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Associations between childhood trauma and tobacco dependence among Latine adults: Testing the protective effects of compassion for self and others

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Abstract

Tobacco dependence has posed a significant public health challenge in the United States and disproportionately affects Latine adults' risk of developing a variety of adverse health conditions. Childhood trauma is a recognized risk factor for dependence, overall health, and mental health concerns. Still, the influence of compassion for self or compassion for others in this context remains unclear. This cross-sectional study investigated the moderating effects of self-compassion and compassion for others on the relationship between childhood trauma and cigarette dependence among Latine adults. Data was collected through questionnaires assessing childhood trauma, self-compassion, cultural values and factors, compassion for others, and cigarette dependence. A multiple linear regression followed by two moderation analyses was conducted, and mixed findings were observed; however, self-compassion did not moderate the relationship between childhood trauma and cigarette dependence in this sample. In conclusion, the study contributes to knowledge around smoking behaviors in Latine adults with a childhood trauma history and covers possible implications for the development of culturally responsive interventions or preventions that cultivate compassion.

Associations between childhood trauma and tobacco dependence among Latine adults: Testing the protective effects of compassion for self and others

Approximately 19% of the population in the United States, or about 62 million people, identify as Latine[1] (Centers for Disease Control [CDC], 2022). It is also suggested that 8.2% of people who smoke tobacco in the United States identify as Latine (CDC, 2022). Although tobacco research posits that Latine individuals do not engage in smoking behaviors as much as their peers (Velasco-Mondragon et al., 2016), there is a high probability that these numbers may be underestimating people who smoke as there may be a vast majority of Latine individuals not engaging in research due to various reasons such as historical socio-political contexts (e.g., structural racism; Gómez, 2021). While tobacco research has shown lower rates of prevalence for Latine individuals who smoke (CDC, 2023), it has documented many detrimental effects of smoking among the Latine community (American Cancer Society [ACS], 2023). Smoking increases one's risk of adverse health outcomes, including lifelong illnesses (ACS, 2023; CDC, 2022). Not unique to Latine communities, smoking has been correlated to increasing the risk of diabetes, heart-related diseases, strokes, and various forms of cancer (e.g., lung, breast cancer, stomach, cervix, esophagus, and liver) (ACS, 2023; CDC, 2022). However, these and other illnesses that increase earlier risk of mortality are at higher levels among Latine communities surveyed and more detrimental (e.g., diabetes is the fifth leading cause of death for Latine individuals) (CDC, 2022).

[1] Latine is a gender-inclusive term used to attempt to identify and categorize different communities across the Americas and Caribbean that encompass Latino/a, Latinx, Hispanic, and those who are Spanish-speaking (Miranda et al., 2023). It is important to acknowledge that some Latine communities are also indigenous and speak languages other than Spanish. Additionally, how one wishes to identify is their personal decision and the term Latine may not capture everyone's experience or preference, especially those who are indigenous.

In addition to existing complications across the United States healthcare system that impact many (Buntin, 2021), Latine individuals are less likely to have access to or utilize healthcare, including preventative care and smoking cessation resources (Babb et al., 2020; Perez-Brescia, 2022). Accessibility issues are for various reasons, including inequitable health insurance or lack thereof, and it is reported that Latine individuals are less likely to have health insurance in the United States compared to other racial/ethnic groups (ACS, 2023; Perez-Brescia, 2022). Additionally, there are proximity and transportation barriers, lack of bilingual services in Spanish, possible medical literacy issues, and barriers towards trust due to provider bias, racism, discrimination, and fear of displacement for some (Gómez, 2021; Perez-Brescia, 2022; Velasco-Mondragon et al., 2016).

Understanding the specific social determinants and differences within diverse populations is essential for addressing challenges effectively. For Latine individuals, these challenges may be further compounded by socio-political contexts, immigration status, and historical marginalization (Medina et al., 2023). Furthermore, the nuanced interaction between lived experiences from childhood and adult cigarette dependence among Latine adults presents a compelling area for investigation. Data collected in 2021 by the CDC supports that nearly 8 of every 100 (7.7%) Latine adults smoke tobacco. Additionally, about 28 of every 100 (28.1%) adults who experience psychological distress are currently people who smoke cigarettes (CDC, 2023). Although for some, the numbers may appear small, the reality is that adverse health-related outcomes are greatly increased among these individuals, including the risk of early preventable death (CDC, 2023).

Disparities are ever present throughout the literature, and because of ecological inequalities (Medina et al., 2023) they are exacerbated, thus, it is essential to emphasize

culturally responsive and socially just approaches to understanding and addressing health disparities (CDC, 2023). Accordingly, the present study investigates how the more positive concept of compassion interplays with smoking behaviors and dependence instead of highlighting harm solely and maladaptive coping skills. More specifically, the goal of the current study is to test how childhood trauma informs cigarette dependence and how compassion for self and others may mitigate this association among Latine adults.

Childhood trauma and tobacco dependence in Latine communities

Childhood trauma, otherwise, commonly referred to as Adverse Childhood Experiences (ACEs), are negative events that create immediate and sometimes lasting discomfort, distress, psychological harm, physical harm, or overall suffering (Cross et al., 2022). These traumas can be natural disasters, community violence, neighborhood environment, displacement, dysfunctional home life, neglect, and physical, sexual, or psychological abuse (Cross et al., 2022). The negative experiences happening before adulthood and at essential points of development are crucial as they impact children's physiological and mental well-being, can alter children's genetic code, and increase the risk of adverse health outcomes and chronic health issues (Rogers et al., 2021; Téllez et al., 2023). These traumatic events typically invoke toxic stress (i.e., prolonged stress), which, if not offered an outlet or buffer through finding safety or processing the event, emotions, or state of being, then the painful experiences are more likely to be dysregulating and increase the risk for mental and physical harm or illness (Rogers et al., 2021).

Another potential trauma that was not initially surveyed in the early research on ACEs that is especially salient in some Latine families is traumatic experiences due to the immigration process (Téllez et al., 2023). Among Latine communities, children in immigrant families may be

more likely to experience ACEs than those in families born in the United States (Lima Cross et al., 2023). Alongside racism and discrimination, including racial violence, the process of immigration can be a tumultuous time for various reasons as the precursors of having to immigrate can be traumatic (e.g., separation from family or threats or displacement in country of origin) in addition to the process of arriving to the United States and navigating acculturation to a new country and culture (Barrera et al., 2019). There are also traumatic experiences that may occur while attempting to obtain residency, going through naturalization, or struggling with the risk of being deported or imprisoned (Barrera et al., 2019).

There is another layer for 1st generation U.S. born Latines, who have to bear witness to the effects on their family members who may not be. Additionally, understanding the impact that the immigration experience has on cigarette smoking may allow for a better chance at supporting an already vulnerable group. In their 2022 study, Sanchez and colleagues discovered that 26% of Latine participants who immigrated within the last year to the United States were currently smoking. Here, participants with documented immigration status were more likely to have a reduction in cigarette use after immigration than unauthorized individuals (Sanchez, 2022). The study also found that social support systems and neighborhood contextual factors played a role in curbing behaviors among young adults' cigarette smoking post-immigration (Sanchez, 2022).

Overall, ACEs across Latine individuals are a community health burden as there is a greater and more exacerbated risk for adverse health outcomes to an already more vulnerable population due to systemic inequalities within the United States for Latine individuals, including the deficits within the healthcare system (CDC, 2022). As highlighted by Llabre and colleagues (2018), many studies investigating ACEs across communities have had little participation from Latine individuals before publishing. They found that 25.8% of Latine men and 31.2% of Latine

women had four or more ACEs (Llabre et al., 2018). Researchers also found that four or more ACEs were endorsed among 37.6% of United States-born Latines, and for those born outside of the United States, it was 26.3% (LLabre et al., 2018). The presence of higher ACE scores is especially significant as findings throughout trauma literature emphasize the increased risk for adverse health outcomes if an individual endorses four or more ACEs (Llabre et al., 2018; Martin et al., 2023) and as supported by Martin and colleagues (2023), four or more ACEs increased the risk of depressive symptoms, smoking, heart disease, and overall substance use disorders.

As exemplified, smoking and tobacco dependence increase the risk for negative health outcomes that disproportionately and adversely affect Latine communities (ACS, 2023; CDC, 2022). Latine individuals who experience ACEs are more at risk for maladaptive coping, such as through smoking (Espinosa et al., 2021), thus increasing the risk for tobacco dependence. In a study conducted by Espinosa and colleagues (2021), researchers found that individuals who experienced physical and emotional ACEs were more than twice as likely to use tobacco compared to one ACE of parental separation. Perceived discrimination was also associated with a higher probability of tobacco use among the Latine young adults who participated in the study (Espinosa et al., 2021). In another study investigating past-year discrimination across racial/ethnic groups, it was found that for each one-unit increase in discrimination (from 0-24), there was a 3% increase in higher odds for tobacco use among Latine individuals (Mattingly et al., 2023). Lima Cross and colleagues (2022) found that in a nationally representative sample of Latine parents, those who reported ACEs had a greater likelihood of tobacco use. Additionally, the researchers highlighted that Latine parents tend to be more aware of social injustices due to structural and interpersonal racism, which increases the risk for tobacco use, and that past year

discrimination in the sample was associated with tobacco use in the parents (Lima Cross et al., 2022). Overall, ACEs, and especially perceived discrimination, are a significant social stressor for Latine individuals and increase the risk of smoking.

It is important to note that the literature on ACEs and tobacco use behaviors among diverse Latine individuals (e.g., not just parents) is limited to the noteworthy research cited above. There needs to be more literature concerning examining possible buffers for ACEs and smoking behaviors for Latine groups. It is important to acknowledge strengths that are present that helped Latine communities withstand systematic oppression and colonization that have been passed through generations. Family connectedness through *Familismo*, respecting others in the community through *Respeto*, and a focus on building personal relationships through *Personalismo* (Comas-Díaz, 2006) are cultural values that are ever present in Latine communities. When thinking about healing and liberation from pain and suffering in Latine communities, highlighting these cultural values via positive emotions, such as compassion, may allow for developing empowering prevention and interventions.

The Role of Compassion in Latine Communities

How does one frame compassion? Is it an emotion, or is it behavior? The current conceptualization of compassion is that it is a complex phenomenon that involves strong feelings in an individual through the conscious awareness of another person's suffering (Chang et al., 2020; Neff, 2023). Compassion requires mindful attention toward another's suffering with an urge or desire to alleviate that suffering (Neff, 2023). True compassion, as it is understood, is not just overall empathy, where the individual can understand and share the feelings of another to experience their emotions or see their perspective more (Oblad & Oblad, 2020), but requires the desire for action to help (Chang et al., 2020; Strauss et al., 2016). This conceptualization of

compassion allows us to discern that the phenomena involve cognitive components along with behavioral. Compassion requires deep emotions and complex feelings that move past bearing witness to another's pain but choosing to be present for another. This understanding of compassion represents compassion for others well, but self-compassion allows these experiences to be applied to one's suffering (Neff, 2023). In instances of suffering, having the ability to acknowledge and then support one's pain, to care for oneself and one's emotions, with warmth or kindness despite all else is a powerful act that can aid in times of distress (Chang et al., 2020; Neff, 2023).

Compassion, as described, is operationalized in research mainly in the domains of compassion for self, or compassion for others, which is measured by self-report measures that gauge one's attention to how one expresses loving attention to oneself and notices suffering and their response, respectively (Chang et al., 2020; Strauss et al., 2016). Several measures investigate the domains of compassion, but research needs to be more comprehensive in their validation among Spanish-speaking individuals. Cross-culturally, compassion is present, but there are nuances in how it is presented (Chang et al., 2020; Lomas, 2015). In cultures with foundations in collectivistic views, such as Latine communities, parts of compassion for others are present through the values taught in connectedness (e.g., *familismo, personalismo, and respeto*) (Segal et al., 2011). Much of the research discusses compassion through religious means for support in Latine communities (Grenier et al., 2009) or compassion fatigue in caregiving and medicine (Savieto et al., 2019). Research also focuses on using critical compassion for teachers when engaging Latine students and youth (Cammarota & Romero, 2006; Romero & Cammarota, 2009).

Additionally, there is a larger area of research, albeit smaller for generalizability among Latine communities, in contemplative practices, such as mindfulness, that help instill empathy and, thus, compassion (Edwards et al., 2013; Segal et al., 2011). In recent years, mindfulness has become an area of interest for working with Latine communities in helping with well-being (Castellanos et al., 2019; Cotter & Jones, 2019). The issue with this research is that compassion is not directly referred to or is used synonymously with empathy, and it becomes hard to delineate trait compassion and its domains. There is more research on empathy (Rios Casas et al., 2020), and as compassion is related to affective empathy (i.e., the ability to feel and share the emotions of others; Oblad & Oblad, 2020), there may be some connection; however, it is difficult and inappropriate to know or conceptualize how specific findings from empathy research may be understood in the context of compassion.

Overall, in a population that is experiencing heightened distress due to the current rhetoric of the US that increases the risk of harm and negatively impacts the health of Latine individuals (CDC, 2022), practices that instill compassion, such as contemplative practices (e.g., mindfulness and loving-kindness) can offer room for self-acceptance, deep introspection to benefit well-being and alleviation of suffering (Karnaze et al., 2023; Lomas, 2015; Segal et al., 2011).

The Moderating Role of Compassion for the Self and Others in Latine Communities

Some previous research has shown that compassion, both for oneself and for others, can act as a protective factor in the face of adversity (Garbutt et al., 2022). For example, in one study on individuals with multiple sclerosis, individuals with higher levels of self-compassion were found to have lower levels of psychological distress and greater psychological well-being (Eghbali et al., 2022). Furthermore, in a study among adolescents, compassion for others was

found to promote prosocial behaviors and foster positive relationships, which can buffer the negative impact of ACEs on mental health (Carro et al., 2020). Additionally, some research supports that childhood maltreatment can undermine adolescents' self-compassion, potentially impairing the development of compassion toward oneself and others (Amari & Mahoney, 2021; Sousa et al., 2022).

In the context of Latine communities, compassion for the self and others may play a crucial role in mitigating the adverse effects of ACEs and possibly reducing the likelihood of tobacco smoking dependence. Again, it is essential to highlight that there is a gap in this area of research, looking at domains of compassion (i.e., compassion for others and compassion for the self) as protective factors within Latine adults in general but also those who have experienced ACEs and struggle with tobacco dependence. There is also a gap in research that focuses on the domains of compassion regarding any substance use, and more of the research conducted is investigating specific health diagnoses (e.g., cancers, schizophrenia, and heart disease). Despite these gaps, as cultural values in Latine communities focus on and promote a collective nature, investigating the possible protective effects of compassion is necessary. Reviewing related work, there is evidence to suggest that compassion can moderate risk pathways in various domains.

In recent years, there has been a growing body of research highlighting the potential moderating role of compassion in various risk pathways related to psychological distress. For example, in a review of six studies by Hosseini Barzanji and Kurd (2019), researchers found that self-compassion may moderate the relationship between stress and mental health outcomes, with individuals who exhibit higher levels of self-compassion may experience lower levels of psychological distress. Additionally, in a systematic review of 35 studies, Winders and colleagues (2020) found that in all the study findings, increased self-compassion was associated

with less post-traumatic stress symptomatology. Considering the lack of research that includes the current study variables, the present study may fill a significant gap for compassion research, specifically how domains of compassion moderate the association between ACEs and cigarette dependence.

Theoretical Framework

The Integrative Model for the Study of Developmental Competencies in Minority Children (Coll et al., 1996) provides a valuable framework for understanding the complex relationship between ACEs, compassion, and cigarette dependence in Latine adults. The integrative model emphasizes the impact of discrimination, racism, and oppression on the development of minoritized children. García Coll et al. (1996) proposed this model because the dominant developmental models failed to focus on what may be part of the normative development of minoritized children. The integrative model does not neglect the importance of discussing the impact of racism, class, acculturation stress, and oppression on children's development. A strength of García Coll's (1996) model is that it also attempts to counteract a deficiency model and instead highlights cultural strengths and resilience among minoritized communities. Thus, the model leads to more support for understanding the nuanced experiences of minoritized individuals, which may help prevent ongoing stereotypes.

The Integrative Model is suitable for the proposed study, which focuses on the Latine population because the Latine community has been subjected to high levels of prejudice, nativism, acculturation stressors, racism, and economic discrimination in the United States (Baeza-Rivera et al., 2022; CDC, 2022; Stein et al., 2016). The model highlighting systemic injustice and oppression also accounts for children's variable experiences, such as non-cultural (e.g., biological) and specific contextual experiences (e.g., family and neighborhood; Carlo et al.,

2022). Childhood traumatic events that may occur in these populations are incredibly nuanced as there is another layer to the experiences that significantly impact development (Salinas-Miranda et al., 2015). In this study, ACEs are the primary interest, and it must be noted that the integrative model fails to fully capture all the various forms of possible traumatic events outside of racism, discrimination, and acculturation concerns. Despite this difference, adapting the model to fit the present research scenario seems appropriate, as it provides a comprehensive framework for understanding the impact of vast negative childhood experiences that may exist for diverse groups of children, including Latine populations (See Figure 1 for the adapted model).

As described in prior research, ACEs can negatively impact various developmental outcomes, including mental health, physical health, and academic achievement (Stein et al., 2016). Applying the Integrative Model, tobacco and cigarette dependence may represent structural adaptations due to the maladaptive coping mechanisms, such as avoidance through substance use, which occur as a way to cope with adverse experiences and environments and, thus, the effects of traumatic experiences (Marsiglia et al., 2014; Salinas-Miranda et al., 2015). Accordingly, ACEs experienced in the Latine community may be associated with the specific structural adaptation of cigarette use and dependence. The Integrative Model (García Coll et al., 1996) also focuses on adaptive cultural strengths, values, and coping mechanisms in minoritized communities, which may buffer against adverse risks (Stein et al., 2016). Therefore, grounded in this theory, compassion for self and others (both adaptive cultural strengths; Kolchraiber et al., 2022) may reduce the adverse effects of childhood trauma on cigarette dependence.

Current Study

The present study investigated the relationships between compassion domains, ACEs, and cigarette dependence. The main aim was to investigate the moderating effects of compassion

domains on the relationship between ACEs and cigarette dependence among Latine adults by utilizing a cross-sectional survey design. To address the research aim, we hypothesized that self-compassion would moderate the risk of dependence in Latine adults with higher scores of ACEs. Extending on the previous findings, we expected that those with lower scores in compassion for self will have a stronger positive association between ACE scores and dependence risk than those with higher scores in compassion for self. Additionally, we anticipated that compassion for others would not play a moderate risk of dependence (i.e., no significant difference) among Latine adults with higher ACEs. By examining the moderating effect of domains of compassion, this study aims to provide essential insights into potential protective factors that can help mitigate the adverse effects of ACEs on cigarette dependence in this population.

Given the gaps in the current research, it is crucial to examine how various domains of compassion, such as self-compassion and compassion for others, might play a moderating role in alleviating the impact of ACEs on cigarette dependence among Latine adults. Building upon previous findings that highlighted the protective role of self-compassion in mitigating psychological distress and post-traumatic stress symptoms, this study aims to expand the scope of compassion research. It sought to utilize a strength-based approach that focuses on these more positive constructs to examine how compassion, both towards oneself and towards others, may buffer the adverse effects of ACEs on cigarette dependence among Latine adults. By investigating the potential protective effects of compassion, this study aimed to contribute to a better understanding of the complex relationship between adversity, mental health, and substance use outcomes in marginalized populations. In doing so, this study will not only add to the existing literature on compassion and mental health outcomes but also will provide valuable

insights into the potential role of compassion in mitigating the impact of ACEs on cigarette dependence among Latine adults.

Method

Design and Sample Selection

Data collection for this online cross-section survey was launched throughout the United States from May 2023 to March 2024. Eligibility criteria were individuals above the age of 18 who identified as Latine or Spanish speaking, were engaging with smoking cigarettes at least once a week, and could read and write in English or Spanish. When first launching the study in May 2023, we had to pause collection as approximately 440 responses came into our eligibility screener, which made it difficult to discern what was authentic. Updating our strategy to a new process and removing any old advertisements on social media was helpful, and we began recruitment again by June 2023. Any prior collection was discarded and not included in further analysis or descriptions.

Participants were recruited through three main avenues post social media challenges. In June 2023, the first stage of recruitment included community outreach efforts, such as flyers, local forums in Richmond, Virginia, universities, and partnerships with local organizations in Virginia. This first recruitment and data collection stage was completed using REDCap (N = 54 completed eligibility). The second stage also utilized REDCap, expanded outside of Virginia, and used the ResearchMatch database that includes individuals nationwide (N = 133 completed eligibility screener). The third and final stage of recruitment was completed through Qualtrics, and their services were utilized for recruitment and data collection. This stage was independently curated and maintained by Qualtrics using their panels of nationally representative online survey-

takers, and no personal identifiers were shared with the researchers (N = 200 completed the study in its entirety).

Of the 387 eligible participants who enrolled in the study, 98 individuals completed the study in its entirety from the first two waves, leaving 298 participants. A total of 99 individuals were excluded from analyses due to failure to meet data quality checks, which were completed by reviewing multiple (i.e., eight) qualitative responses to check for nonsensical or impossible responses.

Participants

Included participants (N =199) were 18 and older (M_{age} = 35.1, SD = 8.5), all identified as Latine, 50.8% were assigned Male at birth, while 48.2% were assigned Female (1% did not respond, and Intersex was an option). Participants' responses indicated that 45.7% had no diagnosed medical health condition, and 63.3% had no current psychiatric mental health diagnosis. Most participants had moderate perceived stress; 67.8% and 69.3% of individuals scored four and higher on the ACEs international questionnaire. Additionally, many respondents' answers indicated biculturalism (M = 3.41, SD = 0.79) (i.e., a balance of their two cultures of the family country and the United States), higher scores of ethnic identity pride (M = 3.61, SD = 0.73), higher scores of familismo (M = 7.63, SD = 3.12), and personalismo (M = 7.41, SD = 2.90), see Table 2 for more specifics on measures.

Individuals all smoked cigarettes weekly; 74.9% smoked every day, averaging M = 6.5 (SD = 4.6) cigarettes smoked per day. 64.3% of participants had all made serious attempts to quit smoking in the past, although 46.2% were not thinking of quitting tobacco/nicotine use in the next six months. Interestingly, 47.2% of the participants, on a scale of 1, not at all confident, to 10, extremely confident that they could succeed in stopping their tobacco use, chose six and

above. When asked if individuals' regular cigarette brands were flavored like menthol or mint, 72.9% answered yes. Despite other findings, when cigarette dependence was analyzed, the majority of participants scored at low dependence, 37.7%, while 32.2% were at medium dependence and 21.6% at high dependence.

Procedure

Individuals who expressed interest in the study by email, phone, or through the ResearchMatch database were asked to complete a screening survey to determine eligibility, completed virtually on any device with internet access. Eligible individuals were then sent an individualized REDCap survey link that began with a participation information sheet to be signed by the individuals once they agreed to participate. This information sheet needed to be completed before continuing to the study survey. The Qualtrics Panels teams recruited individuals that matched the inclusion criteria and administered the survey, which began with the eligibility screener before the ability to complete the survey. Qualtrics conducted data quality checks and provided the researcher with data from participants deemed eligible and completed the study.

All individuals knew that they could complete the study in multiple settings in English or Spanish except on Qualtrics, which was only offered in English; it took approximately less than one hour for all participants. Participants were able to skip any questions if they were not comfortable answering. The survey started with demographic questions, including age, gender, race/ethnicity, socioeconomic status, immigration or documentation status, and relevant medical history. After, participants completed measures related to their tobacco and cigarette use and history before the battery of measures. Once the study was complete, participants in the first two stages were compensated $40 either by cash if in the local area or by gift card of their preference,

with Amazon being the most frequent choice. The Qualtrics team compensated individuals differently, and incentives varied based on choices made before participation, such as airline miles or other redeemable credit card points after their participation. Individuals could automatically download or inquire about additional resources and support for tobacco and cigarette cessation, including referrals to local smoking cessation programs or resources.

Measures

Adverse Childhood Experiences – International Questionnaire (ACE-IQ; WHO, 2020)

Felitti and colleagues (1998) collaborated on developing the adverse childhood experience questionnaire with the CDC and Kaiser Permanente. This instrument encompasses ten categories of childhood experiences, encompassing physical, emotional, or sexual abuse, emotional and physical neglect, parental separation, domestic violence, parental substance use, parental mental illness, and parental incarceration. Building upon the ACEs framework, the World Health Organization (WHO) created a globally tested and validated cross-national questionnaire in 2009 (for more information, see Appendix A). This expanded questionnaire addresses six core areas of adverse experiences, incorporating additional affirmative responses to endorsed areas. Most respondents (85%) demonstrated comprehension of all questions (Cronbach's alpha = 0.85; WHO, 2020). The six distinct question areas within the WHO questionnaire include core demographic information, marriage demographics, details about parents or guardians, family-related aspects, experiences of abuse, and encounters with violence. These areas are further broken into 13 categories, expanding on the original ACEs model (Felitti et al., 1998).

The ACE-IQ encompasses 13 categories with varying scale formats. Emotional abuse, physical abuse, sexual abuse, violence against household members, emotional neglect, physical

neglect, bullying, and community and collective violence are assessed using multiple items. For instance, bullying is evaluated with two questions, while exposure to collective violence, such as war, involves four questions. Responses are rated on a frequency scale ranging from never (4) to many times (1). Additionally, five categories employ a yes or no single-item response format, including living with household members who were substance abusers, living with household members who were mentally ill or suicidal, living with household members who were imprisoned, having one or no parents, and experiencing parental separation or divorce.

Penn State Nicotine Dependence Index (PS-NDI; Foulds et al., 2015)

The PS-NDI is a 10-item self-report scale designed to measure nicotine dependence in people who smoke cigarettes (for more information, see Appendix B). This scale, with scores ranging from 0 to 20, includes questions addressing cigarette consumption, the timing of the first cigarette of the day, nocturnal awakenings for smoking, reasons for smoking, the experience of strong cravings, the intensity of urges to smoke over the past week, the difficulty in refraining from smoking in restricted areas, and the emotional and psychological impact of not smoking for a period (Foulds et al., 2015). The scoring involves assigning points based on responses to each question. For example, the number of cigarettes smoked per day corresponds to a score on a scale of 0 to 5, and the timing of the first cigarette after waking is similarly scored. The measure remained continuous, using the total score on a scale from 0 to 20.

Santa Clara Brief Compassion Scale (SCBCS; Hwang et al., 2008; Caycho-Rodríguez et al., 2020)

The SCBCS is a valuable tool for assessing an individual's level of compassion for others (for more information, see Appendix C). The scale consists of five self-assessment items and gauges the individuals' compassion towards others, such as the following, “When I hear about

someone (a stranger) going through a difficult time, I feel a great deal of compassion for him or her." Individuals can respond to each item on a seven-point scale, ranging from 1 (not at all true of me) to 7 (very true of me). To obtain the overall SCBCS compassion score, individual scores for the five items are summed, resulting in a total score ranging from 5 to 35. Higher scores signify higher levels of self-reported compassion for others.

The scale allows for a comprehensive evaluation of various facets of compassion. These facets include empathetic responses to strangers facing adversity, feelings of compassion for unknown individuals, the significance attributed to assisting others, preferences for altruistic actions benefiting strangers over personal interests, and the experience of tender emotions toward strangers in need. The original English version of the brief scale demonstrated robust psychometric properties, including a Cronbach's alpha of 0.90, indicating high internal consistency and reliability (Hwang et al., 2008). Subsequently, the scale was translated into Spanish, and a study conducted by Caycho-Rodríguez and colleagues (2020) explored the Spanish version's validity, reliability, and factorial invariance across genders. The Spanish SCBCS exhibited reliability ($\alpha = .90$) and provided evidence of convergent and discriminant validity, supporting its applicability in diverse cultural and linguistic contexts. This comprehensive evaluation underscores the SCBCS's utility as a reliable tool for assessing compassion for others across a Latine population.

Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011; Garcia-Campayo et al., 2014)

The SCS–SF is a brief 12-item self-report instrument developed by Raes and colleagues (2011), which assesses self-compassion across six subscales: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-identified (for more information, see Appendix D). Participants rate their responses on a scale from 1 (almost never) to 5 (almost

always) based on the frequency of engaging in specific behaviors during challenging situations. Subscale scores are obtained by calculating the mean of the relevant item responses, and to compute the total self-compassion score, negative subscale items are reverse-scored. The scale demonstrates strong internal consistency (Cronbach's alpha ≥ 0.86), and confirmatory factor analysis supports the same six-factor structure as the long form, with an overarching factor of self-compassion (Raes et al., 2011). The Spanish translation of the SCS-SF exhibits high internal consistency (Cronbach's $\alpha = 0.85$) and reliable subscale scores, affirming the validity and reliability of the scale in assessing self-compassion across diverse cultural contexts (Garcia-Campayo et al., 2014). The SCS–SF is a valuable tool for researchers and clinicians, offering a concise yet comprehensive measure of self-compassion.

Power Analysis

For estimating the necessary sample size, G*Power version 3.1.9.7 (Faul et al., 2007) was used for three a priori power analyses (see Table 1). Due to the model, the family statistic chosen was an F-test, Linear multiple regression - Fixed model, R^2 increase. As there is no current research investigating compassion domains and cigarette dependence (or substance use in general), the first power test solely used the main effect (ACEs x cigarette dependence), with different moderate and large effect sizes. In contrast, the second included the two compassion domains with the main effect (ACEs x cigarette dependence x compassion for self x compassion for others) to integrate the multiple linear regression. The third power test included the moderators as a predictor with different effect sizes as conservative estimates; as these are two separate moderation analyses but with the same number of variables of interest, the outcome yields the same (Yenipinar et al., 2019).

Although there is not a study at the time of writing that matches how the variables are operationalized in this population, based on multiple meta-analyses and scoping reviews, it was found that various ACE types (e.g., emotional, neighborhood violence, physical) and ACE cut-points (e.g., None, Low, High) are associated with moderate to high associations with tobacco use and dependence (Leza et al., 2021; Petruccelli et al., 2019; Rogers et al., 2022; Shin et al., 2018; Zhu et al., 2023). Most of the research utilized multinomial logistic regression reporting odds ratios or adjusted odds ratios, proportions, and did not make effect sizes or correlations available in their results. Additionally, another major difference across the aforementioned research was the study designs, such as having dichotomous relationships.

Although, in some cases, it may be possible and appropriate to convert odds ratios (Polanin & Snilstveit 2016), the present study does not meet these assumptions. As the needed effect size statistics are not shared and cannot be calculated using the validated formulas, using the various meta-analyses that supported moderate and significant associations throughout the literature, effect size conventions were used, a moderate association (f^2 = .15) and a large association (f^2 = .35; Yenipinar et al., 2019). Significance criteria of α = .05 and power = .80 were chosen. Based on the first power test with a moderate effect size, the minimum sample size needed was N = 68, while the large effect size called for N = 31. The second model inputted with a moderate effect size was N = 085, while the large effect size was N = 40. The third model and power test for the moderation variables with a moderate effect size was N = 77, while the large effect size was N = 36.

Data Analysis

Data was cleaned to include participants who completed all necessary assessments, and outliers were removed (e.g., Seven participants with ages above 55 were not included; they

ranged from age 66 to 75 and heavily skewed the results based on visual representations and possible lack of generalizability). ACE-IQ (i.e., independent variable) scores were analyzed using the WHO (2020) parameters to calculate the individual's binary scores from 0-13 and were kept continuous. The dependent variable, cigarette dependence, was also continuous on a scale from 0 to 20. A self-compassion score for the first moderation model was continuous and calculated using SCS-SF parameters (Neff et al., 2019), where reverse scoring was completed on necessary items, and the mean of each subscale was averaged for the total mean score for ease of interpretation. The sub-scales for the brief form were not intended for statistical comparisons (Neff et al., 2019; Raes et al., 2011), so they were not included in the analysis. The second moderation model, with compassion for others, utilized a total score for the measure (Hwang et al., 2008) from 5 to 35 and was left continuous and not transformed.

As measures of interest were limited, there was no missing data in the final analysis; thus there was no need for imputations, and all linear assumptions were satisfied without any need for transformations. Descriptive and frequency statistics were employed for demographics and cigarette use patterns (see Table 2, Table 3, Table 4, and Table 5, respectively). Bivariate correlations were conducted to explore the relationships between ACEs, cigarette dependence, age, and compassion domains (see Table 6). Multiple linear regression was then conducted to test the variables (Ernst & Albers, 2017), and all necessary statistics were examined to interpret statistical significance (see Table 7). Two separate moderation models to investigate how compassion for self (see Figure 2) and compassion for others (see Figure 3) impacted ACEs and cigarette dependence were then completed. The moderation analyses used PROCESS macro v4.2 for SPSS (Hayes & Rockwood, 2016) to assess the potential buffering effect of the compassion domains. Statistical results can be found in Tables 8 and 9, respectively.

Results

Bivariate Correlations (see Table 6) conducted revealed several significant associations between the variables of age, cigarette dependence (M = 9.14, SD = 4.28), ACEs (M = 5.91, SD = 3.71), compassion for self (M = 3.32, SD = 0.73), and compassion for others (M = 26.74, SD = 5.98). First, age was investigated to see if there was a need to control for it in the larger statistical models. Age did show a positive correlation with compassion for self (r = .283, p < .001) and compassion for others (r = .276, p < .001), which suggested in this sample that older participants tended to report higher scores in both the compassion domains. However, age was not significantly correlated with nicotine dependence (r = .029, p = .688) or ACEs (r = -.106, p = .138). Due to these findings, it did not seem meaningful or clinically relevant to control for age in the following models.

Cigarette dependence was positively correlated with ACEs (r = .208, p = .003), indicating that higher scores in ACEs in this sample were associated with higher cigarette dependence. Additionally, cigarette dependence was negatively correlated with compassion for self (r = -.186, p = .008), suggesting that higher scores in self-compassion were associated with lower levels of dependence in this sample. There was no significant correlation found between nicotine dependence and compassion for others (r = .076, p = .283). When looking at ACEs, there showed a strong negative correlation with compassion for self (r = -.423, p < .001) and a moderate negative correlation with compassion for others (r = -.218, p = .002), possibly indicating that higher ACEs exposure is associated with lower levels of compassion towards oneself and others in this sample. Unsurprisingly, compassion for self and compassion for others were positively correlated (r = .393, p < .001), which supports the link between these domains of compassion in this sample.

ACEs as a predictor of cigarette dependence

In the multiple regression analysis (see Table 7), the predictive power of ACEs on cigarette dependence was explored, alongside the other factors of compassion for self and compassion for others, which will be discussed in the next section. The regression model only explained 8.5% of the variance in cigarette dependence scores, $R^2 = .085$, $F(3,195) = 6.00$, $p < .011$, with an adjusted R^2 of .070, indicating a modest fit of the model and large effect size. However, specifically focusing on ACEs, the analysis did reveal a significant positive relationship between cigarette dependence. The unstandardized regression coefficient (*B*) was .2 (*SE* = .09), suggesting that, holding other variables constant, a one-unit increase in ACEs scores was associated with a .2 unit increase in cigarette dependence scores.

This effect was significant ($t = 2.23$, $p = .027$), with a 95% confidence interval ranging from .02 to .37, indicating a possible positive true effect size. The standardized beta coefficient for ACEs was $\beta = .17$, a modest but significant positive relationship. It shows that as ACEs increase, cigarette dependence is likely to also increase, underscoring its relative importance in the model. This finding was supported by the part and partial correlations being .15 (i.e., strength and direction) and .16 (i.e., contribution to the variance), respectively, showing ACEs' contribution to the variance in cigarette dependence beyond the other variables in the model.

ACEs and compassion domains as a predictor of cigarette dependence

Continuing from the multiple regression analysis noted above, compassion for self significantly predicted cigarette dependence. The $B = -1.11$ (*SE* = .47), and $\beta = -.19$, indicating a negative relationship. This finding suggests that in the sample, an increase in compassion for self was associated with a decrease in cigarette dependence scores, which could highlight a possible protective effect of this compassion domain against dependence. The correlation analysis

complements this finding. Additionally, the t-value was -2.35 (p = .020), which is significant and indicates a negative relationship that reflects this possibility, supporting the idea that higher levels of compassion for self are associated with lower levels of cigarette dependence.

Comparatively, compassion for others was found to have a different relationship, with B = .13 (SE = .05) and β = .19, suggesting a slight positive relationship. The t-value was 2.51 (p = .013), further indicating a significant positive relationship, suggesting that higher levels of compassion for others are associated with slightly higher levels of nicotine dependence. This finding is especially interesting as the correlation analysis was insignificant, and it may have acted as a suppressor in the model (Ludlow & Klein, 2014), supporting the need for further analysis as there may be a more nuanced influence.

Compassion for self and others as a buffer for cigarette dependence

A moderation analysis was completed to explore how compassion for self may buffer the association between ACEs and cigarette dependence (see Table 8). A second moderation model investigating compassion for others' possible effects was also completed (see Table 9). It should be considered that the hypothesis for compassion for self was that it would buffer the relationship, and compassion for others was that there would be no buffering effect. The first model, where compassion for self was examined as the moderator between ACEs and cigarette dependence, accounted for 6% of the variance in cigarette dependence scores (R^2 = .060, F(3,195) = 4.15, p < .007). Although there were promising results, the interaction between ACEs and compassion for self was not significant in this model (B = -.10, SE = .10, t = -1.03, p = .307) with the change in R^2 due to the interaction was .01 (F(1, 195) = 1.05), and suggests that compassion for self did not moderate the relationship between ACEs and cigarette dependence in this present study. These findings do not support the researcher's hypothesis.

The second model investigating compassion for others as a moderator between the relationship of ACEs and cigarette dependence held similar results, which was in line with what the researcher hypothesized. Compassion for others in this model did explain 5.89% of the variance in cigarette dependence scores (R^2 = .06, F(3,195) = 4.07, p < .008). However, the interaction term between ACEs and compassion for others did not reach statistical significance (B = .00, SE = .01, t = .2, p = .844) with the model's explanatory power being minimal, with a change in R^2 of .00 (F(1, 195) = .04).

Discussion

The first aim of this study was to investigate the relationship between compassion domains, compassion for self, and compassion for others, with ACEs and cigarette dependence. The second aim and main goal of the study was to test whether compassion for self, moderated the relationship between ACEs and cigarette dependence among Latine adults. It was hypothesized that compassion for self would moderate the relationship between ACEs and cigarette dependence. In contrast, higher compassion scores would weaken the association between ACEs and cigarette dependence (i.e., reducing dependence scores despite higher ACEs). It was also hypothesized that compassion for others would not moderate the relationship between ACEs and cigarette dependence.

The study findings were mixed. There were significant associations between ACEs, compassion for self and others, and cigarette dependence. In line with previous research, the correlations and multiple regression analysis confirmed that higher levels of ACEs were associated with higher cigarette dependence scores. Higher levels of self-compassion significantly correlated with lower cigarette dependence, which initially supported the idea that self-compassion may benefit the relationship. ACEs were strongly negatively correlated with

compassion for self and moderately negatively correlated with compassion for others. This finding supports the associations between variables and indicates that in the sample, higher ACEs exposure was associated with lower levels of compassion domains. This finding is empirically supported throughout the literature (Tanaka et al., 2011). Compassion for self specifically has been supported in buffering ACEs and strengthening forms of emotional resilience (Garbutt et al., 2023).

The multiple regression analysis supported predictions, including ACEs, compassion for self, and compassion for others, which significantly accounted for 8.5% of cigarette dependence scores. However, the associations and variance accounted for throughout the variables was on the lower end. Most importantly, the moderation analyses did not support the main hypothesis that compassion for self would moderate the relationship between ACEs and cigarette dependence. The moderation analysis using compassion for others did support the hypothesis that there would be no buffering effect between the variables. The main purpose of the study was not supported, to determine if compassion for self is a buffer and possibly a protective factor for cigarette dependence among Latine adults with ACEs. There is still evidence that these factors may be interconnected, but there are still missing pieces.

Previous research has not investigated the relationships between compassion domains, ACEs, and cigarette dependence in the Latine population. This study is the first of its kind to theorize that compassion for self could be a protective factor among Latine individuals who smoke cigarettes. The findings support associations with compassion for self impacting the relationship between cigarette dependence and ACEs, which is a promising finding to add to the substance use and compassion literature, especially in the Latine population. Some studies that investigated the relationship between compassion for self and well-being in other populations

support the present study. Despite the encouraging findings of preliminary analyses and related prior research, the current study did not find that for Latine individuals in the sample, compassion for self or others played a moderating role in the relationship between ACEs and cigarette dependence.

The need to discover possible protective factors within Latine communities to buffer against negative experiences and harmful behaviors is very much needed. As expounded previously, through The Integrative Model, significant risk factors impacting individuals nationwide who identify as Latine represent adverse events and experiences. The current study findings highlighted increased risks towards poorer health outcomes and impacts on well-being, which the Integrative Model posits. It was reflected in the findings that high amounts of stress, discrimination, and traumatic events were present and significant among the participants. The structural adaptations (which, as discussed, can be maladaptive coping mechanisms such as smoking) of overall tobacco use were present, drawing an association with how the sample is engaging with behaviors that are also increasing their stress. Although the moderation analyses were not significant, new ways of reaching Latine individuals that allow for being responsive to their cultural needs are necessary for creating new possibilities in treatment and prevention programs that can be built using the Integrative Model to continue helping contextualize Latine realities and development.

Additionally, regarding compassion domains, it is important to note that as the participants were mainly over 30, this distribution of age could have impacted how they understood and answered the questions throughout the measures. Age was correlated with the compassion domains, and the scores across the compassion domains increased as age increased. How compassion for self and others (rated very high in the majority of the sample compared to

compassion for self) presents in the population requires further exploration to see what possibilities may exist. There is also uncertainty about how these measures may look across other samples and their generalizability, but more investigation is needed.

Moreover, Latine individuals in the sample likely hold more cultural nuances than those captured within the statistical models. For instance, as shared before, many individuals throughout the sample exhibited biculturalism, ethnic identity pride, familismo, and personalismo. Nonetheless, with the sample being 199 individuals, a much larger sample would be necessary to maintain power and clinical relevance to utilize other possible variables.

Lastly, it is also important to consider that the sample did have maladaptive behaviors and risks with their smoking habits, which were noted earlier, but were not scored as highly dependent. Hence, the discrepancy between the dependence scale and other cigarette behaviors is puzzling. Again, this could be due to the need for cultural representativeness. The measure was translated and validated in Spanish, but it does not mean every question translates practically to the sample and has actual clinical relevance.

Implications

The current study has substantial implications for continuing this investigation, focusing on how cultural contexts shape the experience and expression of compassion among Latine communities. With the associations present, teasing apart compassion to learn more about possible underpinnings of the construct and phenomena, such as connection, empathic concern, mindfulness, and self-judgment, may allow for essential discoveries in new ways to support the cessation of cigarettes in this population. Concerning the proportion of variance accounted for by the associations of compassion for self between ACEs and cigarette dependence (under 10%), there is still clinical relevance as any help towards better health outcomes and life expectancy

makes all the difference for the Latine population. Therefore, the present study serves as a foundation for compassion domains being included in tobacco research, and expanding to other relationships with other substances could lead to meaningful discoveries. Integrating cultural contexts, such as acculturation levels, cultural values (e.g., familismo) will also strengthen this next step.

There are also implications for deriving more culturally appropriate ways to monitor dependence. The measure for cigarette dependence in the present study, the PS-NDI, utilizes a point system to assign a value to each question asked. As mentioned, the questions cover multiple areas that have been verified through research to be connected to cigarette dependence. What was found in this study was that individuals were averaging lower on the scale, with the majority scoring in low dependence and then moderate dependence, which was surprising compared to their cigarette use and behaviors. This finding brings forth questions on the clinical relevance of this measure for use with this sample and can help with the development of more culturally appropriate instruments in tobacco/nicotine use or dependence research.

The possible implications for clinical practice and settings are to pay attention to the increased rates of specific cultural values for this population, especially for individuals who, in the majority, scored with four or more ACEs. In the underutilization of health services for Latine communities throughout the United States, cultural values being understood is not a new concept, but finding new ways to integrate them needs to become a standard practice. Considering family and connection in treatment plans and cessation programs, utilizing these values in therapeutic interventions, and what may mark differences would be to engage in community partnerships as health advocates to educate community members in receiving support not just individually but for their loved ones.

Lastly, there are implications for public policy and advocacy; utilizing the study findings, a few avenues deserve attention. As there has already been support in ensuring health materials and cessation programs have Spanish translations, linguistic support is insufficient. There is a call for investing in community efforts that can keep bridging the gap for the utilization of health services for individuals with two cultures. The participants' biculturalism level shows that individuals are not just one "thing." These individuals have much more to their identity that is integral to other areas of their lives that deserve value and support. Funding for community health workers that can integrate the higher levels of familismo found through a push to leverage close-knit family structures could be transformative. Higher scores of personalismo found that trust in relationships helps bring nuance to how forming bonds with community health workers could make all the difference.

Therefore, there is a call for specific health campaigns that can target Latine families, insisting they reach out to their community health workers, create partnerships, and show examples of ways to honor cultural heritages while still being present to United States customs. Additionally, with the level of stress, including a focus on managing this as a preventative measure against smoking through connection could be more purposeful. Including education in the campaigns speaking specifically on flavored tobacco products may also assist in the allure of these products for Latine individuals, as much of the participants' initial use was with these products and before they were 21.

Limitations, Strengths, and Future Directions

As an exploratory cross-sectional study, several limitations were made apparent and need to be shared. Utilizing the findings shared throughout this paper, it may have been more meaningful to recruit a clinical sample with higher cigarette dependence scores. The clinical

relevance of the findings may have been stronger, as the sample varied and higher cigarette dependence was not in the majority. Additionally, having a larger sample that could support an elevated statistical power to investigate effects would be beneficial. However, power was met for the present study; it was on the lower end with individuals who varied greatly across variables of interest. There is also the possibility that the measure used for cigarette dependence is less appropriate for use with the Latine population in the present study. Individuals in Latine communities may vary significantly in dependence symptom presentation with certain health conditions. This possibility is intriguing to reflect on as the questions on the cigarette dependence measure may need to be more relevant in the sample. It was supported that the participants were smoking and in larger quantities with heightened perceived stress, but the majority scored with low cigarette dependence.

Age was correlated with compassion for self and others, so those older exhibited stronger scores, with most of the sample being older than 30; this could have impacted the data. This, along with individuals scoring highly on the compassion for others scale while moderately on compassion for self, showcases that the participants need more variation. In addition, these domains may not be linear or evenly distributed. There were relationships and missing pieces that deserve to be investigated to understand these variables' nuance better. Lastly, the study was constructed to take into account individuals who primarily speak Spanish and include those who have immigrated to the United States; in the end, there were only 2 included individuals who completed the study in Spanish and four individuals who had disclosed immigrating to the United States. This limitation is that there is a possibility that the measures just did not accurately represent the sample that could be focused on in future studies.

Despite the study's limitations, many strengths should be highlighted for consideration. It is important to veer away from traditional paths in regard to how scholars investigate populations of interest throughout substance use research. Within the Latine community, some hidden values build off the need for connection to others and impose stronger emotional resilience through life's hardships without implicitly teaching it. Despite higher rates of mental health stigma, valid trust issues with the medical systems and model in the United States, and overall risks towards environmental stressors, it is still vital to investigate using strength-based approaches. The present study chose to search for possible protective factors to buffer traumatic childhood events' impact on cigarette dependence, and it was a risk in the landscape of tobacco research. There is a need to continue along this path to find stronger ways to make research more culturally responsive to meet the needs of individuals without solely focusing on the negative aspects of dependence and overall risks.

Thus, future studies should expand and diversify the study sample to meet more individuals, including measures that would have delineated compassion domains, adverse experiences, and cigarette dependence. At the same time, including cultural elements and cannabis use behaviors could have been extremely promising. Additionally, designing the study to be orally administered in person would allow for reaching a greater population of individuals who smoke, as throughout recruitment, it was evident that this would have allowed for more participants. Another idea would be to include a qualitative portion that utilizes concept mapping to discover meaningful themes and a better understanding from participants who fit these variables to have them share their experiences.

Conclusion

By delving into how compassion may be cultivated in our communities, the study provides insight into the relevance of self-compassion and compassion for others as factors that hold relationships with ACEs and cigarette dependence. Although buffering effects were not supported in the sample for compassion for self and compassion for others, the relevance holds. If compassion domains can impact cigarette dependence, further investigation is needed to find the nuance and include other possible related measures. Furthermore, the findings of this study still have practical implications for interventions and prevention programs targeting tobacco and cigarette dependence among Latine adults with a history of ACEs. As there was some support between the variables, interventions that can incorporate strategies to enhance self-compassion and promote compassionate attitudes toward others to reduce the risk of tobacco and cigarette dependence could be hopeful. As the impact of cigarette use in the community still predicts lower health outcomes, it makes sense to try incorporating new forms of reaching individuals. Moreover, the results of this study contribute to the development and need for culturally sensitive interventions that address the unique experiences of Latine adults. Further implications give credence to the importance of considering social and cultural factors when designing interventions for tobacco and cigarette dependence among Latine adults.

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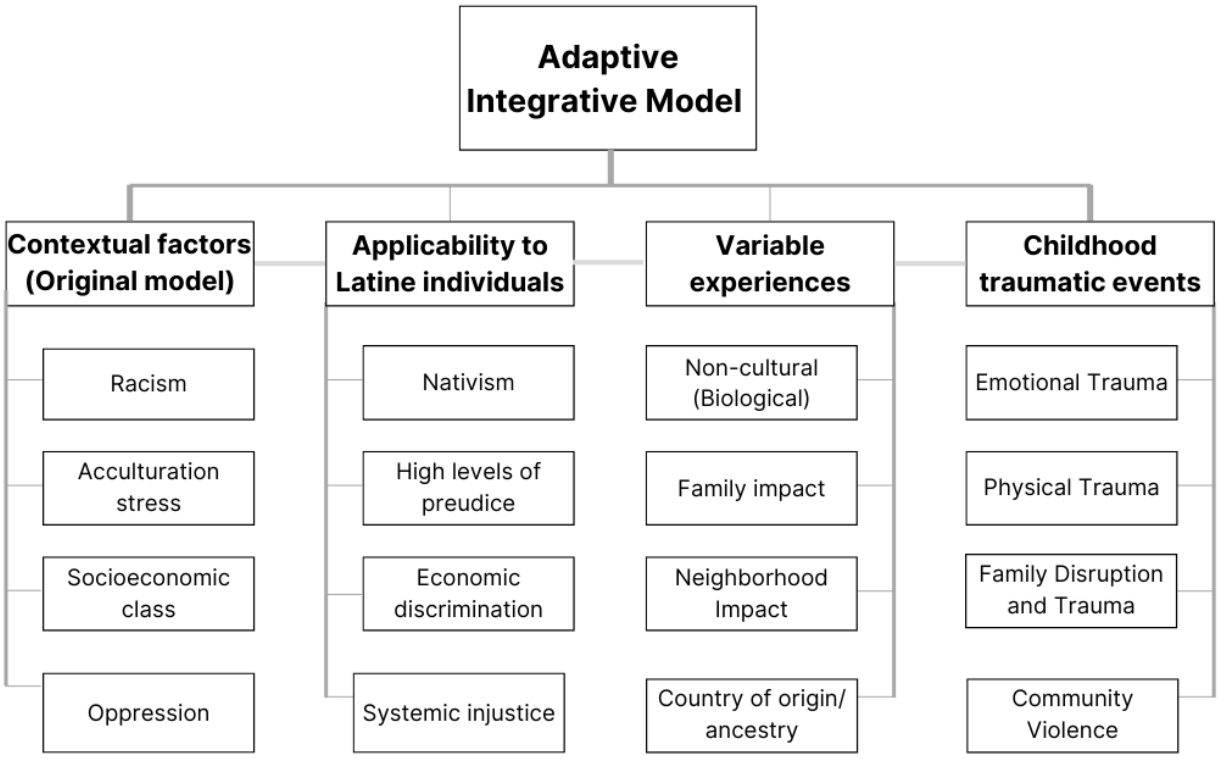
Figure 1

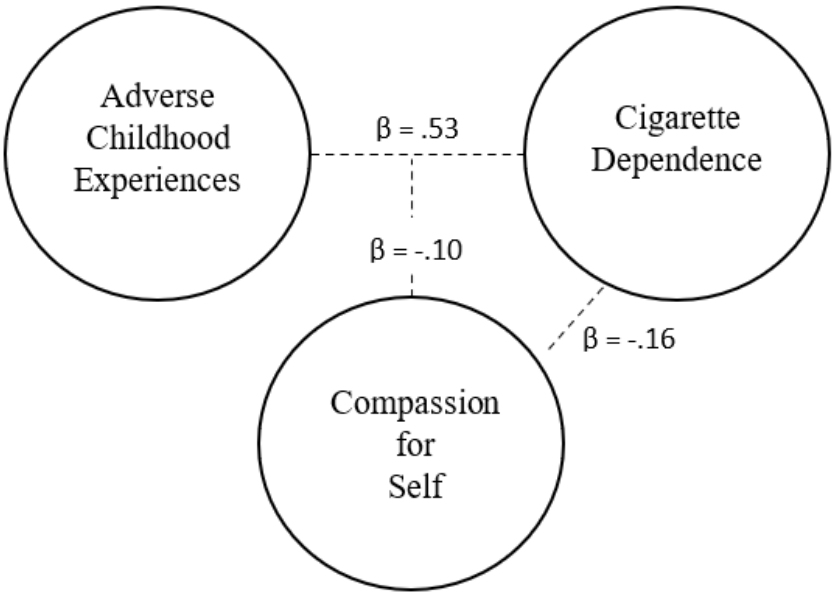
Adapted Integrative Model



Note. The model for the present study is adapted from The Integrative Model for the Study of Developmental Competencies in Minority Children (Garcia Coll et al., 1996).

Figure 2

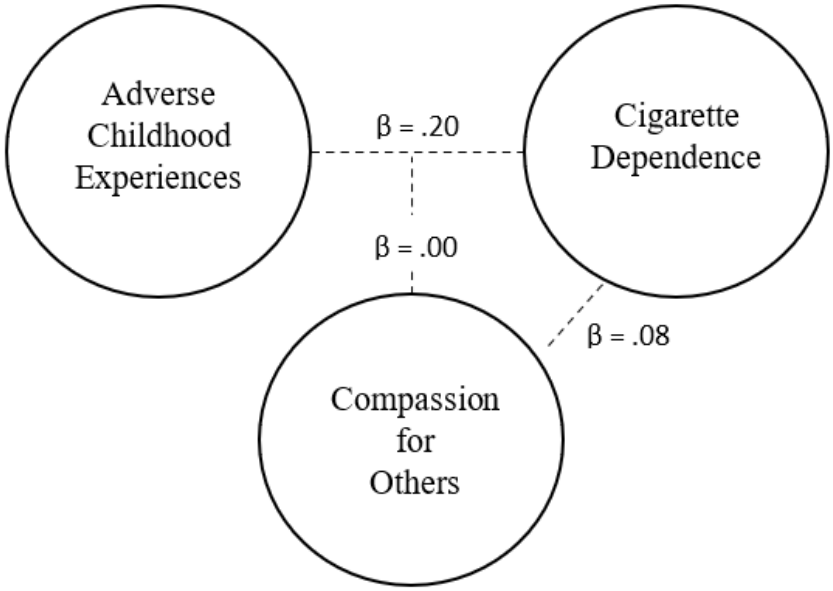
Moderation Model Compassion for Self as a potential buffer for Adverse Childhood Experiences on Cigarette Dependence



Note. Path model explains how compassion for self did not buffer the relationship between adverse childhood experiences and cigarette dependence. Dotted lines equate to non-statistical significance. Constant = β = 8.44, $p < .01$.

Figure 3

Moderation Model Compassion for Others as a potential buffer for Adverse Childhood Experiences on Cigarette Dependence



Note. Path explains how compassion for others did not buffer the relationship between adverse childhood experiences and cigarette dependence. Dotted lines equate to non-statistical significance. Constant = β = 5.51, p = .04.

Table 1

Visualization of the three a Priori Power Analyses

Model #	Variables	N	
		$F^2 = .15$	$F^2 = .35$
1	ACEs x Tobacco Dependence	68	31
2	ACEs x Tobacco Dependence x SC x CFO	85	40
3	ACEs x Tobacco Dependence x C	77	36

Note. Table explains the different models run on G*POWER, SC is self-compassion, CFO is compassion for others, and C is representing the compassion domains, $\alpha = .05$ and power = .80.

Table 2

Demographic and Psychological Characteristic of the Sample

Variable	N	Minimum	Maximum	Mean	SD
Age	199	18	55	35.12	8.57
Cigarette Dependence	199	0	19	9.14	4.28
ACEs	199	0	13	5.91	3.71
CFS	199	1.83	5.00	3.32	0.73
CFO	199	11	35	26.74	5.98
Familismo	199	0	12	7.65	3.12
Personalismo	199	0	11	7.41	2.90
Fatalism	199	0	8	5.05	1.75
Machismo	198	0	17	8.09	4.99
Resolution	199	2	4	3.55	0.57
Exploration	199	1	4	3.10	0.83
Affirmation	199	1	4	3.61	0.73
PSS	199	0	38	16.84	7.43
Acculturation	199	1	5	3.41	0.79

Note. CFS = Compassion for self; CFO = Compassion for others. Resolution, exploration, and affirmation are the three subscales from the brief ethnic identity scale. Exploration is if an individual seeks information about their group, resolution is acceptance of their identity, and affirmation is a sense of belonging and pride around ethnic group. PSS = Perceived Stress Scale score; Acculturation is the Bicultural Scale for Hispanics score and biculturalism is reflected across moderate scores.

Table 3

Demographic Frequency Table

Variable	Frequency	Percentage
Sex Assigned at Birth		
Male	101	50.8%
Female	96	48.2%
Intersex	0	0
Refused response	2	1.0%
Employment Status		
Working now	165	82.9%
Temporary leave	3	1.5%
Unemployed/Job searching	17	8.5%
Disability	1	0.5%
Keeping house	5	2.5%
Student	7	3.5%
Refused to answer	1	0.5%
Education Level		
Never/Kindergarten only	1	0.5%
Some high school	4	2.0%
High school graduate	36	18.1%
GED or equivalent	3	1.5%
Some college, no degree	38	19.1%
Associate's (occupation/academic)	33	16.5%
Bachelor's	47	23.6%
Graduate/Professional degree	35	17.6%

Marital status		
Married	110	55.3
Divorced	9	4.5%
Widowed	1	0.5%
Separated	6	3.0%
Never married	62	31.2%
Unmarried partners	11	5.5%
Born in the United States		
No	4	2.0%
Yes	194	97.5%
Health conditions		
None	91	45.7%
One	84	42.2%
Two or more	23	11.6%
Psychiatric conditions		
None	126	63.3%
One	29	14.6%
Two or more	43	21.6%

Note. Percentages are based on the total number of respondents (N = 199).

Table 4

Cigarette and Commercial Tobacco Use Behaviors and Attitudes Descriptives

Variable	N	Minimum	Maximum	Mean	SD
Importance of stopping tobacco use	199	1	10	6.19	2.95
Confidence in stopping tobacco use	199	1	10	5.72	2.99
Cigarettes per day	198	0	30	6.56	4.64
Strength of urges to smoke	199	1	6	3.56	1.28
Age in years when started smoking regularly	199	5	47	20.59	6.11

Note. The importance of stopping tobacco use and confidence in stopping are rated on a scale of 1 to 10, with higher scores indicating greater importance and confidence, respectively. The strength of urges to smoke is rated on a scale from 1 to 6. Age is reported in years.

Table 5

Cigarette and Commercial Tobacco behaviors and attitudes frequencies

Variable	Frequency	Percentage
Smoking frequency		
Every day	149	74.9%
Some days	50	25.1%
Cravings to smoke		
Yes	152	76.4%
No	47	23.6%
Flavored cigarettes used at start		
Yes	139	69.8%
No	60	30.2%
Current brand menthol/mint preference		
Yes	145	72.9%
No	54	27.1%
Previous Attempt to Quit		
Yes	128	64.3%
No	71	35.7%
Intentions to quit in the next 6 months		
Considering quitting	86	43.2%
Not considering	92	46.2%
Unsure/other	8	4.0%
Refused to answer	13	6.5%
Perceived success likelihood		

in quitting		
Very likely	38	19.1%
Somewhat likely	52	26.1%
A little likely	70	35.2%
Not at all	36	18.1%
Refused to answer	3	1.5%
Flavored tobacco products helps people quit smoking cigarettes		
Yes	89	44.7%
No	106	53.3%
Refused to answer	4	2.0%
Flavored tobacco products more appealing		
Yes	146	73.4%
No	51	25.6%
Refused to answer	2	1.0%
If menthol cigarettes were no longer sold, most likely would you		
Switch to non-menthol cigarettes	53	26.6%
Switch to other tobacco product	56	28.1%
Quit smoking	29	14.6%
Something else	7	3.5%
Refused to answer	54	27.1%

Note. Percentages based on total respondents (N = 199).

Table 6

Correlation table between included variables in study

Variable	*M*	*SD*	1		2		3		4	
			r	*p*	*r*	*p*	*r*	*p*	*r*	*p*
1.Age	35.1	8.6								
2.Cigarette Dependence	9.1	4.3	.029	.688						
3.ACEs	5.9	3.7	-.106	.138	**.208**	**.003**				
4.Self compassion	3.3	0.73	**.283**	**<.001**	**-.186**	**.008**	**-.423**	**<.001**		
5.Compassion for others	26.7	6.0	**.276**	**<.001**	.076	.283	**-.218**	**.022**	**.393**	**<.001**

Note. Significant correlations at the 0.01 level (2-tailed) are bolded. N = 199.

Table 7

Multiple Linear Regression Analysis Summary for Predicting Cigarette Dependence

	Model Summary				Change Statistic		
Model	R	R^2	Adj R^2	SE	R^2 Change	F Change	Sig. F Change
1	.291	.085	.070	4.12	.089	6.00	< .001
ANOVA							
Source	Sum of Squares	df	Mean Square	F	Sig.		
Regression	306.06	3	102.02	6.00	< .001		
Residual	3314.00	195	16.99				
Total	3620.06	198					
Coefficients					95% CI		
Variable	B	SE	β	t	Lower Bound	Upper Bound	Sig.
Intercept	8.10	2.01		4.03	4.13	12.06	< .001
ACEs	.19	.87	.17	2.23	.02	.37	.027
CFS	-1.11	.47	-.19	-2.35	-2.04	-.18	.020
CFO	.13	.05	.19	2.51	.03	.24	.013

Note. CFS = Compassion for self; CFO = Compassion for others; CI = Confidence Interval. The dependent variable is cigarette dependence.

Table 8

Moderation Analysis Summary: The Effect of Compassion for Self on the Relationship Between ACEs and Cigarette Dependence

	Model Summary	
Model	R	.24
	R^2	.06
	Adjusted R^2	.05
	MSE	17.45
	F	4.15
	df1	3
	df2	195
	Sig.	.007

Coefficients					95% CI	
Variable	B	SE	t	Sig.	Lower Bound	Upper Bound
Intercept	8.44	2.64	3.20	.001	3.24	13.65
ACEs	.53	.35	1.50	.134	-.17	1.23
CFS	-.16	.69	-.24	.814	-1.53	1.20
ACEs x CFS	-.10	.10	-1.03	.307	-.30	.10
Interaction Test						
R^2 Change	F	df1	df2	Sig.		
.0051	1.05	1	195	.307		

Note. CFS = Compassion for self; CI = Confidence Interval.

Table 9

Moderation Analysis Summary: The Effect of Compassion for Others on the Relationship Between ACEs and Cigarette Dependence

	Model Summary	
Model	R	.24
	R^2	.06
	Adjusted R^2	.049
	MSE	17.47
	F	4.07
	df1	3
	df2	195
	Sig.	.008

Coefficients					95% CI	
Variable	B	SE	t	Sig.	Lower Bound	Upper Bound
Intercept	5.51	2.65	2.08	.039	.28	10.74
ACEs	.20	.37	.54	.587	-.53	.93
CFO	.08	.09	.83	.407	-.11	.26
ACEs x CFO	.00	.01	.20	.844	-.02	.03
Interaction Test						
R2 Change	F	df1	df2	Sig.		
.00	.04	1	195	.844		

Note. CFO = Compassion for Others; CI = Confidence Intervals.

Appendix A

Adverse Childhood Experiences – International Questionnaire

Relationship with parents/guardians
When you were growing up, during the first 18 years of your life . .
2.1 - Did your parents/guardians understand your problems and worries?
2.2 - Did your parents/guardians really know what you were doing with your free time when you were not at school or work?
Always Most of the time Sometimes Rarely Never Refused

3.1 - How often did your parents/guardians not give you enough food even when they could easily have done so?
3.2 - Were your parents/guardians too drunk or intoxicated by drugs to take care of you?
3.3 - How often did your parents/guardians not send you to school even when it was available?
Many times A few times Once Never Refused

Family Environment
4.1 - Did you live with a household member who was a problem drinker or alcoholic, or misused street or prescription drugs?
4.2 - Did you live with a household member who was depressed, mentally ill or suicidal?
4.3 - Did you live with a household member who was ever sent to jail or prison?
Yes No Refused

4.4 - Were your parents ever separated or divorced?
Yes No Not applicable Refused

4.5 - Did your mother, father or guardian die?
Yes No Don't know / Not sure Refused

These next questions are about certain things you may actually have heard or seen IN YOUR HOME. These are things that may have been done to another household member but not necessarily to you.
4.6 - Did you see or hear a parent or household member in your home being yelled at, screamed at, sworn at, insulted or humiliated?
4.7 - Did you see or hear a parent or household member in your home being slapped, kicked, punched or beaten up?
4.8 - Did you see or hear a parent or household member in your home being hit or cut with an object, such as a stick (or cane), bottle, club, knife, whip etc.?
Many times A few times Once Never Refused

These next questions are about certain things YOU may have experienced. When you were growing up, during the first 18 years of your life . . .
5.1 - Did a parent, guardian or other household member yell, scream or swear at you, insult or humiliate you?
5.2 - Did a parent, guardian or other household member threaten to, or actually, abandon you or throw you out of the house?
5.3 - Did a parent, guardian or other household member spank, slap, kick, punch or beat you up?
5.4 - Did a parent, guardian or other household member hit or cut you with an object, such as a stick (or

cane), bottle, club, knife, whip etc?
5.5 - Did someone touch or fondle you in a sexual way when you did not want them to?
5.6 - To this; How often did someone older than you or an adult try to or touch you in a sexual way?
5.7 - Did someone attempt oral, anal, or vaginal intercourse with you when you did not want them to?
5.8 - To this: How often did someone older than you or an adult force or attempt to force you to have sex
Many times A few times Once Never Refused

Peer Violence
These next questions are about BEING BULLIED when you were growing up. Bullying is when a young person or group of young people say or do bad and unpleasant things to another young person. It is also bullying when a young person is teased a lot in an unpleasant way or when a young person is left out of things on purpose. It is not bullying when two young people of about the same strength or power argue or fight or when teasing is done in a friendly and fun way. When you were growing up, during the first 18 years of your life . . .
6.1 - How often were you bullied?
Many times A few times Once Never (Go to Q.6.3) Refused

6.2 - How were you bullied most often?
I was hit, kicked, pushed, shoved around, or locked indoors
I was made fun of because of my race, nationality or color
I was made fun of because of my religion
I was made fun of with sexual jokes, comments, or gestures
I was left out of activities on purpose or completely ignored
I was made fun of because of how my body or face looked
I was bullied in some other way
Refused

This next question is about PHYSICAL FIGHTS. A physical fight occurs when two young people of about the same strength or power choose to fight each other. When you were growing up, during the first 18 years of your life . . .
6.3 - How often were you in a physical fight?
Many times A few times Once Never Refused

Witnessing Community Violence
These next questions are about how often, when you were a child, YOU may have seen or heard certain things in your NEIGHBORHOOD OR COMMUNITY (not in your home or on TV, movies, or the radio). When you were growing up, during the first 18 years of your life . .
7.1 - Did you see or hear someone being beaten up in real life?
7.2 - Did you see or hear someone being stabbed or shot in real life?
7.3 - Did you see or hear someone being threatened with a knife or gun in real life?
Many times A few times Once Never Refused

Exposure to War/Collective Violence
These questions are about whether YOU did or did not experience any of the following events when you were a child. The events are all to do with collective violence, including wars, terrorism, political or ethnic conflicts, genocide, repression, disappearances, torture and organized violent crime such as banditry and gang warfare. When you were growing up, during the first 18 years of your life . . .
8.1 - Were you forced to go and live in another place due to any of these events?
8.2 - Did you experience the deliberate destruction of your home due to any of these events?
8.3 - Were you beaten up by soldiers, police, militia, or gangs?
8.4 - Was a family member or friend killed or beaten up by soldiers, police, militia, or gangs?
Many times A few times Once Never Refused

Appendix B

Penn State Nicotine Dependence Index

1. How many cigarettes per day do you usually smoke? **_____ per day**
2. On days that you can smoke freely, how soon after you wake up do you smoke your first cigarette of the day? **_____ minutes**
3. Do you sometimes awaken at night to have a cigarette? **Yes / No**
4. If yes, how many nights per week do you typically awaken to smoke? **_____ nights**
5. Do you smoke now because it is really hard to quit? **Yes / No**
6. Do you ever have strong cravings to smoke? **Yes / No**
7. Over the past week, how strong have the urges to smoke been? (check one)
   No urges / Slight / Moderate / Strong / Very strong / Extremely strong
8. Is it hard to keep from smoking in places where you are not supposed to? **Yes / No**
9. Did you feel more irritable because you could not smoke? **Yes / No**
10. Did you feel nervous, restless or anxious because you could not smoke? **Yes / No**

Appendix C

Santa Clara Brief Compassion Scale

Please answer the following questions honestly and quickly using the scale below.

1 2 3 4 5 6 7
not at all true of me very true of me

_____ 1. When I hear about someone (a stranger) going through a difficult time, I feel a great deal of compassion for him or her.
_____ 2. I tend to feel compassion for people, even though I do not know them.
_____ 3. One of the activities that provides me with the most meaning to my life is helping others in the world when they need help.
_____ 4. I would rather engage in actions that help others, even though they are strangers, than engage in actions that would help me.
_____ 5. I often have tender feelings toward people (strangers) when they seem to be in need.

Appendix D

Self-Compassion Scale – Short Form

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

_____1. When I fail at something important to me I become consumed by feelings of inadequacy.
_____2. I try to be understanding and patient towards those aspects of my personality I don't like.
_____3. When something painful happens I try to take a balanced view of the situation.
_____4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
_____5. I try to see my failings as part of the human condition.
_____6. When I'm going through a very hard time, I give myself the caring and tenderness I need.
_____7. When something upsets me I try to keep my emotions in balance.
_____8. When I fail at something that's important to me, I tend to feel alone in my failure
_____9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
_____10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
_____11. I'm disapproving and judgmental about my own flaws and inadequacies.
_____12. I'm intolerant and impatient towards those aspects of my personality I don't like.

BIOGRAPHICAL SKETCH

NAME: Camila Tirado

eRA COMMONS USERNAME (credential, e.g., agency login): tiradoc

POSITION TITLE: Ph.D. Student in Counseling Psychology

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
Virginia Commonwealth University - Richmond, VA (VCU)	BS	08/2017	12/2021	Psychology
Virginia Commonwealth University - Richmond, VA (VCU)	MS /Ph.D.	08/2022	08/2028	Counseling Psychology

A. Funding

Predicting Effects of ENDS Flavor Regulations Among Latinx/e Smokers: Impact of Cultural Assets on Attitudes, Intentions, and Behavior
Role: Principal Investigator
Diversity Supplement; Parent R01DA050996-01A1 (Co-PIs: Cobb/Barnes)
National Institute of Drug Abuse | National Institute of Health
Award Period: 01/01/2023-6/24/2024
Total Direct Costs: $45,528; Total Costs: $70,682

B. Positions, Scientific Appointments and Honors

Positions and Employment

Present Graduate Research Assistant, VCU La Esperanza Research Lab
2022 - 2023 Research Evaluation Assistant, VCU Humphrey Fellowship Program
2022 - 2022 Graduate Teaching Assistant, VCU Department of Psychology
2020 - 2023 Research Assistant, VCU Decision Neuroscience Lab Institute for Drug and Alcohol Studies

Professional Memberships

Present Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)
Graduate Council Member VCU Chapter

Present	Latinx Graduate Student Association (LGSA) VCU
Present	American Psychological Association (APA)
Present	National Latinx Psychological Association (NLPA)
Present	APA Division 17, Society of Counseling Psychology
Present	APA Division 28, Psychopharmacology and Substance Abuse

Honors and Awards

2024	Virginia Conference on Youth Tobacco Use 1st Place Poster Award
2024	National Latinx Psychological Association Committee member
2024	Mind and Life Summer Research Institute Emerging Participant Recipient
2023	VCU Graduate student travel grant winner
2022	NIH/NIDA Diversity Supplement Award Recipient
2021	VCU Launch Award for Undergraduate Research
2021	Recognized in 'Striving & Thriving in STEM" VCU Campaign
2020 - 21	VCU Undergraduate Fellowship for Inclusion, Inquiry, and Innovation

C. Contributions to Science

Graduate Research: My science contributions have just begun and I am focused on investigating the disparities that exist within marginalized communities (adolescent and adult) and how to better translate and apply research findings for prevention and interventions across mental health domains. Direct areas of research are investigating multiculturalism and minoritized mental health and the intersection of addiction psychology. These areas are my concentration in not just my scholarship but also deeply ingrained in all areas of my life.

A. **Tirado, C.,** Moreno, O., Fuentes, L., Garcia-Rodriguez, I., Hernandez, C., & Munoz, G. (2022). Assets and stressors on adolescent substance use: The role of religiosity. Reference Module in Biomedical Sciences. https://doi.org/10.1016/B978-0-12-818872-9.00195-3
B. **Tirado, C.,** Garcia-Rodriguez, I., Muñoz, G., Moreno, O. (in press). Cognitive and behavioral interventions for Latinx immigrants: Implications for reducing harm and promoting change. The Behavior Therapist, 46(8), 343-346. ISSN 0278-8403.
C. Moreno, O., **Tirado, C.,** Nelson, T., Noyola, N.(in press). Depression in Context of Race, Ethnicity, and Culture. In the American Psychological Association Handbook on Depression. The American Psychological Association Publishing.
D. Johnson, K.F., Cunningham, P., **Tirado, C.,** Moreno, O., Gillespie, N., Duyilbe, B., Hughes, D., Goodman Scott, E., & Brookover, D. (2023). Social determinants of mental health considerations for counseling children and adolescents. Journal of Child and Adolescent Counseling. Doi:10.1080/23727810.2023.2169223
E. Moreno, O., **Tirado, C.,** Avila, M., Bravo, A.J., Garcia-Rodriguez, I., Romo, S., Rodriguez, J., Matos, C., Hernandez, C., Ramos, M.S., Fuentes, L., Muñoz, G., Gutierrez, G., & Corona, R. (2024). Results from a pilot efficacy trial of a motivational interviewing substance use intervention for Latinx/e youth. Journal of Counseling and Development, 102(2), 198-209. https://doi.org/10.1002/jcad.12505