gaither, 2021; Walton & Brady, 2017). These social identity threats that come along with numerical minority status are likely to be amplified during school transitions when students experience ethnic incongruence, as students of color must navigate a sudden decrease in their numerical representation at school.

Implications for Intergroup Attitudes

Increased feelings of social identity threat and decreased feelings of belonging can have implications for intergroup attitudes. Ethnic competition theory argues that when individuals are confronted with a threat to their social identity, they attempt to identify more with their in-group and consequently develop more negative attitudes towards out-groups (Blalock, 1967; Hewstone et al., 2002; Tajfel & Turner, 2004). Previous research has supported that when low numerical representation is made salient, individuals hold more negative attitudes towards out-groups (Brown & Bigler, 2002). While there is limited research on the relationship between one's in-group size and

intergroup attitudes in school contexts, Rastogi and Juvonen (2019) found that in multi-ethnic middle schools, out-group size was negatively associated with intergroup attitudes, such that having more out-group members at school led to more negative attitudes towards cross-ethnic peers. Ethnic incongruence during the transition between schools has the potential to exacerbate this relationship, as experiencing a change in one's in-group size at school can make numerical minority status more salient to youth of color and increase feelings of threat.

While conducting a review of the literature, we identified only one publication that has studied the relationship between ethnic incongruence during school transitions and intergroup attitudes. In a longitudinal study conducted by Birtel and colleagues (2020), Asian and White students' intergroup attitudes were measured before and after transitions from non-diverse elementary schools (i.e., more in-group members) to diverse secondary schools (i.e., fewer in-group members). Results showed that while Asian American students' intergroup attitudes toward White students improved after the transition, White students' intergroup attitudes towards Asian American students worsened. These results indicate that experiencing ethnic incongruence during school transitions can impact intergroup attitudes and that Asian American students have complex intergroup relations with cross-ethnic peers. However, there may be additional nuances about this relationship that warrant additional study, such as the middle to high school transition, multiethnic school contexts with additional racial groups (e.g., Black and Latinx peers), and societal group status. The present study aims to address these gaps in the literature.

Unique Experiences of Asian American Students

The current study will extend previous research by investigating the relationship between ethnic incongruence and intergroup attitudes among Asian Americans. Asian Americans are severely understudied in the intergroup relations literature despite being the fastest growing racial group in the United States (Budiman & Ruiz, 2021). The vast majority of Asian American students attend schools where less than half of their classmates are Asian and they are also more likely than any other ethnic group to attend ethnically diverse high schools (Orfield & Lee, 2007; Schaeffer, 2021), making them a particular population of interest to study ethnic incongruence during the high school transition.

Limited existing research reveals that Asian Americans' attitudes towards ethnic out-groups significantly differ across ethnic lines, such that Asian American youth have on average more positive attitudes towards White peers than Black or Latinx peers (Chen & Graham, 2015). These differences may be in part due to the racialized academic tracking practices in high schools that tend to separate Asian American students from other students of color, which limit opportunities for meaningful cross-ethnic contact (Chen et al., 2020). Thus, studying

how ethnic incongruence during the middle to high school transition impacts intergroup attitudes might be particularly of interest among Asian Americans, as they have unique racialized experiences compared to other students of color.

Asian American students also navigate a unique set of social identity threats, including the model minority myth stereotype, which portrays Asian Americans as a high-achieving, competent, and successful group that have close proximity to Whiteness (Cheryan & Bodenhausen, 2011). Although the model minority myth might seem positive on the surface, invoking these stereotypes results in negative consequences for Asian American students, including impaired academic performance and higher psychological stress (Atkin et al., 2018; Cheryan & Bodenhausen, 2000). These stereotypes pose a persistent threat in high school, as Asian American students report more model minority stereotyping from peers as they advance through high school (Kiang et al., 2016). The model minority myth also influences intergroup relations, as it positions Asian Americans as relatively superior to Black and Latinx Americans (Zou & Cheryan, 2017).

Model minority myth stereotypes are also reflected in academic tracking practices that group Asian American students with White students and separates them from other students of color (Oakes, 2005). Evidence supports that the unique positioning of Asian American students can be interpreted as a threat to other students of color. Bell et al. (2021) found that larger representation of Asian American students at schools was associated with more negative attitudes toward Asian peers. This may explain why Asian American youth report more peer discrimination at school than any other racial group (Rosenbloom & Way, 2004). In summary, experiencing ethnic incongruence during the middle to high school transition likely impacts Asian American youth due to an increased prevalence of unique social identity threats, including racial discrimination from cross-ethnic peers and distinct racial positioning from other students of color (e.g., model minority myth).

The Current Study

The current study will investigate whether experiencing ethnic incongruence during the transition from middle to high school predicts change in Asian adolescents' intergroup attitudes. Using a longitudinal dataset, this study examines whether change in in-group representation between eighth and ninth grade predicts intergroup attitudes towards cross-ethnic peers in ninth grade. Consistent with ethnic competition theory, a decrease in in-group size (i.e. transitioning from a school with more in-group members to a school with fewer in-group members) was predicted to be associated with more negative intergroup attitudes. Analyses will extend upon previous research (e.g., Bikmen, 2011; Chen & Graham, 2015) investigating students' intergroup attitudes towards cross-ethnic peers as a novel outcome. Exploratory analyses will be conducted to test whether objective and subjective measures of

in-group representation are predictive of intergroup attitudes, as researchers have found that subjective measures of representation may be more indicative of youth's experiences (e.g., Loeb & Hurd, 2017). Furthermore, exploratory analyses will also be conducted to identify differential patterns in intergroup attitudes towards different ethnic out-groups (i.e., Black, Latinx, and White), as researchers should disaggregate outgroup attitudes into specific ethnic groups when studying intergroup relations (Bell et al., 2021).

Method

Participants

Asian American youth (N=633) were drawn from a larger initial sample of 5,991 students recruited for the UCLA Middle School & High School Diversity Project, an ongoing longitudinal study that investigates the impact of ethnic diversity on students' psychosocial and academic outcomes. The longitudinal study was conducted in California, one of the most ethnically diverse states in the United States. California has the largest Asian and Latinx populations in the United States, making it an ideal setting for testing hypotheses about ethnic incongruence (Jenson et al., 2020). Students were enrolled in one of 26 multiethnic public middle schools across California that were selected to represent moderate to high levels of ethnic diversity. Researchers successfully followed over 80% of the eighth grade sample when they enrolled in 140 high schools in ninth grade (dispersion due to the greater availability of school choices that is typical in large metropolitan settings).

All participants in the current analysis self-identified as either East Asian (e.g., Chinese, Japanese, Korean), Southeast Asian (e.g., Vietnamese, Cambodian, Thai), or South Asian (e.g., Indian, Pakistani, Bangladeshi). Of the 633 Asian American students, 53.4% were East Asian (N = 338), 35.2% were Southeast Asian (N = 223) and 11.4% were South Asian (N = 72).

Participants who identified as Asian biracial were excluded from the analyses because it remains unclear whether they would have considered Asian students as their ethnic in-group. The survey used racial and ethnic categories determined by the California Department of Education (CDE), which combined Filipino students with Pacific Islander students. Because the data could not be disaggregated to separate Filipinos from Pacific Islanders, Filipino students were also excluded from the analyses.

The sample was balanced between gender (47.4% male, 52.6% female) and parent education level (49.9% had at least one parent with a four year college degree). Almost all of the participants were recent immigrants or children of immigrants (21.0% first generation, 68.6% second generation, and 7.4% third-plus generation or beyond).

Procedure

In the spring of eighth grade and the fall of ninth grade, students completed approximately 50-minute-long questionnaires during one of their nonacademic classes. Questionnaires included a range of measures assessing psychosocial outcomes, including, but not limited to, intergroup attitudes, feelings of belonging, risk behaviors, and mental health. Trained research assistants informed students about confidentiality and read all items aloud as students provided their responses to the questionnaires. Students received $10 per questionnaire for their participation in eighth grade and $20 per questionnaire for their participation in ninth grade.

Measures

Objective In-Group Representation. Participants' grade-level in-group representation was drawn from published data provided by the CDE. The CDE reports the percentage of students at each school from the following ethnic backgrounds: African American, American Indian/Alaskan, Asian, Caucasian, Filipino, Latino, Pacific Islander, and multi-ethnic. The school's reported percentage of Asian students was used to indicate in-group representation in both eighth and ninth grade.

Subjective In-Group Representation. To measure subjective in-group representation, participants were asked, "How many students at this school are from your ethnic group?" Participants responded on a 7-point Likert scale, with higher scores indicating higher subjective in-group representation. Each point included the following anchors: 1 = none or hardly few (less than 10%), 2 = a few (10-20%), 3 = some (20-40%), 4 = about half (40-60%), 5 = more than half (60-80%), 6 = most (80-90%), 7 = all or almost all (90-100%). Subjective representation was assessed in both eighth and ninth grade.

Social Distance. The behavioral component of intergroup attitudes was measured in eighth and ninth grade with an adaptation of the Social Distance Scale, a scale widely used in the study of prejudice and intergroup relations (Bogardus, 1933). Participants were asked to rate on a Likert scale ranging from 1 = for sure yes to 5 = no way the likelihood that they would engage in four activities (i.e., eat lunch together, visit each others' homes, dance together at a school party, sit together on a school bus) with students from four different ethnic groups (i.e., Asian, Black, Latino, and White). An example item is, "Would you want to eat lunch together with kids who are Latino?" The four items were summed up to form a single index for each ethnic group, with higher scores representing more negative intergroup attitudes. Cronbach's alphas were calculated for the four in-group items (α = .91) and for the four items referring to each of the three ethnic out-groups, Black (α = .93), Latinx (α = .93), and White (α = .91).

Consistent with prior studies of intergroup attitudes (e.g., Knifsend & Juvonen 2017), a social distance score was calculated to account for attitudes towards one's ethnic in-group. Social distance scores were calculated by subtracting the

average of four items for each of the three ethnic out-groups (e.g., average attitudes towards Black students) from the average of four items for members of one's own ethnic group (i.e., average attitudes towards Asian American students). Because items were rated on a 1–5 scale, social distance scores ranged from −4 (greater distance indicating high in-group preference) to 4 (greater distance indicating high out-group preference).

Covariates

Gender. Participants self-identified as either male or female during the first wave of data collection (i.e., sixth grade).

Parent Education. Consistent with other research, the participant's parent or guardian's highest level of education was measured as a proxy for socioeconomic status (e.g., Juvonen et al., 2018). A score assessing education level was computed, with higher scores indicating more educational attainment. The measure ranged in values from 0 to 5 (0 = elementary or junior high to 5 = graduate degree).

Immigrant Status. Immigrant status was measured to account for differences in outcomes among ethnic minority youth whose families have recently immigrated to the United States (Berry et al., 2006). Participants reported their immigrant status by indicating whether they or their parents were born in the United States. First-generation students were born outside the United States. Second-generation students were born in the United States with at least one of their parents being foreign-born.

Peer Racial Discrimination. Perceptions of race-based peer discrimination were assessed in ninth grade using four items adapted from the Adolescent Discrimination Distress Index, a scale normed with multi-ethnic adolescents, including Asian Americans (Fisher et al., 2000; Grossman & Liang, 2008). Items asked participants to rate whether they had experienced exclusion, disrespectful treatment, threats, or name-calling by their peers because of their race (e.g., "How often did kids exclude you from their activities because of your race?") on a scale from 1 (never) to 5 (a whole lot). Items were collapsed into a single index, with higher scores indicating higher levels of discrimination ($\alpha = .77$).

Analyses Approach

Multiple linear regression analyses were conducted to examine whether ethnic incongruence between eighth and ninth grade significantly predicted intergroup attitudes in ninth grade. Although the key goal of the study was to understand change in ethnic in-group representation, change scores were not used in the analyses in accordance with recent research indicating that change scores may increase the likelihood of obtaining significant results and produce misleading causal-effects (Fu & Holmer 2015). Instead, all analyses were conducted using the ninth grade predictor variables (i.e., objective or subjective in-group representation) to predict ninth grade outcomes (i.e., social distances), while controlling

for respective in-group representation and social distance in eighth grade.

Results

Descriptive analyses were conducted to understand Asian American students' objective and subjective changes in in-group representation and their intergroup attitudes. To test the primary research question, multiple linear regression analyses were conducted to test whether objective and/or subjective in-group representation in ninth grade was associated with social distance to ethnic out-groups (Black, Latinx, and White) in ninth grade, in comparison to objective and/or subjective in-group representation in eighth grade.

Preliminary Analyses

Objective and Subjective In-Group Representation. To understand how objective in-group representation changed with the transition to high school, Asian-American students' in-group size in their schools, as reported by the CDE, were examined. On average, objective in-group representation of Asian American students was higher in eighth grade (M = 0.31, SD = 0.19) than in ninth grade (M = 0.27, SD = 0.19). To also understand how subjective in-group representation changed during the transition to high school, Asian American students' self-reports of the percentage of Asian American students at their schools were examined. Similar to objective in-group representation, participants self-reported a change in subjective representation, with greater in-group representation perceived in eighth grade (M = 3.38, SD = 1.51) than in ninth grade (M = 3.26, SD = 1.44). Thus, on average, participants experienced both objective and subjective decreases in representation during their transition to ninth grade. However, the distributions of objective and subjective change reported by participants differed from one another, such that the distribution of objective change was more negatively skewed and the distribution for subjective change was relatively normally distributed (see Figures 1 and 2). In other words, while the majority of students in our sample experienced a decrease in in-group representation from eighth to ninth grade, the majority of students perceived no change in in-group representation from eighth to ninth grade.

Social Distance. To analyze Asian American students' intergroup attitudes, social distance scores were calculated to capture how Asian American students felt about ethnic out-groups relative to their in-group (see Table 1). Asian American adolescents in eighth grade rated their in-group more positively than Black, Latinx, and White students. Social distance was greatest for Black (M = -0.66, SD = 0.95) and Latinx (M = -0.61, SD = 0.88) students and lowest for White (M = -0.32, SD = 0.69) students. Similarly, adolescents in ninth grade rated their in-group more positively than Black, Latinx, and White students. Like in eighth grade, social distance in ninth grade was greatest for Black (M = -0.55, SD = 0.85) and Latinx (M =

-0.52, SD = 0.82) students, and lowest for White (M = -0.29, SD = 0.65) students.

Primary Analyses

Multiple linear regressions were conducted to examine whether objective and/or subjective in-group representation in ninth grade significantly predicted social distance to ethnic out-groups (Black, Latinx, and White) in ninth grade. All analyses were conducted using the ninth grade predictor variables (i.e., objective or subjective in-group representation) to predict ninth grade outcomes (i.e., social distances) while controlling for respective in-group representation and social distance in eighth grade. Analyses controlled for covariates of gender, parent education, immigrant status, and racial discrimination by peers.

Objective In-Group Representation. Multiple linear regression was used to test if objective in-group representation in ninth grade significantly predicted social distance to Black, Latinx, and White students in ninth grade (see Table 2). Inconsistent with the hypothesis, Asian American students who had lower objective in-group representation in ninth grade had lower social distance (i.e., more positive attitudes) to Black students in ninth grade (β = .845, p = .023), over and above baseline representation in eighth grade, controlling for covariates. Unlike social distance to Black students, objective in-group representation in ninth grade did not significantly predict social distance to Latinx students (β = .011, p = .974) or to White students (β = .073, p = .823) in ninth grade, over and above baseline representation in eighth grade, controlling for covariates.

Subjective In-Group Representation. Multiple linear regression was used to test if subjective in-group representation in ninth grade significantly predicted social distance to Black, Latinx, and White students in ninth grade (see Table 3). Consistent with the hypothesis, the analyses suggested that subjective in-group representation in ninth grade significantly predicted social distance to Latinx students, such that Asian American students who had lower in-group representation in ninth grade had greater social distance (i.e., more negative attitudes) to Latinx students in ninth grade. More specifically, subjective in-group representation in ninth grade significantly and negatively predicted social distance to Latinx students, over and above baseline representation in eighth grade, controlling for covariates (β = -.066, p = .049). Unlike social distance to Latinx students, it was found that subjective in-group representation in ninth grade did not significantly predict social distance to Black students (β = -.037, p = .300) or to White students (β = -.058, p = .059) in ninth grade over and above baseline representation in eighth grade, controlling for covariates.

Secondary Analyses

To ensure that primary analyses with social distance scores were not actually capturing change in attitudes towards the in-group, additional multiple linear regression analyses were run to test if objective and subjective in-group representation in ninth grade significantly predicted attitudes towards the in-group, Asian American students. All predictors were identical to the primary analyses except analyses controlled for attitudes towards Asian American students in eighth grade rather than social distance towards out-groups in eighth grade. Both objective (β = -.454, p = .155) and subjective (β = -.048, p = .108) measures of in-group representation in ninth grade were not significantly associated with attitudes towards the in-group in ninth grade.

Discussion

The current study investigated whether ethnic incongruence during the transition to high school predicts intergroup attitude change among Asian American youth. The study also tested whether objective and subjective measures of in-group representation predicted intergroup attitudes. Consistent with the hypothesis, Asian American students who transitioned to schools where they perceived fewer in-group members (i.e., low subjective representation) had greater social distance (i.e., more negative attitudes) towards Latinx peers. Contrary to the hypothesis, Asian American students who transitioned to schools with fewer in-group members (i.e., low objective representation) had lower social distance (i.e., more positive attitudes) toward Black peers. There was no significant association between ethnic incongruence and attitudes toward White students. These findings suggest that for Asian Americans, a change in in-group representation, both objective and subjective, are differentially associated with intergroup attitudes depending on the ethnic out-group.

The present study provides a particularly nuanced view of how ethnic incongruence impacts attitudes toward Black, Latinx, and White students among Asian Americans. Consistent with ethnic competition theory, Asian Americans who experienced ethnic incongruence held more negative attitudes toward Latinx students. As students of color experience ethnic incongruence during school transitions, numerical minority status may become more salient, which negatively affects feelings of belonging and academic performance (Benner & Graham, 2007, 2009; Morales-Chicas & Graham, 2017). Numerical minority status also often invokes social identity threats for members of marginalized groups, who may feel that they are more susceptible to stereotyping and tokenization by dominant group members (Steele & Aronson, 1995; Murphy et al., 2007). According to ethnic competition theory, students who face social identity threats (e.g., numerical minority status) may develop more negative intergroup attitudes as a strategy to maintain positive self-identity (Blalock 1967; Tajfel & Turner, 1986). Overall, the findings regarding Asian Americans' attitudes towards Latinx students are in line with previous research demonstrating that numerical minority status negatively affects intergroup attitudes, as ethnic incongruence

could exacerbate this relationship (Brown & Bigler, 2002; Hewstone et al., 2002).

The current results were not the same for Black students, as Asian Americans who experienced ethnic incongruence actually held more positive attitudes toward Black peers. This unexpected finding may reflect how lower Asian in-group representation is related to the representation of Black schoolmates: during the transition to high school, the relative representation of Black students likely increases for most Asian American students. Out of the four major ethnic groups, Asian and Black students are the least likely to attend the same schools, especially in elementary and middle schools which tend to be racially segregated (Chen & Graham, 2015; Orfield & Lee, 2007). Therefore, when transitioning to high schools that are more ethnically diverse, Asian students may have more opportunities to interact and develop relationships with Black students. Furthermore, the racialized academic tracking practices that would separate Asian American students from Black students may be less prevalent in high schools that have smaller Asian American populations (Chatterji et al., 2021; Oakes 2005). Unlike attitudes towards Latinx students which were in line with ethnic competition theory, attitudes towards Black students were consistent with contact theory, which proposes that increased contact with ethnic out-groups leads to less prejudiced and more positive intergroup attitudes (Allport 1954; Pettigrew & Tropp, 2006). The current findings are surprising, as previous research has consistently found that Asian American students tend to have more negative attitudes towards both Black and Latinx students in comparison to White peers (e.g., Bell et al., 2021; Chen & Graham, 2015). Overall, these findings suggest that intergroup attitudes among students of color are much more nuanced than previous literature would suggest and they likely differ depending on the sociocultural context.

One reason the findings of the present study might not be consistent with previous research is because of differences in numerical representation between Black and Latinx students in the California-based sample. This study draws data from a longitudinal study of students surveyed from public middle schools across California, a state where Latinx students have been the numerical majority in K-12 schools for over ten years (Buenrostro 2018). On the other hand, Black students are the smallest out of the four major pan-ethnic groups (i.e., Asian, Black, Latinx, and White) in California public schools (California Department of Education 2022). Therefore, whether or not Asian American students transition to schools with more or fewer in-group members, they are more likely to be surrounded by more Latinx peers and relatively fewer Black peers.

One consequence of unequal numerical group representation may be differences in social status between Latinx and Black students, at least within the school context. Previous research has supported that when classrooms have a numerical ethnic majority and minority, students in the

ethnic majority will be more accepted by their peers than students in the minority (Bellmore et al., 2007). Therefore, Latinx peers in California might be considered more cool or popular simply because of the size of their ethnic group at school. In other words, Latinx students might pose a greater social identity threat to Asian American students than Black students because of their larger numerical size and associated higher social standing. Furthermore, because of the model minority myth, Asian Americans are stereotyped as inherently more academically successful and superior to other racial minorities, especially Black Americans (Zhou 2004). Therefore, Asian American students might believe that Black American students might be of lower status and thus do not perceive them to be as much of a social identity threat compared to other ethnic groups. These stereotypes might accentuate the already reduced threat that Black peers may pose due to their smaller numerical size. Therefore, for Asian American students at California schools, ethnic incongruence may predict more negative attitudes towards Latinx peers but not towards Black peers.

Another reason why Asian American students' attitudes towards Black or Latinx students might differ is because of similarities and differences in the racial positioning of their groups. Asian and Latinx populations share similar demographic trends and stereotypes, as they both are the fastest growing ethnic groups in the United States and are often associated with the cultural and linguistic practices of their countries of origin, regardless of whether or not they were born in the United States (Brown 2014). Asian and Latinx populations occupy an "in-between" space in the racial hierarchy as neither Black nor White and are framed as perpetual foreigners that are unfit to become American (Kim 1999). Furthermore, Asian and Latinx populations also report similar experiences of discrimination, including being perceived as inferior to White Americans and unable to identify with American culture and identity (Zou & Cheryan 2017). These similarities might frame Asian Americans and Latinx Americans in direct opposition to one another in multiethnic contexts.

On the other hand, Asian Americans and Black Americans are positioned separately on both dimensions of racial positioning, as Asian Americans are perceived as foreign and superior while Black Americans are perceived as American and inferior (Zou & Cheryan 2017). Research has suggested that the similar racial positioning of Asian Americans and Latinx Americans and dissimilar racial positioning of Asian Americans and Black Americans might differentially shape intergroup relations, such that distinct patterns in Asian-Black relations and Asian-Latinx relations might emerge. For example, although Asian-Latinx friendships have been found to improve Asians' intergroup attitudes toward Latinx students, Asian American students' attitudes towards their Black classmates were resistant to change, even in the presence of friendship (Chen & Graham 2015). Additional research is needed to understand the complex intergroup relations in multiethnic

settings, especially among Asian Americans and other students of color.

For Asian American students, ethnic incongruence did not predict attitude change toward White students. One possible explanation is that Asian Americans may perceive themselves to be more similar to White Americans than Black or Latinx Americans because of the model minority myth. The model minority myth posits Asian Americans as "honorary whites" because of their economic and educational success that is comparable, and at times even more advanced than, White Americans (Zhou 2004). Although Asian Americans are stereotyped to have the privileges that come with the status of whiteness, Asian Americans continue to face ethnic stereotyping, racial discrimination, and socioeconomic disparities (Chou & Feagin, 2015). Asian American students may feel additional pressures to assimilate to White standards and culture in order to counterbalance their racialized status as forever foreigners but also maintain their status as the "model minority". These pressures may push Asian American students to feel more similar to White students than to Black or Latinx students, especially in school settings where Asian American students tend to be placed in similar academic tracks to White students (Oakes 2005). Because Asian American students might themselves endorse the model minority myth and believe that they are of equal status to White students, ethnic incongruence may not affect their attitudes toward White students (Yi & Todd 2021).

It remains unclear why results differed depending on whether analyses were conducted with objective or subjective measures of in-group representation. Although previous research may suggest that subjective measures of representation may be more indicative of students' experiences, the results of the current study demonstrate that there is more nuance, and objective or subjective measures may be more relevant depending on the outcome (e.g., Loeb & Hurd, 2017). Further research is needed to study whether objective or subjective measures of in-group representation are more indicative of intergroup attitudes.

Limitations

The current study extends previous research about ethnic incongruence by studying the association between ethnic incongruence and intergroup attitudes, differentiating between objective and subjective measures of in-group representation, and highlighting intergroup relations between Asian American youth and other students of color. However, some aspects of the present study may limit the external validity of the findings.

Firstly, the analyses were conducted without controlling for racialized academic tracking practices. As previously mentioned, racialized academic tracking practices play a large role in the formation of intergroup attitudes at multiethnic schools and future research should factor these directly into the model (Kogachi & Graham, 2020). However, data was unavailable on the extent to which the middle and high schools in the sample utilized academic tracking practices. Furthermore, although this study measured a change in Asian American students' in-group size, it did not control for changes in ethnic out-group size (i.e., change in the number of Black, Latinx, or White students) at the students' high schools. Data on the students' perceptions of the size of other ethnic outgroups at their school was not collected in the current study. In other words, while it is presumed that decreases in Asian American representation inversely correlate with increases in out-group representation, the current study could not test whether change in intergroup attitudes was associated with change in objective or subjective out-group size rather than change in in-group size.

Second, although ethnic competition theory was used as a relevant framework for explaining the relationship between ethnic incongruence and intergroup attitudes, the dataset used in the analysis did not measure students' perceptions of threat. Although analyses included students' perceptions of racial discrimination by peers, this particular variable did not significantly predict intergroup attitudes. Therefore, future research should test this idea by including other indicators of threat in order to identify the mechanism by which ethnic incongruence predicts intergroup attitude change.

Third, social distance scores were used to capture intergroup attitudes toward the three pan-ethnic outgroups relative to Asian youth's attitudes toward their ethnic in-group. As indicated earlier, difference scores have been criticized for increasing the likelihood of obtaining significant results and producing misleading causal-effects (see Fu & Holmer 2015). While additional analyses suggested that change in in-group representation (both objective and subjective) was not significantly associated with change in attitudes towards the in-group, future research should use other measures of intergroup attitudes that do not require difference scores.

Fourth, this study only analyzed Asian American intergroup attitudes towards the three other major ethnic groups in the United States. Due to the use of CDE data as a measure of objective in-group representation, intergroup attitudes could not be disaggregated among the pan-ethnic Asian American group. CDE does not disaggregate among the diverse pan-ethnic Asian American group and also does not disaggregate Filipinos and Pacific Islanders. Previous research has demonstrated differences between Asian ethnic groups (e.g., East Asians vs. South Asians) and their cross-ethnic friendships and intergroup attitudes. In particular, South Asian American students had more cross-ethnic friendships and more positive intergroup attitudes towards cross-ethnic peers than their East Asian and Southeast Asian counterparts (Chen & Graham 2015). Future research should examine whether there are differences between the Asian sub-groups in whether ethnic incongruence predicts intergroup attitude change, especially towards other students of color. Additional research is also needed to explore how ethnic incongruence may impact intergroup attitudes among other youth of color, such as Black or Latinx student attitudes towards Asian American peers.

Lastly, because the study was conducted in California,

results may differ in different geographic locations, due to different school demographics and sociocultural contexts. With the greatest Asian and Latinx youth population in the country, the diversity of California's population is unique compared to many other US states (Jenson et al., 2020). As a more diverse state, California also has a unique sociocultural context which may influence student's intergroup attitudes. For example, California has some of the largest concentrations of Asian and Latinx communities in the country and students may not feel as threatened in school contexts with fewer in-group members if their community context contains large numbers of in-group members (Frey 2022). California schools may also have unique types of support for students of color compared to other schools. In particular, California public schools have more teachers of color (37%) than the national average (21%) (California Department of Education, 2022; National Center for Education Statistics, 2020). Furthermore, California became the first US state to implement a mandatory ethnic studies curriculum for high school students (Blume & Gomez, 2021). Future research should study the effects of ethnic incongruence in geographic regions of the US with varying levels of school diversity and investigate the impact of the overarching sociocultural context (e.g., teacher diversity, school curriculum) on intergroup relations.

Conclusion

In summary, the present study provided novel evidence that ethnic incongruence predicts Asian Americans' intergroup attitudes during the middle to high school transition and that this association differs depending on the ethnic out-group. Asian American students who experienced ethnic incongruence had more negative attitudes towards Latinx students and more positive attitudes towards Black students. Furthermore, this study highlighted the need for future research to study how contextual factors, such as changing school demographics, continue to shape the intergroup attitudes of multiethnic youth and raise questions about differences between objective and subjective in-group representation. Lastly, the results provided additional insight into the unique experiences of Asian American youth, a largely understudied population in the intergroup relations literature.

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Appendix

Figure 1. Distribution of Asian American Students' Objective Change in In-Group Representation
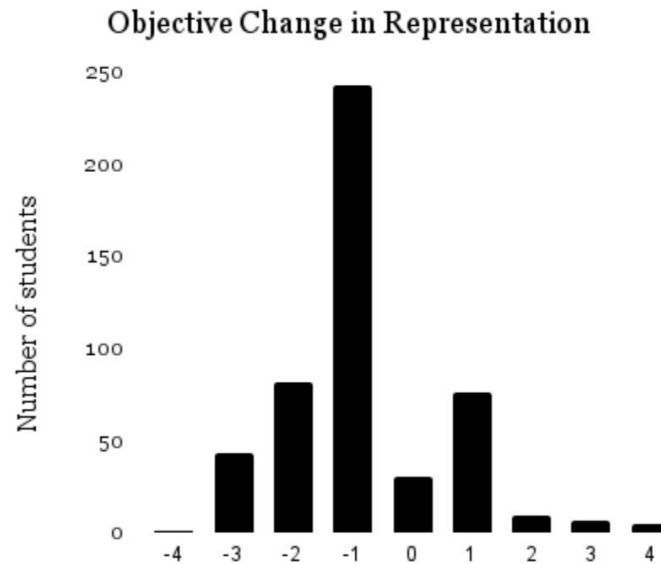

Figure 2. Distribution of Asian American Students' Subjective Change in In-Group Representation
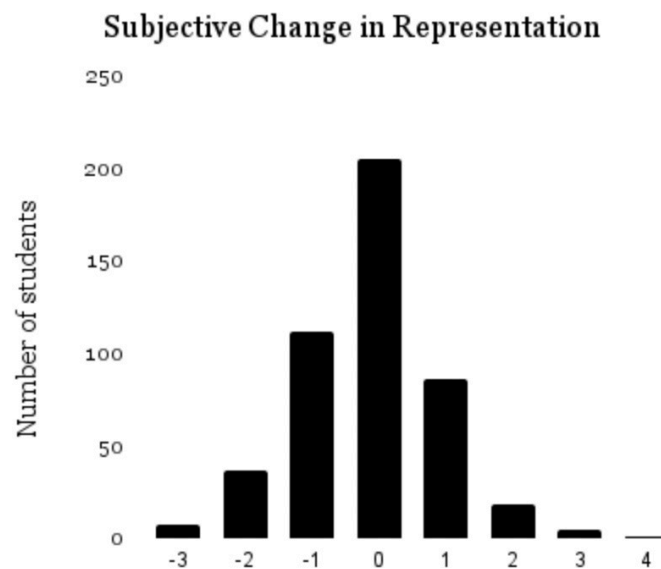
Table 1. Asian American Students' Intergroup Attitudes (Social Distance) to Ethnic In-Group and Out-groups

	8th Grade		9th Grade	
	Intergroup Attitudes	Social Distance	Intergroup Attitudes	Social Distance
Asian	M = 1.88, SD = 0.79		M = 1.76, SD = 0.68	
Black	M = 2.55, SD = 1.00	M = -0.66, SD = 0.95	M = 2.31, SD = 0.96	M = -0.55, SD = 0.85
Latinx	M = 2.49, SD = 0.79	M = -0.61, SD = 0.88	M = 2.29, SD = 0.94	M = -0.52, SD = 0.82
White	M = 2.21, SD = 0.86	M = -0.32, SD = 0.69	M = 2.06, SD = 0.84	M = -0.29, SD = 0.65

Table 2. Predicting Intergroup Attitudes (Social Distance) as a Function of Objective In-Group Representation

	9th Grade Social Distance to Black Students		9th Grade Social Distance to Latinx Students		9th Grade Social Distance to White Students	
	β	b (SE)	β	b (SE)	β	b (SE)
Gender (*male*)						
Female	.027	.046 (.071)	.055	.091 (.067)	-.002	-.003 (.062)
Parent Education (*no 4 year college degree*)						
4 year college degree	-.021	-.036 (.072)	.005	.009 (.068)	.029	.038 (.063)
Immigrant Status (*second generation*)						
First Generation	.014	.031 (.90)	-.015	-.030 (.085)	-.019	-.031 (.078)
Third Generation	-.001	-.002 (.124)	-.050	-.136 (.117)	-.004	-.010 (.108)
Peer Racial Discrimination	.022	.036 (.069)	-.053	-.084 (.065)	.021	.026 (.060)
8th Grade Social Distance	.588***	.559 (.039)	.606***	.576 (.038)	.385***	.382 (.047)
8th Grade Objective Representation	-.138	-.610 (.374)	-.002	-.009 (.353)	-.063	-.215 (.331)
9th Grade Objective Representation	.190*	.845 (.371)	.003	.011 (.350)	.021	.073 (.325)

*Note: *p<.05 **p<.01 ***p<.001*

Table 3. Predicting Intergroup Attitudes (Social Distance) as a Function of Subjective In-Group Representation

	9th Grade Social Distance to Black Students		9th Grade Social Distance to Latinx Students		9th Grade Social Distance to White Students	
	ß	*b (SE)*	*ß*	*b (SE)*	*ß*	*b (SE)*
Gender (*male*)						
Female	.030	.051 (.073)	.066	.108 (.068)	.013	.017 (.063)
Parent Education (*no 4 year college degree*)						
4 year college degree	-.022	-.037 (.072)	.003	.006 (.068)	.030	.040 (.063)
Immigrant Status (*second generation*)						
First Generation	.026	.054 (.090)	.003	.005 (.085)	-.010	-.017 (.078)
Third Generation	-.015	-.044 (.122)	-.062	-.171 (.115)	-.005	-.012 (.106)
Peer Racial Discrimination	-.011	-.017 (.070)	-.078	-.121 (.065)	-.007	-.009 (.060)
8th Grade Social Distance	.554***	.517 (.039)	.570***	.534 (.038)	.361***	.343 (.045)

Note: *p<.05 **p<.01 ***p<.001