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THE INFLUENCE OF CULTURE ON BEHAVIOR-BASED TASKS OF
IMPULSIVITY

by

Byron H. Garcia

A thesis proposed in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

Approved:

Rick A. Cruz, Ph.D.
Major Professor

Melanie Domenech Rodríguez, Ph.D.
Committee Member

Amy Odum, Ph.D.
Committee Member

D. Richard Cutler, Ph.D.
Interim Vice Provost
of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

2021

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ABSTRACT

The Influence of Culture on Behavior-Based Tasks of Impulsivity

by

Byron Garcia, Master of Science

Utah State University, 2021

Major Advisor: Dr. Rick Cruz

Department: Psychology

Previous research has proposed acculturation to American culture to be a risk factor for negative health outcomes (i.e., substance use). There is also evidence that the maintenance of ethnic cultural behaviors, values, and identity to be protective. Among Latinx youth, stronger endorsement of familism values has been found to be protective for externalizing behaviors and associated with less risk-taking on a behavior-based task. The aim of this study was to investigate how differences across domains of cultural identity (i.e., behaviors, values, and identifications) influenced performance on behavior-based measures of impulsivity among Latinx adolescents and emerging adults.

Aim 1 tested if performance on task measures of impulsivity differed by nativity (i.e., U.S-born or foreign-born). Aim 2 examined if familism, interdependent self-construal, heritage cultural identity, and heritage cultural practices were associated with better task performance for both study samples. Aim 3 tested if priming family obligation values (versus values around independence) could reduce rates of delay discounting and increase rates of probability discounting.

I used secondary data from two study datasets that were different in participant characteristics (age) and data collection method: Study 1 was described as the Salud de los Adolescentes Latinos (SAL) study, which collected data from 92 Latinx adolescents from Northern Utah. Study 2 was described as the Latinx Young Adult Survey (LYAS) which collected data from 278 Latinx young adults using Qualtrics online survey. Results partially supported the study's hypotheses. For aim 1, no significant difference in task performance that was a result of nativity was observed. For aim 2, path analysis for the SAL dataset found increases in bicultural comfort to be significantly associated with increases in inhibitory control on the Flanker task, $b = 5.24, p < .05$, adjusting for other covariates. Path analysis for the LYAS dataset found significant associations between greater Spanish language use and lower discounting on the Monetary Choice Questionnaire (MCQ), $b = -.31, p < .01$, as well as increases in bicultural comfort with lower discounting on the Probability Discounting Questionnaire (PDQ), $b = -.12, p < .01$, adjusting for other covariates. As for aim 3, our one-way ANOVA yielded no significant effect of the prime condition on task performance means for both the MCQ $F(2, 267) = 2.87, p = .06$ and PDQ $F(2, 250) = 2.08, p = .13$. Clinical implications, study limitations, and future directions were considered and discussed.

(159 pages)

PUBLIC ABSTRACT

The Influence of Culture on Behavior-Based Tasks of Impulsivity

Byron Garcia

Background: Among Latinx youth residing in the United States (U.S), the adoption of U.S cultural behaviors, values, and identity has been proposed to increase risk for negative outcomes, such as substance use. Research also suggests that the maintenance of Latinx cultural behaviors, values, and identity may be protective. Although there is an established link between impulsivity and substance use outcomes, very little research has sought to explore factors that influence impulsivity among Latinx groups. Furthermore, behavioral tasks have made substantial contributions as measures of impulsivity, yet few studies have examined cultural identity domains in relation to these behavioral tasks.

Objective: The aim of this study was to investigate relationships between cultural domains (i.e., behaviors, values, and identifications) of cultural identity and performance on behavior-based measures of impulsivity among a population of Latinx adolescents and emerging adults.

Methods: Latinx adolescents (N = 92) between the ages of 13-18 and Latinx emerging adults (N = 278) between the ages of 18 and 25 were recruited for the present study. It was hypothesized that psychological domains of cultural identity, including ethnic identity, language use, self-construal, and familism values would be associated with lower preference for smaller more immediate rewards on the MCQ, higher preference for the less-risky reward on the PDQ, and increased levels of inhibitory control on the Flanker task. It was also hypothesized that Latinx participants who receive the family

obligation/interdependent self-construal prime would have reduced rates of delay discounting and increased rates of probability discounting.

Results: The current study found increased levels of comfort related to one's bicultural identity to be associated with increased inhibitory control on the Flanker task for adolescents, but lower rates of probability discounting (i.e., preference for riskier option) on the PDQ for young adults. Spanish language use was found to be significantly associated with lower rates of delay discounting (i.e., preference for larger delayed rewards) on the MCQ and this association was unique to young adults. No significant effect as a result of cultural prime condition was observed.

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CHAPTER 1

PROBLEM STATEMENT

The disinhibition of capacities related to self-regulation (SR) account for substantial comorbidity observed among externalizing disorders such as substance use disorders, antisocial personality disorders, attention-deficit/hyperactivity disorder (ADHD), conduct disorder, and bipolar disorder (Bogg & Finn, 2010; Young et al., 2009). Impulsivity appears to be a common vulnerability for externalizing psychopathology (Dick et al., 2010). Behavioral tasks from experimental psychology have furthered our understanding on the variability in impulsive behaviors that may not be fully captured in self or informant report questionnaire data (Dick et al., 2010). Delay discounting and inhibitory control are two distinct but related dimensions of impulsivity with established behavioral task assessments that have become increased targets of inquiry given their established associations with impulse control disorders such as ADHD, obsessive compulsive disorder (OCD), gambling, and addiction (Dick et al., 2010; Fineberg et al., 2014; Madden & Bickel, 2010).

Despite the proliferation of research examining impulsivity through task-based measures, the use of these behavioral paradigms among ethnic minority youth and emerging adults is scarce (McClelland & Cameron, 2012; Stevens et al., 2018). In addition, disparate rates in externalizing problems, such as illicit drug use, increased incarceration rates, and alcohol use disorders continue to be a pressing concern among different ethnic minority groups (Substance Abuse and Mental Health Administration [SAMHSA], 2018; Vaeth et al., 2017; Zapolski et al., 2014). Latinxs are a particularly

understudied ethnic group that may be at elevated risk for vulnerability towards impulsivity given their increased exposure to high-risk environments throughout development (Chartier et al., 2017). When compared to White ethnic groups regarding drinking behaviors, Latinx groups in the United States (U.S) who choose to drink have been found to be more likely to consume higher volumes of alcohol (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2021). Latinx adolescents have also been reported to show increased rates of impulsivity-related problems including aggression and delinquency (Center for Disease Control and Prevention [CDC], 2017; Kan et al., 2017; Vaeth et al., 2017). Moreover, past research has shown higher scores on behavior-task measures of complex response inhibition and attention shifting skills for African American children when compared to Latinx children (Caughy et al., 2013). Similar findings have also been observed in adulthood such that Latinx and African American adults demonstrated increased rates of discounting on a delay discounting task when compared to their White counterparts (Andrade & Petry, 2014). Although research in the U.S has elucidated differences in impulsive related outcomes among ethnic minority groups, contemporary cultural research has been limited in its ability to explain the observed ethnic group differences (Zemore et al., 2018). One impediment in advancing this literature may be attributed to the substantial heterogeneity that is found within different ethnic minority groups. Research examining within-group variability among ethnic minority groups has received increased attention particularly among Latinx samples (Li-Grining, 2012; Schwartz et al., 2019).

Although there is a well-established literature examining some aspects of culture to be linked with positive psychosocial outcomes (e.g., Germán et al., 2009; Wheeler et

al., 2017), there is a notable lack of research examining potential associations between different cultural factors and impulsivity. To date, only a handful of studies have been able to provide preliminary evidence to show how specific aspects of culture (e.g., cultural values such as familism) can positively impact performance on behavioral paradigms aimed to measure impulsivity, specifically among Latinx youth (Telzer et al., 2011; 2013). There is also increasing evidence highlighting the influential role of familism in emerging adulthood (Stein et al., 2019), yet studies examining the promising role of familism as it pertains to impulsive behaviors have been limited to child and adolescent samples with little attention to Latinx emerging adults. In addition to familism values, there is empirical support to suggest that other domains of one's ethnic heritage culture can positively impact impulsivity and related behaviors, including language use (Lechuga & Wiebe, 2009), ethnic identity (Marsiglia et al., 2004), and independent/interdependent self-construals (Johnson, 2007).

Moreover, there is an experimental priming literature that has shown that cultural identity can be primed to influence emotions and cognitions within the context of decision-making tasks (Chiao & Blizinski, 2010; Hong et al., 2000; Oyserman, 2008), thus suggesting aspects of culture to be more dynamic than static. However, research within other disciplines examining impulsivity using multiple modes of behavioral assessments (e.g., behavioral economics and behavior analysis) have generally not approached their investigations through a cultural lens. Accordingly, there is a gap in the literature regarding limited understanding of how cultural identity can be experimentally primed to influence performance on tasks that measure impulsivity.

Taken together, there is an extensive line of research identifying impulsivity as a multidimensional construct that increases the vulnerability for externalizing psychopathology, although little research has focused on the potential positive associations between cultural factors and impulsivity using within-group designs among Latinx youth and emerging adults. Behavioral tasks have made substantial contributions as measures of impulsivity, yet there are few studies that have examined differences across cultural domains (i.e., behaviors, values, identity) in relation to these behavioral tasks. In addition, there is a robust literature on priming paradigms, yet there is virtually no study that has sought to use a priming paradigm to experimentally explore if other aspects of culture (i.e., familism) can positively impact performance on behavioral tasks that measure impulsivity. In order to address these gaps in the literature, the first two aims of the current study are designed to examine the associations between generational status (a proxy for within group cultural differences) and psychological domains of culture (i.e., cultural practices, values, and identity) with specific dimensions of impulsivity (delay discounting and resistance to distractor interference) among Latinx adolescents and emerging adults. The third aim of this study will draw on the cultural priming literature to evaluate a novel familism/individualism priming paradigm that I anticipate will affect impulsive and risky decision making on two discounting tasks (delay and probability discounting). Though the role of familism on Latinx emerging adults is scarce, I predict that priming a familism valued mindset will result in lower rates of delay discounting and higher rates of probability discounting relative to priming an individualistic value frame.

Findings for the current study will advance our understanding on how differences in cultural practices, cultural values, and cultural identifications contribute to within-group differences in impulsivity among Latinx adolescent and emerging adults. By experimentally testing how individual differences across these cultural domains affect impulsive or risk-decision making, findings for the study will have important implications for prevention work among Latinx groups in the U.S.

CHAPTER II

LITERATURE REVIEW

Theoretical Framework

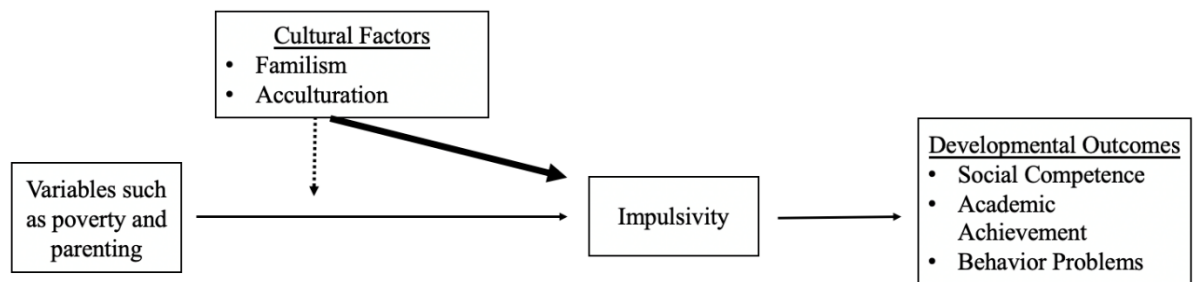
Etiological models linking impulsivity with developmental outcomes have rarely articulated the role of cultural processes. In an effort to fill this gap in the literature, Li-Grining (2012) proposed a model for Latinx youth suggesting multiple pathways whereby cultural factors influence SR development by modifying effects of poverty and the family context. In Li-Grining's (2012) model (not displayed here), poverty is shown to have direct effects on parenting practices, children's SR, and broader developmental outcomes. Similarly, parenting practices are proposed to have direct effects on children's SR which in turn influence developmental outcomes. Accordingly, parenting practices and children's SR are situated within this model to operate as mediators in the pathway from poverty to children's broad developmental well-being. Moreover, the model proposes that this mediated pathway between poverty, parenting practices, and SR may be better understood by examining the moderating roles of cultural factors such as familism values and acculturation.

Li-Grining indicated that SR research among ethnic minority samples in the United States (U.S) had been limited to Chinese immigrant and African American children samples, limited in focus on the roles of poverty and parenting practices, and limited in developmental models that incorporate relevant ecological aspects past race, ethnicity, and immigrant status. Accordingly, expanding this literature to examine cultural processes among ethnically and racially diverse Latinx groups can further our

understanding on within-group differences in SR behaviors and related outcomes. While Li-Gining's proposed model situates cultural factors (i.e., familism values and acculturation) to function as moderators in the socialization of SR among Latinx youth, a preliminary analytic step in examining the role of cultural factors on SR development would be to examine its direct effects on different aspects of SR. I will use a simplified modification of Li-Grining's model (see Figure 1) to guide the current study. The first aim is to examine the potential direct effects of the cultural factors presented in Figure 1 (i.e., familism and domains of acculturation) on performance in behavior-based tasks aimed to measure impulsivity. Specifically, the present study will examine family obligation values (i.e., current assistance, respect for family, and future support) to assess the cultural value of familism. Additionally, the present study will examine cultural practices (i.e., language use), cultural values (i.e., independent/interdependence self-construals), and ethnic identification (i.e., ethnic/mainstream identity and biculturalism) as cultural domains in which acculturation occurs. Taken together, the cultural factors outlined above will be examined to assess their direct associations with facets of impulsivity.

Figure 1

Model of Self-Regulation with cultural factors showing direct and indirect effects



Note. Adapted from Li-Grining’s Developmental Model of SR to with familism and acculturation as moderators. Reprinted from “The Role of Cultural Factors in the Development of Latino Preschoolers’ Self-Regulation” by Christine Pajunar Li-Grining, 2012, *Child Development Perspectives*, 6(3), p. 211.

Defining Self-Regulation and Impulsivity

SR is a broad phenomenon that encompasses an interaction between a motivational drive system and cognitive control system that regulate behaviors, emotions, and cognitions in order to achieve a desired goal (Nigg, 2017). The current study will draw from researchers in the substance use literature who index the construct of impulsivity as a cognitive and behavioral capacity of SR (Dick et al., 2010). I specifically draw from two related frameworks of impulsivity to define impulsivity as the inability or unwillingness to inhibit behavior with little regard to the consequences of these actions (Dick et al., 2011; Zucker et al., 2011). Similar to the complexity of SR however, impulsivity is also multifaceted and it comprises a cluster of personality characteristics and executive cognitive functions that interact with each other to reflect different impulse control behaviors (Dick et al., 2010; Bogg & Finn, 2010).

In the personality literature, recent models have described five moderately related personality traits that make up the broad construct of impulsivity (Cyders & Smith, 2007; Whiteside & Lynam, 2001). Recognized as the UPPS model, Whiteside and Lynam (2001) characterized impulsivity with the following five dispositions: (a) *positive urgency* is the tendency to act impulsively when experiencing high positive moods, (b) *negative urgency* is the tendency to act impulsively in response to high negative emotion, (c) *sensation-seeking* is the tendency to seek out new and thrilling experiences, (d) *lack of planning* is the tendency to act without thinking, and (e) *lack-of-perseverance* is the inability to remain focused on a task. This model has identified positive and negative urgency to be emotion-based trait of impulsivity, whereas lack of planning and lack of perseverance can be described as deficits in conscientiousness, thus suggesting impulsivity to encompass a makeup of distinct personality traits that lead to different impulsive-like behaviors as they pertain to emotion-based or conscientiousness traits (Whiteside & Lynam, 2001). There is extensive support for the use of the UPPS model among researchers examining the broad construct of impulsivity at the personality trait level, however personality traits have been found to be relatively stable over time and trait models are limited in their capacity to capture the significant influence of cognitive processes that contribute to impulsivity at the state and behavioral level (King et al., 2014).

Behavioral models provide an ideal framework for testing research questions about impulsive-related behaviors such as problematic alcohol use, thus researchers who attempt to define impulsivity using this framework are interested in examining impulsivity at the neural and behavioral level (King et al., 2014). At this level of analysis, executive functions have been defined as an integral component underlying impulsivity

and diminished capacity in this domain has been evidenced to reflect impulsive behavior (Barkley, 1997). For example, while impulsive dispositions like sensation seeking may gravitate individuals towards risky activities (e.g., exploring new high-risk sports), such behaviors may only be considered maladaptive in the absence of executive functions, resulting in increased likelihood of adverse outcomes (Romer et al., 2017). Indeed, impulsive behaviors including (but not limited to) an inability to inhibit impulsive control and/or immediate gratification can be viewed as resulting from paucities in one or more executive mechanisms, particularly inhibition, cognitive flexibility, and emotional regulation (Leshem, 2016; Romer et al., 2017).

As it pertains to Dick and colleagues (2010) review of impulsivity, *prepotent response inhibition* (the ability to inhibit/suppress an already initiated response), *resistance to distractor interference* (the ability to avoid interference from task-irrelevant information in the external environment), and *delay discounting* (the ability to delay immediate reward in order to obtain a larger reward) are related dimensions of impulsivity that involve the recruitment of executive cognitive functions required to regulate behaviors, emotions, and cognitions. Diminished executive function involving lack of sustained attention, planning, or response disinhibition have been found to be robustly linked to unique manifestations of externalizing behaviors both in human and animal studies (Dick et al., 2010; Friedman & Miyake, 2004).

Response inhibition and resistance to distractor interference have been found to load on a single factor and thus are commonly grouped under the broad executive functioning term of inhibitory control given their high correlation on performance-task measures (Friedman & Miyake, 2004). There is evidence suggesting response inhibition to be more commonly implicated with the recruitment of executive functions related to

the active suppression of rapid and reactive responses, thus involving the recruitment of executive functions in both effortful control and incentive reactive systems (Diamond, 2013; Nigg, 2017). Whereas resistance to distractor interference has been found to also involve active suppression of responses but with direct and unique recruitment of executive functions related solely to effortful control (attentional focusing, attentional shifting, and inhibitory processes; Diamond, 2013; Friedman et al., 2004). Similar to response inhibition, delay discounting has also been evidenced to be involved in the recruitment of executive functions implicated in incentive reactive systems (Zucker et al., 2011). Accordingly, the current study will focus on resistance to distractor interference (inhibitory control) and delay discounting as the two dimensions of emphasis underlying our definition of impulsivity.

Impulsivity and Outcomes

Several meta-analyses have found impulsivity as it relates to SR to be robust predictors of important outcomes in academic achievement, physical health, and psychopathology in childhood, adolescence, and adulthood (de Ridder et al., 2012; Robson et al., 2020). Impulsivity among children and adolescents has been found to be negatively related to academic performance, aggression, depression and anxiety, obesity, substance use and abuse, unemployment and criminal behavior in adulthood, and symptoms of physical illness in adulthood (Robson et al., 2020). Conversely, adolescents and adults with lower levels of impulsive tendencies have significantly better outcomes in academic achievement, work, self-esteem, and happiness (de Ridder et al., 2012). Together, these studies underscore the significant role of impulsivity as it pertains to SR

capacities on overall psychosocial adjustment across childhood, adolescence, and adulthood.

The well-established association between impulsivity and substance use related behaviors is not exclusive to human studies (Beauchaine, 2015; Iacono et al., 2008; Dick et al., 2010). Researchers using animal models to study alcohol use related behaviors have found significant associations between deficits in inhibitory skills (inhibiting impulsive responses for the obtainment of a future goal) and behaviors predictive of alcohol use disorders, such as reduced alcohol sensitivity and increased alcohol consumption (Dick et al., 2010; Mitchell et al., 2006). Among human studies, lack of inhibitory skills have been found to be strongly associated with disorders of impulse control, such as ADHD, trichotillomania, and OCD (Fineberg et al., 2014). Similarly, poor performance on behavior-based measures of impulsivity that engender emotion and motivation has been found to be strongly associated with risky behaviors and disorders of addiction (Lejuez et al., 2002; Kirby & Petry, 2004). Accordingly, discrepancies in one's ability to employ inhibitory skills has been extensively examined as a critical predictor in the etiological and developmental progression of externalizing psychopathology.

Assessment of Impulsivity

According to Dick and colleagues (2010), the many facets of impulsivity may be better studied in the context of more meaningful multi-modal measures using either self- and informant- report questionnaires, behavior-based laboratory tasks, or both. Despite the availability and utility of self- and informant- report questionnaires however, research has suggested that these modes of assessment may be limited in their capacity to measure

the variability in cognitive processes related to impulsivity given low correlations with behavior-based tasks (Dick et al., 2010; King et al., 2014).

As it pertains to impulsivity, resistance to distractor interference (inhibitory control) is reflected in one's inability to use attentional and memory skills to suppress unwanted or irrelevant stimuli (Friedman et al., 2004). Resistance to distractor interference is commonly assessed using forced-choice reaction time tasks that require participants to selectively attend and respond to target stimuli whilst ignoring goal-irrelevant distracting stimuli on interspersed trials (Tiego et al., 2018; Zelazo et al., 2012). Eriksen's (1995) widely recognized Flanker task is a commonly used paradigm with extensive empirical support (Dick et al., 2010) which asks participants to indicate, as quickly as possible without sacrificing accuracy, the left or right orientation of a centrally presented stimulus (i.e., arrows) while inhibiting attention to incongruent distracting stimuli (i.e., the flankers) which are two arrows on either side; Eriksen, 1995). When the flanking stimuli arrows are presented on incompatible trials (flanker arrows incongruent/opposite to the orientation of the central stimulus), subjects respond more slowly because of the need to exercise effortful control (Diamond, 2013). Since its inception, this task has proven to be sensitive to developmental changes across the lifespan, particularly throughout late childhood and adolescence (Luna, 2009). The Flanker task has been adapted and included in NIH's Toolbox of Cognition Battery and will be used in the current study to assess resistance to distractor interference as it relates to inhibitory control capacities.

Similarly, delay discounting paradigms have received extensive empirical support across human and animal studies in the assessment of an individuals' tendency to devalue

larger delayed rewards/outcomes when presented with a comparable amount of reward/outcome that could be received sooner - a key behavior observed across disorders of addiction (Madden & Bickel., 2010). Due to its wide use across scientific disciplines, several adaptations of delay discounting tasks have been made using either monetary and/or nonmonetary outcomes (Odum et al., 2020). In this study, I will focus on discounting measures using hypothetical monetary incentives as outcomes, such as the monetary choice questionnaire (MCQ; Kirby et al., 1999). This paradigm is formatted as a questionnaire performance task (e.g., 27 preconfigured dichotomous choices between smaller, immediate monetary rewards [\$55 today] and larger, delayed monetary rewards [\$75 in 61 days]). The outcome of interest is the extent to which respondents prefer the delayed and more valuable reward over the immediately available but less valuable one. In typical discounting assessments, this outcome variable can be calculated using a hyperbolic discounting equation (Mazur, 1987) where larger values of k (a scaling factor that describes how much value is affected by delay) represents greater impulsivity (i.e., steeper discounting) and smaller values of k represents lower levels of impulsivity. However, due to the variable patterns of responding that can occur among participants, many possible combinations of responses can yield the same k value (Gray et al., 2016). Accordingly, an estimation of an individual's k value based on their pattern of responding and calculation of consistency scores has been proposed to be an alternative approach to scoring the MCQ (Gray et al., 2016; Kaplan et al., 2016).

The current study will also employ a variation of this task that uses an analogous procedure and equation where participants are asked to make choices between certain and probabilistic rewards (Gray et al., 2016). While performance on the MCQ has been

argued to measure a dimension of impulsivity favoring immediate reward (sensitivity towards reward size), performance on the probability discounting questionnaire (PDQ) has been argued to measure a dimension of impulsivity more closely related to risk-taking (sensation-seeking; Myerson et al., 2003; Vanderveldt et al., 2015). Also, it is important to note h and k values are inversely related in terms of pathological choice patterns (i.e., higher h s = more risk averse and higher k s = more future discounting of larger rewards). Accordingly, though both measures are similar in structure, their respective underlying processes within decision-making contexts are different suggesting these tasks to measure different dimensions of impulsivity (Green & Myerson, 2010).

Developmental Models of Impulsivity

Prevailing models on the developmental course of impulsivity suggest that behaviors linked with impulsivity (i.e., risk-taking/sensation seeking) tend to increase during mid-late adolescence into emerging adulthood because a developmental lag in the neural regions corresponding to reward sensitivity and effortful control. Thus, the relative immaturity of the prefrontal cortex during this period of development is thought to confer risk for a host of maladaptive outcomes in adolescence and into emerging adulthood (Casey, 2015; Fosco, et al., 2019). Zucker et al. (2011) provide a useful developmental framework that organizes *effortful control* and *incentive reactivity* as two biological systems that interact with each other throughout the course of development well into early adulthood.

According to this developmental model, effort control and appropriate incentive reactivity begin to mature in early years of development with early genetic risk and high stress environments impeding the development of effort control and appropriate incentive

reactivity, thus increasing the likelihood of substance use and externalizing problems in adolescence (Zucker et al., 2011). Moreover, as children transition into adolescent years, there is increased exposure to risk taking opportunities (e.g., substance use, risky sex, risky driving) during a time where the incentive reactivity system is more potentiated, while simultaneously, the relatively less mature effortful control system is not as capable of recruiting the inhibitory skills necessary to avoid risky and impulsive behaviors. As a result, mid-to-late adolescence is a period of development that sees increased risk-taking behaviors due to heightened sensitivity to reward alongside lower capacity in effortful control. In addition to this peak in risk-taking behaviors in late adolescence (Steinberg, 2008), environmental factors continue to influence the underlying executive cognitive functions that contribute to impulsivity well into adulthood (Friedman et al., 2016; Romer et al., 2017), thus warranting the need to assess impulsivity past childhood and adolescent periods of development. Together, the general pattern of impulsive and risk-taking behaviors found in U.S cultural contexts across adolescence into emerging adulthood reflect the nonlinear and dynamic development of the different brain regions involved in the effortful control and reward/incentive systems. As a result, efforts for the current study will employ multiple behavior-based task assessments that elicit the recruitment of different cognitive functions involved in impulsive behavior in adolescence and adulthood periods.

Ethnicity and Self-Regulation

Although the relationship between impulsivity and related outcomes has been widely studied, there is a dearth of information understanding why some ethnic groups experience unique differences in externalizing issues related to impulsivity (Caughy et

al., 2013; Kann et al., 2017; Li-Grining, 2007; Pedersen et al., 2012). For example, in early childhood, impulsive behaviors were found to increase risk for academic failure specifically for Latinx and African American children when compared to their White counterparts (Caughy et al., 2013). In adolescence, Latinx adolescents have reported disparate rates in aggressive and delinquent behaviors and earlier onsets of drug use behaviors when compared with other racial/ethnic groups (CDC, 2017). One longitudinal study found African American children to have higher initial levels of impulsivity compared with White children, but lower levels of alcohol involvement in later adolescence (Pederson et al., 2012), a finding that contradicts the robust link between impulsivity and alcohol use (Dick et al., 2010). Research on ethnic differences in impulsive-related capacities is more nuanced in adult samples, yet when compared to other racial/ethnic groups, the Substance Abuse and Mental Health Administration (SAMHSA) identifies Latinx adults in the U.S to have the second-highest rates of alcohol binge drinking (24.6% [SAMHSA, 2018]). Further, African American and Latinx adults have also been found to experience much worse social outcomes related to alcohol use (i.e., arrests, DUIs) when compared to White American adults (Zemore et al., 2018). Nonetheless there is increasing evidence underscoring the significant role of structural inequities (Chartier et al., 2017) and findings should be interpreted with caution, since worse social outcomes related to alcohol-use does not necessarily imply differences in impulsive-related capacities.

Prior research also demonstrates between-group ethnic differences in performance on behavioral-based task measures of impulsivity. Denhardt and Murphy (2010) found performance on a delay discounting task to be uniquely associated with alcohol problems

for African American college students when compared to White college students. Among a large sample of U.S and Chinese native adults, Chinese participants showed greater levels of inhibitory-related cognitive functions on an inhibitory task when compared to their U.S White counterparts (Jian-Bin et al., 2018). Furthermore, Andrade and Petry (2014) found White gamblers to be less impulsive than African-American and Latinx gamblers, at least in terms of choosing between delayed and immediate reinforcers on a delay discounting task. Similar findings were found in a study comparing the degree of discounting by American, Chinese, and Japanese students. Du and colleagues (2002) found that Americans discounted delayed outcomes similar to Chinese, and both discounted more steeply than Japanese students. On the other hand, in probability discounting, a task measuring one's degree of discounting on probabilistic outcomes, American students discounted probabilistic outcomes more steeply than the Chinese students (Du et al., 2002). Moreover, significant ethnic differences have been found among preschool aged children such that African-American children scored better on measures of complex response inhibition and set shifting while Latinx children scored better on measures of inhibitory control and working memory (Caughy et al., 2013).

While the studies outlined above elucidate discrepancies in impulsive-related outcomes between different racial/ethnic groups, it remains unclear how impulsivity differs within ethnic minority samples. Indeed, despite increasing work finding significant individual differences in the developmental trajectory of impulsivity and related cognitions (King et al., 2011; 2013), this research has been limited to predominantly White samples and only few existing studies have examined within-group differences in impulsive-related capacities among ethnic minority groups (DeFeyter &

Winsler, 2009; Li-Grining, 2012). For example, among a large and diverse sample of ethnic minority children, DeFeyter and Winsler (2009) found significant within group differences in cognitive skills among Latinx children as it pertained to immigrant status and country of origin. Specifically, Latinx children of first-generation immigrant status (child and parent born out of U.S) were found to be at a statistically significant advantage in socio-emotional skills and behavior when compared to second- and third-generation Latinx children. Lastly, within-group differences in cognitive competency among Latinx children was also found to vary by region (e.g., Central America) and country of origin (e.g., Honduras, Nicaragua) highlighting the substantial heterogeneity within the makeup of Latinx ethnic groups (DeFeyter & Winsler, 2009). Among a large sample of African American children, Caughy and colleagues (2006) found greater cognitive competency and behavior to be uniquely associated with households that were richer in African American culture, suggesting within-group differences in cultural socialization practices may influence impulsive-related capacities.

The findings outlined above suggest that when it comes to differences in impulsivity-related capacities among different ethnic samples, elevated risk for impulsivity is a phenomenon that may be particularly salient to Latinx ethnic minority groups. Furthermore, these findings also suggest that social (i.e., household environments) and cultural features (i.e., immigrant status) are important and relevant factors that may help explain within and between group differences in impulsivity among Latinx ethnic groups. One suggestion to help explain these ethnic differences can be drawn from models implicating economic related stress on the developmental course of impulsivity. These models posit that children who are exposed to conditions of poverty

during early childhood are more likely to display deficits in SR capacities later in development (Blair & Raver, 2012). Indeed, one speculation states that children from low-income families are placed at greater risk to not have the resources and/or opportunities to promote inhibitory skills, especially within low-income neighborhoods where impulsive behaviors may be more adaptive in high-threat environments (Sektan et al., 2010).

Latinxs are more likely to live in economically disadvantaged households when compared to non-Latinx Whites (Jiang et al., 2016). Several interrelated models explaining alcohol-related problems suggest that social disadvantage among ethnic minority groups living in the U.S is accompanied by discrimination, poverty, and prejudice which may all serve as stressors that increase poor health behaviors (Factor et al., 2013, Keyes et al., 2011, 2012; Mulia et al., 2008). Accordingly, Latinxs are a high risk and understudied ethnic group that deserves increased attention given their increased exposure to unique contextual stressors (Mills et al., 2019). Although the use of a theoretical framework implicating stress to examine ethnic differences in SR capacities has led to significant contributions in the literature (Blair & Raver, 2012; McFayden-Kethcum, et al., 2016), these approaches have been limited in their capacity to incorporate ethnic-specific risk/protective factors that are unique to different ethnic minority populations (Li-Grining, 2012).

Latinx Ethnic Groups and Impulsivity

As outlined above, much of the research on impulsivity has examined between-group differences and failed to capture the rich heterogeneity that exists within diverse ethnic groups. Prior research has underscored the significance of researching within-

group processes that contribute to the observed variability in impulsive behaviors among Latinxs (e.g., DeFetery & Wilsrow, 2009). National census data indicate that Latinx populations are quickly growing in the U.S (U.S Census Bureau, 2017) and currently make up the largest ethnic group in the U.S with a very diverse makeup of Latinx subgroups that vary in terms of their cultural heritage (e.g., country of origin, race, religion, values, practices) and immigrant status (Pew Research Center, 2017). Furthermore, impulsivity and impulsive related outcomes (i.e., problematic alcohol and substance use behaviors) are not confined to just adolescent developmental periods because research shows that these behaviors are markedly more prevalent in emerging adulthood among Latinx populations (Cano et al., 2020; SAMHSA, 2018; Vaeth et al., 2017). Furthermore, the transition from adolescence to emerging adulthood is accompanied by a continued exploration in one's own identity suggesting that changes in context (i.e., transitions to college) may stimulate a reexamination of one's own ethnic identity due to novel experiences and cultural expectations set forth by mainstream culture (Phinney et al., 2006; Phinney & Ong, 2007; Syed & Azmitia, 2009). Accordingly, sociocultural processes such as ethnic identity need to be examined in emerging adulthood and beyond. Thus, to gain a more nuanced understanding on how sociocultural processes contribute to within-group differences in impulsivity and impulsive-related outcomes, it is imperative that research efforts begin by examining the varying influential roles in cultural factors found within different developmental periods (i.e., adolescence and emerging adulthood) among Latinx ethnic groups.

Culture

While ethnicity has been commonly defined as an individual's identity and membership to a group that shares common nativity, values, beliefs, and cultural practices (Phinney, 1996); culture can be differentially distinguished as an abstract construct characterized by the socialization of shared knowledge, meanings, and understandings of particular groups of people (Shore, 2002). Accordingly, ethnicity and culture are two integral elements embedded within broad socio-cultural processes (i.e., acculturation; Schwartz et al., 2010) that have been found to significantly influence psychosocial development within Latinx ethnic groups (Alegria et al., 2007). For example, according to the Hispanic Immigrant Paradox, recently immigrated Latinx adolescents tend to fare better on numerous outcomes (i.e., substance use and physical/mental health) when compared to Latinx adolescents who were either born in the U.S, lived longer in the U.S, or immigrated to the U.S at earlier ages (Alegria et al., 2007). Consequently, individual differences in impulsivity across adolescence and emerging adulthood may vary as a function of these elements interacting with each over time (Li-Grining, 2012; Trommsdorff, 2009). By examining within-group differences in Latinx adolescents living in the U.S, these findings have shed a light on our understanding of an immigrant advantage phenomenon that may be partially explained by immigration status. However, further research is warranted investigating whether these observed differences may be better explained by improved SR abilities and lower impulsivity among adolescents with less exposure to U.S culture.

Latinx youth and Latinx adults whom live in the U.S are faced with conforming to social expectations set forth by either the receiving cultural context (mainstream U.S cultural practices and independent values) or heritage cultural context (country of origin

cultural practices and familism values) and increasing work highlights the need to examine these relationships using a dual cultural identity orientation framework (Schwartz et al., 2010). As it pertains to Latinx ethnic groups in the U.S, Schwartz and colleagues (2010) propose that navigating *two* cultures (i.e., heritage and receiving culture) encompasses the socialization and steering of (a) *cultural practices* (e.g., heritage-language and culture foods, and receiving-society language and culture foods), (b) *values* (e.g., heritage-collectivism, interdependence, and familism, and receiving-individualism and independence), and (c) *ethnic identifications* (e.g., heritage-country of origin, and receiving-country of origin). Although individuals may choose to identify more with their heritage or mainstream culture, increasing research suggests that an individual's ability to effectively navigate both their heritage and receiving culture (i.e., biculturalism), may serve as a protective factor for ethnic minorities living in the U.S (Benet et al., 2005; Unger et al., 2014). Accordingly, the current study will be guided by Schwartz and colleague's (2010) dual cultural identity orientation framework to examine language use (cultural practices), familism and independent/interdependent values (cultural values and beliefs), and ethnic/mainstream and biculturalism identity (cultural ethnic identification) among Latinx adolescent and adults in the U.S identifying with first-generation or second-generation immigrant status.

Culture and Impulsivity

Among Latinxs in particular, maintaining a sense of connection to their ethnic heritage/identity and adhering to commonly espoused cultural values and practices have been shown to be important for psychosocial functioning (Valdivieso-Mora et al., 2016). Consistent with this notion, ethnic identification has been generally found to be

protective of externalizing problem behaviors (Marsiglia et al., 2004) and significantly associated with positive psychosocial outcomes among Latinx adolescents (Smith & Silva, 2011). Phinney and Ong (2007) define ethnic identity to be characterized as a broad construct that develops over time involving two important processes; exploration (e.g., examining alternatives) and commitment (e.g., making a decision in identity based on the quality of one's sense of belonging). Furthermore, because ethnic identity is constructed over time (Syed & Azmitia, 2009), individuals have options in how they identify with their ethnic groups which is generally dependent on aspects of both the individual and contextual environment (Phinney, 2006; Umaña-Taylor & Fine, 2004). This may partially explain findings among a smaller number of studies which have lent empirical support to show heterogeneity in ethnic identity experiences among Latinx college students (Arbona & Jimenez, 2014) or negative associations between ethnic identity and overall psychosocial outcomes among Latinx adolescents and emerging adults (Umaña-Taylor, 2011). Though few studies have failed to find significant positive associations between ethnic identity and psychosocial outcomes (Umaña-Taylor, 2011), the overall existing literature suggests ethnic identity to serve a protective function for Latinx's psychosocial functioning (Umaña-Taylor, 2011). Accordingly, the first aim of the present study aims to shed light on the association between ethnic identification and different dimensions of impulsivity.

Behaviors such as language use, choice of friends, media preferences, and cultural customs and traditions (i.e., food choices, holidays, parenting practices) are commonly grouped together to represent the domain known as cultural practices (Berry, 1980; Schwartz et al., 2010). As it pertains to Latinx's living in the U.S, cultural practices may

be manifested in the choice of language that is spoken (e.g., English and/or Spanish), cuisines that are consumed (Latinx and/or American foods), and peer affiliations (heritage-cultural and/or Americanized friends). To the best of my knowledge, literature investigating associations between cultural practices and outcomes related to impulsivity among U.S Latinx samples have been limited towards examining the role of language as proxy variables in predicting health lifestyle behaviors (Allen et al., 2008; Ford & Norris, 1993; Lechuga & Wiebe, 2009; Wang et al., 2010). Findings suggest that for different Latinx groups living in the U.S, retaining or practicing their native language (Spanish) can serve to be a protective and/or risk factor that is dependent on the context (Cruz et al., 2017; Schwartz et al., 2014). For example, whereas a greater preference for Spanish language use among U.S Latinx individuals has been found to be associated with higher levels of acculturative stress (Miranda and Matheny, 2000) and higher sexual activity and condom use intentions (Ford & Norris, 1993; Lechuga & Wiebe, 2009); retention of this cultural practice may serve a more protective role among Latinx individuals living in contexts that are predominantly oriented to Latinx heritage culture (Allen et al., 2008). Accordingly, it is unclear if language use has a direct association with impulsive related behaviors associated with different healthy outcomes and thus part of the first aim of the current study will examine associations between cultural practices (indexed by language use) and different dimensions of impulsivity.

Studies that measure only cultural practices (i.e., language use) and/or ethnic identity may be limited in their interpretation of their research findings because as previously stated, cultural values is the third domain of the dual cultural identity orientation framework that warrants further understanding to illustrate a clearer picture

on how cultural factors related to acculturation influence impulsivity among Latinx samples. Cultural values refer to belief systems associated with specific contexts or groups, including broad, cross-ethnic group values such as collectivism and individualism (Szapocznik et al., 1978), independent and interdependent self-construals (Markus & Kitayama, 1991; Singelis, 1994) as well as group-specific values such as familism (Galanti, 2003). Contemporary work has established a robust link between different cultural values and health outcomes among ethnic minority populations. For example, collectivistic and interdependent values (emphasis on group interconnectedness and group harmony) have been found to be associated with lower levels of externalizing problems (e.g., substance use) and risk behaviors (Johnson, 2007; Schwartz et al., 2010). Conversely, individualistic attitudes and values (emphasis on independence, self-sufficiency, and uniqueness) have been found to be positively associated with risky behaviors, such as alcohol and drug use among adolescents and adults, suggesting individualistic values to serve as risk factors for ethnic groups that value collectivistic ideals (Johnson, 2007; Schwartz et al., 2010).

Deeply rooted in the interdependent and collectivistic nature of Latinx societies is a cultural value known as familism, which endorses strong values towards a cohesive family unit in which members place great emphasis on family respect, family obligation, and closeness to members of the family (Cauce & Domenech-Rodriguez, 2002). Familism values are transmitted from generation to generation through socialization strategies and interactions within the family unit and have been found to be protective against deviant behavior and association with deviant peers in youth (Germán et al., 2009; Roosa et al., 2011). In a longitudinal study assessing risk behavior over the course

of adolescence, individual variability in familism values related to individuals' own fluctuations in risk behavior, such that when adolescents reported greater familism values than usual, they also reported lower levels of risk behaviors (Wheeler et al., 2017). Another study found strong endorsement of familism values to mitigate the negative effects of high perceived stress among Latinx and East Asian American adults (Corona et al., 2017). Accordingly, the protective effects of familism on externalizing behaviors have been theorized to be a result of strong obligation attitudes and respect towards the family unit and seeing "acting out" as disrespecting and/or disgracing their family (Germán et al., 2008; Valdivieso-Mora et al., 2017).

Telzer and colleagues are among the few existing researchers that have examined the role of familism values on behavior-based measures of impulsivity/risk-taking. Using neuroimaging tools, a risk-taking behavior-based paradigm aimed to measure sensation-seeking and/or reward sensitivity, and a behavior-based paradigm designed to measure inhibitory control, Telzer and colleagues (2013) found greater endorsement of family obligation values (an aspect of familism that socializes youth to consider the family's needs and wishes before prioritizing oneself before the family) to be associated with decreased activation in reward regions of the brain during risk taking decisions and increased activation in effortful control during behavioral inhibition. These findings suggest that the endorsement of strong obligations towards the family unit may serve to decrease reward sensitivity and increase effortful control capacities during risky decision making (Telzer et al., 2013). In a later study, Telzer and colleagues (2014) found evidence for a moderating effect such that family obligation values were especially

protective against other illicit drug use in high-conflict homes, whereas family assistance behaviors were particularly detrimental in the presence of family conflict.

Drawing from these findings, ethnic identification, cultural practices, and cultural values have been evidenced to serve as important and relevant cultural factors implicated in impulsive-related behaviors among Latinx populations from adolescence to young adulthood with significant applied implications. Indeed, in light of growing evidence among parenting interventions that integrate and empower strong family and cultural values to reduce problematic behaviors in youth (Amador-Buenabad et al., 2019; Gonzales et al., 2012; Parra-Cardona et al., 2017), it may be relevant to investigate the feasibility of translating cultural factors to risk-reduction interventions aimed at targeting externalizing problems among Latinx populations. Accordingly, the present study endeavors to fill a gap in the literature by exploring direct associations between different cultural factors (i.e., ethnic identity, language use, independent/interdependent self-construals, and familism) and different dimensions of impulsivity using behavior-based assessments of impulsivity among Latinx adolescents and emerging adults. Furthermore, integrating the aforementioned cultural factors into experimental methods aimed to reduce impulsive behaviors warrants further exploration in order to advance literature that aims to facilitate more efficient translation to clinical interventions.

Cultural Priming

In recent years a substantial body of research has accumulated evidence to suggest that behavior can be unconsciously influenced or *primed* by the activation of relevant stereotypes, attitudes, traits, goals, or other concepts (Shanks et al., 2013). Indeed, extensive research shows that individuals can be induced to behave in ways (e.g.,

behaving more or less intelligently) as a result of priming strategies that involve, but are not limited to, subtle presentation of words linked to a behavior or concept through the use of scrambled sentences, word puzzles, or images (Weingarten et al., 2016).

Furthermore, priming methods may also be categorized by priming types (e.g., affect priming, temporal priming, cultural priming). Consequently, prime manipulations are receiving increased attention given their potential clinical utility in influencing problematic behavior through alterations in cognitive mindsets (Shanks et al., 2013).

In efforts to advance translational research understanding the generality and clinical utility of methodological procedures aimed to influence impulsivity, Rung and Madden (2018) provide a recent meta-analysis review investigating studies that employed experimental manipulations designed to reduce delay discounting. Among the 92 included studies with promising therapeutic potential, learning-based manipulations (e.g. working-memory training) produced the largest and longest-lasting effects in reducing discounting, whereas episodic future thinking (i.e., the act of vividly imagining one's future) and priming manipulations (i.e., priming of an individual's affect or cognitive content) produced acute, but significant reductions in discounting. There was heterogeneity in effect sizes between different subcategories of priming manipulations such that affect priming (i.e., priming emotion-inducing stimuli or directed remembering) had smaller effects on discounting when compared to temporal priming (i.e., priming perception and estimation of time durations).

Furthermore, there is a cultural priming literature that has evidenced culture to be a construct that can be experimentally manipulated via prime manipulations to influence decision-making behaviors (Chiao & Blizinski, 2010; Hong et al., 2000; Oyserman,

2008), yet the review by Rung and Madden (2018) did not include manipulation studies integrating culture within their prime paradigm procedures. To the best of my knowledge, this may be primarily due to the fact that no study to date within the field of behavioral economics has approached prime manipulations on delay or probability discounting through a cultural lens. Research examining other dimensions of impulsivity has found individuals with increased flexibility in adapting to changes in new cultural contexts (i.e., biculturalism) to be more proficient in inhibitory control tasks (Pornpattanangkul et al., 2016), thus it is possible that other cultural factors that have been found to be generally protective for externalizing problems, such as familism and/or interdependent values, can also positively influence discounting rates, particularly for Latinx populations.

Since the emergence of research highlighting culture as a dynamic construct that can activate different cultural mindsets and/or self-construals among bicultural individuals, a phenomenon known as cultural frame switching, Hong and colleagues (2000) called for the study of culture and cognition to be approached from an experimental perspective. In other words, Hong and colleagues (2000) proposed that culture can be experimentally manipulated using cultural priming tasks that are designed to temporarily heighten awareness of cultural information with symbolic cues or stimuli that is representative of independent (e.g., individualistic) and interdependent (e.g., collectivistic) cultural orientations. For example, studies employing cultural prime paradigms using cultural icons (i.e., images that strongly evoke shifts in cognition) among bicultural individuals have demonstrated that pictures representative of either heritage culture (e.g., heritage flag, heritage foods, and heritage monuments) or U.S. culture (e.g., American flag, American foods, and American monuments) activates

beliefs, attitudes, and values associated with that particular culture (Hong et al., 2000). In a systematic review of the cultural priming literature, Oyserman and Lee (2008) provide robust evidence to support the notion that priming heritage relevant values (interdependence/collectivism) or American relevant values (independence/individualism) results in moderate-sized effects in the direction predicted by prime design studies. Although the majority of this research is cross-cultural and limited to Asian and White American samples, work by Lechuga and Wiebe (2009) demonstrated the utility and feasibility of using cultural practices such as language as a priming tool among Mexican American samples. Indeed, Lechuga and Wiebe (2009) found language to be an effective priming tool in predicting varied self-construals (i.e., interdependent or independent) that were in the expected direction of the prime design.

Together, the studies outlined above suggest that culture is dynamic and responsive to context in influencing in-the-moment cognitions and behaviors (Oyserman et al., 2011). Findings from cultural frame switching research suggest that bicultural individuals are able to adapt their self-construal (interdependent versus independent) mindsets to match the situational demands presented in ones' immediate context. Lastly, although there is heterogeneity in methods employing experimental prime manipulations across studies, the studies outlined above suggest that culture, affect, and time can all be experimentally manipulated as a priming tool to influence cognitions and behaviors (Oyserman & Lee, 2008; Rung & Madden, 2018). To date, no research has examined the potential role of familism values in reducing impulsivity and risk-taking in delay and probability discounting tasks via a cultural priming paradigm task. Accordingly, the third and last aim of the current study is to investigate the translational feasibility of integrating

familism values (i.e., family obligations) within a priming task paradigm designed to reduce discounting rates among Latinx emerging adults. The current study will adapt a self-construal “purchase recall” priming task developed by Mandel (2003), which was used to prime independent or interdependent representations of the self. Though the original “purchase recall” task was developed to be more consumer-oriented in nature by asking participants to recall something nice that they recently bought for themselves (independent condition) or a friend or family member (interdependent condition) and then describe how it made them feel. The current study will modify the wording in the prime instructions to reflect individualism/independence versus family obligation values.

Present Study

There is a lack of research examining how within-group cultural variation may be associated with performance on different behavior-task measures of impulsivity within Latinx adolescents and emerging adults. Therefore, the proposed study aims to examine within-group differences across cultural domains (i.e., behaviors, values, and identity) in relation to performance on behavior-based task assessments of impulsivity and whether or not these relationships vary as a result of nativity/place of birth (i.e., foreign-born or U.S born), and psychological aspects of cultural identity, including ethnic identity, language use, self-construal, and cultural values. Given that there may be separate underlying processes involved in decision-making behaviors that contribute to impulsivity, the current study will employ multiple assessments of impulsivity such that findings will indicate whether different aspects of culture uniquely influence resistance to distractor interference (inhibitory control), delayed discounting, and probability discounting. Research among Latinx populations has also widely established the

influential role of familism cultural values in mitigating externalizing problems, yet no study has directly tested whether familism cultural values can be experimentally manipulated to reduce different dimensions of impulsivity. Positive findings would suggest therapeutic potential in incorporating cultural familism values within prevention-intervention programs for Latinx populations at risk for externalizing problems such as substance use.

Research Questions and Hypotheses for Study 1

Aim 1. Does performance on task measures of impulsivity differ by nativity (i.e., U.S-born or foreign-born)?

Hypothesis. Consistent with immigrant paradox literature, I hypothesize that foreign-born Latinx individuals will demonstrate improved performance, that is, lower rates of delay discounting, higher rates of probability discounting, and increased resistance to distractor interference, on the different task measures of impulsivity used in the current study.

Aim 2. Are familism, interdependent self-construal, and independent self-construal associated with resistance to interference control on the Flanker task and lower rates of discounting on a monetary delay discounting task?

Hypothesis. I hypothesize that endorsement of familism values and interdependent self-construals will have a positive association with performance on the flanker task.

Research Questions and Hypotheses for Study 2

Aim 1. Does performance on task measures of impulsivity differ by nativity (i.e., U.S-born or foreign-born)?

Hypothesis. Consistent with immigrant paradox literature, I hypothesize that foreign-born Latinx individuals will demonstrate lower rates of delay discounting and higher rates of probability discounting on the MCQ and PDQ, respectively.

Aim 2. Are familism, interdependent self-construal, and independent self-construal associated with lower rates of delay discounting and higher rates of probability discounting?

Hypothesis. I hypothesize that higher endorsement of familism values and interdependent self-construals will be associated with lower rates of delay discounting and higher rates of probability discounting when compared to Latinx participants endorsing higher independent self-construals and/or lower familism values.

Aim 3. Can priming family obligation values (versus values around independence) reduce rates of delay discounting on the MCQ and probability discounting on the PDQ task?

Hypothesis. I hypothesize that Latinx participants who receive the family obligation/interdependent self-construal prime will have reduced rates of delay discounting and increased rates of probability discounting.

CHAPTER III

METHOD

Methods to answer the overall thesis aims consisted of two separate data collections and datasets. To best outline these methods, I describe and separate the different data collection procedures, along with their respective dataset samples, as two separate studies (Study 1 and Study 2).

Study 1 – Salud de los Adolecences (SAL)

Design

Study 1 used an existing dataset from the *Salud de los Adolecences Latinas* (SAL) project. SAL was a community-based survey study designed to examine intersections between cultural, familial, and individual factors influencing risk and impulsive behaviors among Latinx adolescents in Northern Utah. Participants were recruited from Salt Lake, Davis, Weber, and Utah counties through advertisements via social media platforms, booth set-ups at community events, community flyers, and snowball referrals. Participants were eligible to participate in the SAL study if youth self-identified as Hispanic/Latinx, was comfortable answering survey questions in English, obtained parental consent, and was between the ages of 13-18.

Participants

Of the initial recruited sample of 159 interested families, 58% ($n = 92$) of parents provided consent and youths agreed to participate and successfully completed the study.

The mean age of the sample was approximately 15 ($M_{age} = 15.09$; $SD = 1.71$), and 61% ($n = 55$) identified as girls. Existing literature suggests that there is inconsistency in measurement assessment of socioeconomic status (SES) among adolescent samples given differences in methodological and measurement approaches (e.g., parent-report versus adolescent-report; Goodman et al., 2001). Among adolescent samples specifically, household overcrowding (i.e., more than one occupant per room) has been argued to be a more dynamic measure than other SES indicators and has been found to be associated with fewer economic resources and negative outcomes (Marin et al., 2008). As a result, household crowding was used an indicator of SES for the SAL study by dividing the number of household occupants by the number of household bedrooms (Galobardes et al., 2006; Marin et al., 2008). Further study descriptives are presented in Table 1.

Procedures

Research assistants conducted phone call screenings followed by in-person interviews with families whom met criteria for the SAL study. Interviews were conducted at locations that afforded adequate privacy and were based on family's preferences. Most families preferred to have the interviews occur in their home. After receiving consent and assent from both parents and youth, research assistants conducted the study interview. The research assistant read questions aloud to the youth and entered responses using Qualtrics software on iPad devices. For sensitive questions and to protect participant's privacy, youth were handed a keyboard that was connected to the iPads which allowed for them to enter their responses without the research assistants seeing their answers. During the survey battery, youth were asked to complete a computerized Flanker Task

aimed to measure inhibitory functions involved in impulsivity. Participants were compensated \$20 for their participation in the SAL study.

Table 1

Demographics for Study 1 - SAL

Variable	Mean (SD) / N (%)
Age	15.6 (1.8)
Household Crowding	1.1 (0.3)
Participant Sex	
Male	37 (40)
Female	55 (60)
Language Spoken at Home	
English	62 (67)
Spanish	30 (33)
Nativity/Birthplace	
U.S Born	80 (87)
Foreign Born	12 (13)

Measures

The measures included for Study 1 represent a subset of the full SAL project interview battery and are aimed to measure different aspects of impulsivity and cultural factors. The measures for Study 1 are described below.

Flanker Task (Resistance to distractor interference). The Flanker Task was used to assess inhibitory control processes such as one's ability to suppress responses that are inappropriate in a particular context (Eriksen, 1995). Participants were instructed to focus on a given stimulus while inhibiting attention to stimuli (arrows) flanking it. Sometimes the middle stimulus points in the same direction as the "flankers" (congruent) and sometimes in the opposite direction (incongruent). Participants were scored based on accuracy (number of correct responses) and reaction time (median reaction time for all

trials) to generate a computed raw score that ranges from 0-10. To account for demographic factors known to impact task performance, we converted the computed raw score into an age-corrected standard score which allowed us to compare our sample participant's scores with scores of a nationally representative normative sample of the same age and/or ethnicity. That is, performance scores for our Latinx sample was compared with national average scores of Latinx same-aged peers. Previous work using age-corrected standard scores to measure inhibitory responses from Flanker performance among Latinx youth has demonstrated good validity and reliability (Taylor and Ruiz, 2019).

Delay Discounting. The Monetary Choice Questionnaire (MCQ; Kirby et al., 1999) consists of 27 dichotomous choices between smaller-immediate and larger-delayed monetary rewards that are preconfigured to provide estimates of an individual's delay discounting rate. Three magnitudes are assessed, providing separate discounting rates for small (\$11–\$35), medium (\$20–\$60), and large (\$31–\$85) rewards, as well as an overall discounting rate. The outcome of interest for the MCQ is the extent to which respondents prefer the delayed and more valuable reward over the immediately available but less valuable one, which can be represented using a hyperbolic discounting equation (Mazur, 1987):

$$V = A/(1+kD).$$

Where V is the present value of the delayed reward A at delay D , and k is the rate of discounting. For example, using an item from the measure (“\$31 today” or “\$85 in 7 days”), V would equal \$31, A would equal \$85, and D would equal 7. Solving for k generates a value of .25. According to Kirby's et al.'s (1999) scoring method, k typically

falls between 0.0 and 0.5, with smaller values indicating lower rates of discounting (preference for larger delayed rewards) and higher values indicating higher rates of discounting (preference for smaller immediate rewards).

Although the reliability and validity of the monetary choice questionnaire has been well established (Kirby, 2009), Kirby's (1999) scoring method has been noted in the literature to be relatively complex, difficult to employ, and difficult to interpret efficiently and accurately (Gray et al., 2016; Myerson et al., 2014). I used Gray and colleagues (2016) R syntax that automatically generates k values, consistency of the inferred k value, and immediate choice ratios. Furthermore, the distribution of raw k values has also been shown to be positively skewed and generally unsuitable for parametric analysis. Thus, to correct for this non-normal distribution, researchers recommend that the distributions of k be approximately normalized using a natural log transformation. Therefore, further analysis of the current study's MCQ data was conducted on the log-transformed discounting rates.

Familism. Traditional Latinx familism values were measured using the Family Obligation scale consisting of 24 items looking at the following three subscales: current assistance to the family, respect for family, and future support (Fuligni et al., 1999). The current assistance subscale consists of 11 items that asks participants how often they are asked or required to do something (i.e., "Spend holidays with the family") with response options ranging from 1 (*almost never* or *never*) to 5 (*almost always* or *always*). The respect for family and future support scales asks participants to report how important it is in their family for them to show respect (e.g., "Treat parents with great respect") and future support (e.g., "Help parents financially in the future"). Like the current assistance

subscale, response options for both the respect and future support subscales were on a 5-point scale ranging from 1 (*Not important at all*) to 5 (*Very important*). The scale is scored as a mean of items with higher scores indicating higher levels of respect, family support, and family obligations. This measure was originally validated among adolescents of diverse ethnic backgrounds with psychometric findings demonstrating good validity (Fuligni et al., 1999) and later work demonstrating good reliability (Fuligni, 2007). For the SAL study, Cronbach's alpha for the three subscales were poor; however, given the ordinal nature of the scales and wide range of behaviors, thoughts, and feelings assessed by the scales, the Cronbach's alpha may not provide an accurate measurement of the scale's internal consistency (McNeish, 2018). An alternative measurement that is less restrictive and allows items to vary is ordinal omega which has been shown to more accurately represent the reliability of measures with ordinal response items (Gadermann, Guhn, & Zumbo, 2012). Ordinal omega for the three subscales was adequate (current assistance $\omega = .74$, respect for family $\omega = .75$, and future support $\omega = .65$) for the present study.

Singelis Self-Construal Scale. This is a 30-item questionnaire that measures a variety of feelings and behaviors in various situations that comprise independent and interdependent self-construals (Singelis, 1994). The items load onto two different scales resulting in each subject receiving two scores: one for the strength of the independent self and one for the interdependent self. Sample items from the independence scale include "I enjoy being unique and different from others in many respects" and "I act the same way no matter who I am with"; whereas sample items from the interdependence scale include "Even when I strongly disagree with group members, I avoid an argument" and "I feel

good when I cooperate with others”. Participants responded with how much they agreed or disagreed with each statement with response options ranging from 1 = *strongly disagree*, to 7 = *strongly agree*. Singelis demonstrated the scale has to possess reliable and valid psychometric properties among a sample of U.S. sample of White and Asian American individuals with Cronbach’s alphas of .70 and .74 for the independent and interdependent subscales, respectively. The Cronbach’s alphas for the present study ranged between .58 and .72. were. It has been noted by the developers of this measure that alpha reliability scores ranging from high .60’s to the middle .70’s are adequate scores considering the broadness of the construct of self-construal’s (Singelis et al., 1995).

Multi-group Ethnic Identity Measure-Revised (MEIM-R). This is a brief instrument assessing affiliation with one’s ethnic group. The MEIM-R consists of six items, three assessing exploration and three assessing commitment (Phinney & Ong, 2007). Exploration refers to efforts to learn more about one’s ethnic group and to participation in the cultural practices of this group. Commitment reflects positive affirmation of one’s group and a sense of commitment to the group. The items are preceded by an open-ended question that elicits the respondent’s spontaneous ethnic self-label (i.e., “In terms of ethnic group, I consider myself to be ...”) Sample exploration items include: “I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs” and “I have often talked to other people in order to learn more about my ethnic group.” Sample commitment items include: “I have a strong sense of belonging to my own ethnic group” and “I understand pretty well what my ethnic group membership means to me.” Participants responded on a 5-point scale

ranging from 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree*, or 5 = *Strongly agree*. The MEIM has been used successfully with Hispanic samples, including college students, demonstrating strong internal consistency ($\alpha = .91$; Phinney, Dennis, & Osorio, 2006). For the current study the internal consistency alpha coefficients for the full scale was $\alpha = .80$, $\alpha = .71$ for the exploration subscale, and $\alpha = .72$ for the commitment subscale.

Acculturation Rating Scale for Mexican Americans (ARSMA-II)-Language use subscale. ARSMA-II is a scale that was designed to measure behavioral aspects of acculturation and revised to fully assess bicultural individuals with characteristics relative to two cultures (Mexican cultural orientation and Anglo cultural orientation). Furthermore, the revised ARSMA-II includes items that assess four factors (language use and preference, ethnic identity, cultural heritage and ethnic behaviors, and ethnic interaction) which can also be analyzed separately for each cultural orientation. Because behavioral aspects of acculturation are commonly measured through language use, media, and food preferences (Zea, Asner-Self, Birman, & Buki, 2003), the current study used the language use items found on the ARSMA-II to assess English and Spanish use behaviors. Participants were asked to report how frequently they spoke, wrote, thought, listened to music, and watched television in each language using a 5-point frequency scale with options ranging from 1 = *not at all*, to 5 = *almost always*. Although the full ARSMA-II scale consists of items aimed to assess other factors of acculturation (e.g., ethnic identity), previous work has demonstrated adequate reliability among Mexican origin youth using only the ARSMA-II Language use items with Cronbach's alpha for English items ranging between .71-.77 and Cronbach's alpha for Spanish items ranging between

.80-.83 (Cruz et al., 2017). Cronbach's alpha (α) for the current study's ARSMA-II Language use subscale was acceptable for both English and Spanish ($\alpha = .73$, $\alpha = .78$).

Mexican American Biculturalism Scale — bicultural comfort subscale. The Mexican American Biculturalism Scale (MABS; Basilio et al., 2014) measures the psychological construct of biculturalism by employing three subscales (bicultural comfort, bicultural facility, and bicultural advantages) consisting of 9 items each. Items on the bicultural comfort subscale ask participants how they feel navigating their dual cultural world. Items on the bicultural facility subscale ask participants how well they respond to the behavioral demands of their dual cultural worlds. Items on the bicultural advantages subscale ask what the participant thinks or perceives are inherent advantages in being bicultural. Psychometric analysis of the MABS suggest the scale to be a sensitive and reliable measure of individual differences in biculturalism that can also be used to examine differences in each of the three subscales (Basilio et al., 2014). The current study only used the bicultural comfort subscale of the MABS to measure ranging levels of bicultural comfort that exist among Latinx individuals living in the U.S. The response scale for bicultural comfort ranged from 1 (e.g., "I am only comfortable when [I need to speak in English/Spanish].") to 6 (e.g., "I am always comfortable in both of these situations.") and the mean of item scores were computed with higher scores indicating higher levels of bicultural comfort. The Cronbach's alpha for the bicultural comfort subscale for the current study was adequate ($\alpha = .82$).

Study 2 – Latinx Young Adult Survey (LYAS)

Design

Study 2 of the overall thesis project used data from the Latinx Young Adult Survey (LYAS), a cross-sectional online survey study that aimed to recruit 250 - 300 Latinx emerging adults using a Qualtrics panel. The main objective of LYAS was to examine associations between cultural and individual factors with risk and impulsive behaviors. Qualtrics was responsible for facilitating the recruitment process and the researchers did not have any face-to-face interviews with participants.

Participants

To meet eligibility for LYAS, prospective participants must have reported to be between 18 and 25 years of age, self-identify with Hispanic, Latino, or Latinx ethnic, cultural, or national heritage, indicate that they are currently living in the United States, report both their biological parents to also identify with Hispanic, Latino, or Latinx ethnic, cultural, or national heritage, and agree to the online letter of information about participating in the study. Potential participants were excluded from participating in the study if they did not meet one of the eligibility criteria outlined above and/or if they report not being comfortable reading in the English language. LYAS used quota-based sampling methods to recruit a U.S sample of Latinx emerging adults aged 18–25 years that was representative of national descriptives in ethnicity/race, gender, generational status, education status, and language use. A total of $N = 278$ participants completed the LYAS study, with an average age of 21.3 ($SD = 2.4$). See Table 2 for the final sample's quota-based demographic descriptive statistics.

Table 2*Demographics for Study 2 - LYAS*

Variable	Total (SD)/ N (%)	Control (SD) / N (%)	Familism Prime (SD) / N (%)	Individual Prime (SD) / N (%)
	n = 278	n = 93	n = 84	n = 101
Age	21.3 (2.4)	21.3 (2.3)	21.5 (2.5)	21.1 (2.3)
Participant Sex				
Male	181 (65.1%)	60 (64.5%)	59 (70.2%)	62 (61.4%)
Female	95 (34.2%)	33 (35.5%)	24 (28.6%)	38 (37.6%)
Intersex	2 (0.7%)	0 (0%)	1 (1.2%)	1 (1%)
Nativity/Birthplace				
United States	231 (83.1%)	78 (83.9%)	68 (81%)	85 (84.2%)
Other country	47 (16.9%)	15 (16.1%)	16 (19%)	16 (15.8%)
College Experience				
Community college	91 (32.7%)	34 (36.6%)	28 (33.3%)	29 (28.7%)
4-year University or College	92 (33.1%)	30 (32.3%)	30 (35.7%)	32 (31.7%)
Not enrolled	95 (34.2%)	29 (31.2%)	26 (31%)	40 (39.6%)
Spanish Proficiency				
High proficiency	154 (55.4%)	50 (53.8%)	45 (53.6%)	59 (58.4%)
Medium proficiency	102 (36.7%)	36 (38.7%)	33 (39.3%)	33 (32.7%)
No proficiency	22 (7.9%)	7 (7.5%)	6 (7.1%)	9 (8.9%)

Procedures

Participants were directed to the study survey by existing Qualtrics Panel processes and procedures where they were presented with a letter of information/consent form outlining the purpose of the LYAS study, their protection of confidential information, benefits and risks of the study, and compensation for completing the study. Participants were informed that their participation was completely voluntary and that they could withdraw from the study at any point of the survey by just exiting the browser. Participants were told that the focus of the study was to learn about decision-making

behaviors in emerging adults who identify as Latinx by answering questions pertaining to their demographic information, familial and cultural history, impulsive traits, executive functioning skills, and risky behaviors. The survey battery was administered online via Qualtrics and consisted of approximately 200 - 250 questions. Before beginning the online study survey, participants were asked to fill out the eligibility items found in the demographics section of the survey (see Appendix for study survey. Additional questions asked about gender identity, language use, whether the participant is a parent, socioeconomic status, partnered status, place of birth, international student status, and history of placement in foster care. Upon completion of the eligibility demographic sections, eligible participants were randomly assigned to one of three conditions; a familism-prime condition, an independence/self-reliance prime condition, and a control no-prime condition. At this point, the study survey began, and subjects were presented with their respective condition form.

Prime Manipulation

The translation and adaptation of the LYAS cultural prime paradigm stems from Mandel's (2003) self-construal prime manipulation known as the 'Purchase Recall Task'. From a consumer researcher lens, Mandel's (2003) Purchase Recall Task participants read the following:

“Recall something nice that you recently purchased for yourself [for a friend or family member] and describe how the recipient benefited from receiving this gift, as well as how you felt about giving it.”

I adapted the Purchase Recall Task to reflect a paradigm more geared towards familism values (i.e., family obligations), by rewording Mandel's (2003) instruction pronouns with the word's *family* and/or *family member* to mirror items presented on

different familism measures. Moreover, Oyserman and Lee's (2008) meta-analysis review of priming paradigms suggest interdependent pronouns (e.g., we, us, ours) to have significant influences on different study outcomes involving decision-making behaviors, thus suggesting nouns such as 'family' or 'family member(s)' to have similar effects.

Familism/Interdependent Prime: To prime familism/interdependent cultural values among subjects in the familism/interdependent-prime condition, the prime manipulation instructions in the current study read the following:

"For the next two minutes, please think of a time that you did something to help your *family*, or a specific *family member*. What did you do? How did it *benefit your family member*? How did it make you feel?"
 "Please write 1 - 2 sentences describing your answer in the text box below to move on with the survey."

Independence Prime: To prime self-reliance/independence cultural values among the self-reliant/independent prime condition, the instructions read:

"For the next two minutes, please think of a time that you did something to help *yourself*. What did you do? How did it *benefit you*? How did it make you feel?"
 "Please write 1 - 2 sentences describing your answer in the text box below to move on with the survey."

Control: The control no-prime condition was not presented with a prime manipulation prompt and instead was immediately presented with the manipulation check items before starting the delay discounting task.

Manipulation Check

After subjects in both conditions finished with their priming tasks, they were presented with an item from the familism measure (e.g., "How important is it to make sacrifices for the family?") and an item from the Singelis self-construal scale (e.g., "I enjoy being unique and different from others in many respects") which served as the

manipulation checks to test whether self-construal shifted as a function of respective prime conditions. I expected for the subjects in the familism/interdependent-prime condition to endorse higher values in familism when compared to the self-reliance/independence prime. Conversely, I expected for the subjects in the self-reliance/independence condition to endorse higher values on the dimension of independence when compared to the familism prime condition. Following the manipulation check, participants moved on to the MCQ and the rest of the survey battery.

Addressing Data Quality

Prior to launching the study survey for full data collection, a soft launch of the survey was conducted to obtain data from 10% of the total sample size to assess for initial discrepancies or issues. To increase the quality of our data, the survey was programmed to have page breaks between every three to five questions to reduce survey fatigue and programmed to enable forced responding on all items to prevent respondents from skipping through the survey. To assess for effort and attention, a speeding check (measured as one-half the median completion time) and attention checks (items asking participants to complete a math question [$2 + 2$] with a specific answer [i.e., 5]) were added to the survey to automatically flag and/or terminate participants who were not responding thoughtfully or attentively.

Careless and inconsistent responding was also examined for the MCQ and PDQ (for study 2) outcome variables by first identifying outliers in the dataset with longstring/straightlining responding. Participants who provided more than 39 consecutive answers that were the same (e.g., all first response option) were filtered out as outliers. Inconsistent responding was examined by calculating a consistency score based off the

degree to which participant's selections were consistent with response patterns preceding, as well as following, the switch from selecting the smaller immediate rewards to larger delayed rewards. Larger consistency scores indicate more consistent response patterns, whereas consistency scores less than 70% may indicate poor task effort. Accordingly, we excluded data when consistency scores for participants were less than 70%.

Measures

The current thesis project was designed for Study 2 to include many of the same variable measures that were included for Study 1. Except for the flanker task measure for Study 1, and the probability discounting questionnaire for Study 2, both studies include the same subset of variable measures. Instead of restating the same measure descriptions from Study 1, we present Table 3 in the current section to display a side-by-side comparison of the measures used in both studies, along with their respective reliability and validity information. Only the probability discounting questionnaire and the SES measures are described below since they were the only measures included for Study 2 that was not included for Study 1.

Table 3

Summary of measures from Study 1 (SAL) and Study 2 (LYAS) with psychometric properties.

Construct/Domain	Measure	Subscales	Cronbach's Alpha (SAL)	Cronbach's Alpha (LYAS)
<i>Impulsivity</i>				
Inhibitory control (resistance to distractor interference)	NIH Flanker Task (Eriksen, 1995; Zelazo et al., 2013)	-	-	-
Probability discounting	Probability Discounting Questionnaire (PDQ; Madden et al., 2009)	-	-	.91
Delay discounting	Monetary Choice Questionnaire (MCQ; Kirby et al., 1999)	-	.88	.90
<i>Cultural Values</i>				
Familism	Family Obligations (Fulgini et al., 1999)	Assistance	.74*	.86*
		Respect	.75*	.81*
		Future Support	.65*	.77*
Self-construals	Singelis self-construal scale (Singelis, 1994)	Full Scale	.66	.95
		Independence	.72	.91
		Interdependence	.58	.90
<i>Cultural Identification</i>				
Ethnic Identity	Multi-group Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007)	Full Scale	.80	.86
		Exploration	.71	.73
		Commitment	.72	.76
Biculturalism	Mexican American Biculturalism Scale (MABS; Basilio et al., 2014)	Bicultural Comfort	.82	.88
<i>Cultural Practices</i>				
Language use	Acculturation Rating Scale for Mexican Americans (ARSMA-II; Cuellar et al., 1995)	English use	.73	.76
		Spanish use	.78	.65

Note: Values with asterisk * denotes ordinal omega to represent internal consistency for the respective scales.

Probability Discounting (Probability Discounting Questionnaire [PDQ; Madden et al., 2009). The PDQ is composed of 30 preconfigured items of choices between two rewards that differ in size and the probability of their receipt (e.g., a certain \$50 vs. a .5 probability of \$100) across three 10-question blocks (block 1: \$20 guaranteed or a [10–83%] chance of \$80; block 2: \$40 guaranteed or a [18–91%] chance of \$100, block 3: \$40 guaranteed or a [40–97%] chance of \$60). All participants in the study will be presented with the same instructions for completing the PDQ. The procedure for calculating the h value for the PDQ is generally analogous to the k value of the MCQ, and uses the following equation (Rachlin et al., 1991):

$$V = A / (1 + hO),$$

where V is the subjective value of a probabilistic outcome of amount A , h is parameter analogous to k in the equation above and O is the odds against the receipt of a probabilistic outcome (where $O = (1/p) - 1$, and p is the probability of winning). Therefore, h and k are inversely related in terms of pathological choice patterns, higher h s = more risk averse and higher k s = more future discounting. The current study will use available R syntax presented by Gray and colleagues (2016) to calculate both MCQ and PDQ indices of interest.

Socioeconomic stress. Given the variability in living situations among college-student samples across the U.S (Carter et al., 2010), in addition to the unprecedented events caused by a pressing global pandemic, assessment of SES may be difficult.

Measures aimed to assess SES among adults may not fully capture the complexity of financial stability that is occurring in present day society, thus one well-established approached towards indexing SES is by examining financial strain (Angel et al., 2003).

Accordingly, the current study analyzed financial strain (1 = *has more money than needed*, 2 = *just enough money for needs*, and 3 = *not enough money to meet needs*) as an indicator variable for SES.

Data Analysis Plan

The present study separately analyzed data from two the two different samples given that different data collection and sampling methods were used. All data was analyzed using the R statistical software program (R Core Team, 2019). Sample demographic characteristics for both studies were reported based on the final data set samples. The SAL and LYAS study datasets were designed to answer Aims 1 and 2 of the current thesis project. However, only the Study 2 LYAS dataset was used to test Aim 3 regarding the priming manipulation.

Covariates

Given the diverse demographic characteristics of Latinxs living in the U.S and its impact on different health related outcomes (Schwartz et al., 2010), we included age, participant sex, nativity, and SES as covariates for both the SAL and LYAS study datasets. Calculation of SES was the only difference among the covariates between both study samples, such that household crowding was used an indicator of SES for the SAL study and past month financial strain as the indicator of SES for the LYAS study.

Aim 1 analysis plan

The first overall aim addressed whether performance on behavior-based tasks measures of impulsivity varied as a result of nativity (i.e., U.S-born or foreign-born) and psychological aspects of cultural identity (i.e., familism, interdependent/independent self-

construals, language use, and ethnic identity). To answer Aim 1, two separate independent group t-tests analyses were conducted for each sample (SAL and LYAS). Nativity status (U.S. versus foreign-born) was entered as the independent group variable. The dependent variables included the two respective tasks measures from each dataset, the flanker task and MCQ for SAL and the MCQ and PDQ for LYAS. Next, I examined zero-order associations between different aspects of culture and performance on behavior-task measures of impulsivity.

Aim 2 analysis plan

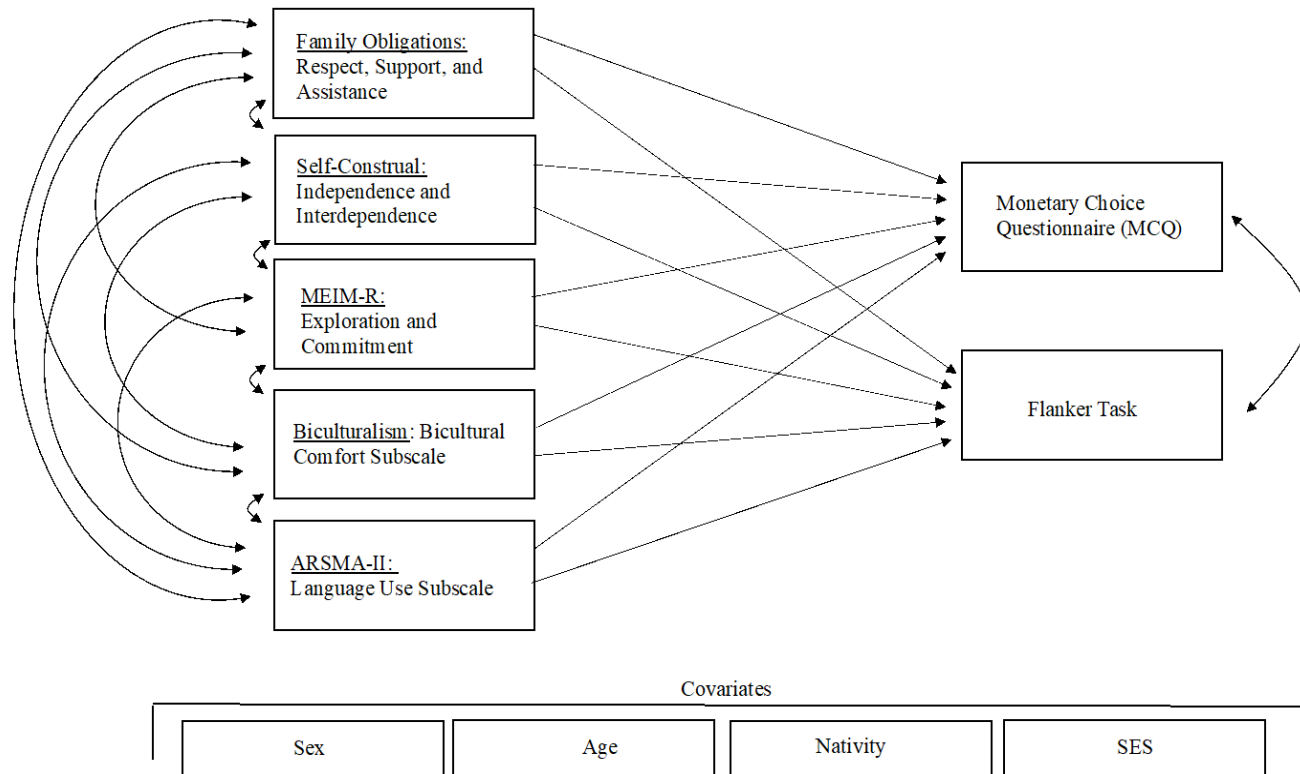
The second aim was tested using path analysis to model the unique associations between cultural dimensions (i.e., familism, interdependent versus independent self-construal, language use, and ethnic identity) and performance on the different task measures of impulsivity. Each of our models adjusted for sex (0 = *female*, 1 = *male*), age (13-18 for SAL and 18-25 for LYAS), nativity (1 = *born outside of the U.S.*, 2 = *born in the U.S.*), household crowding (from SAL sample), and financial strain (from LYAS sample). We also ran a covariate only path analysis to explore potential associations between our covariates and primary outcome variables. See Figure 2 and Figure 3 for path analysis models.

Aim 3 analysis plan

To test the final aim, a one-way ANOVA was used to determine if the effect size for the prime manipulation was large enough to demonstrate significant statistical differences between the three prime condition.

Figure 2

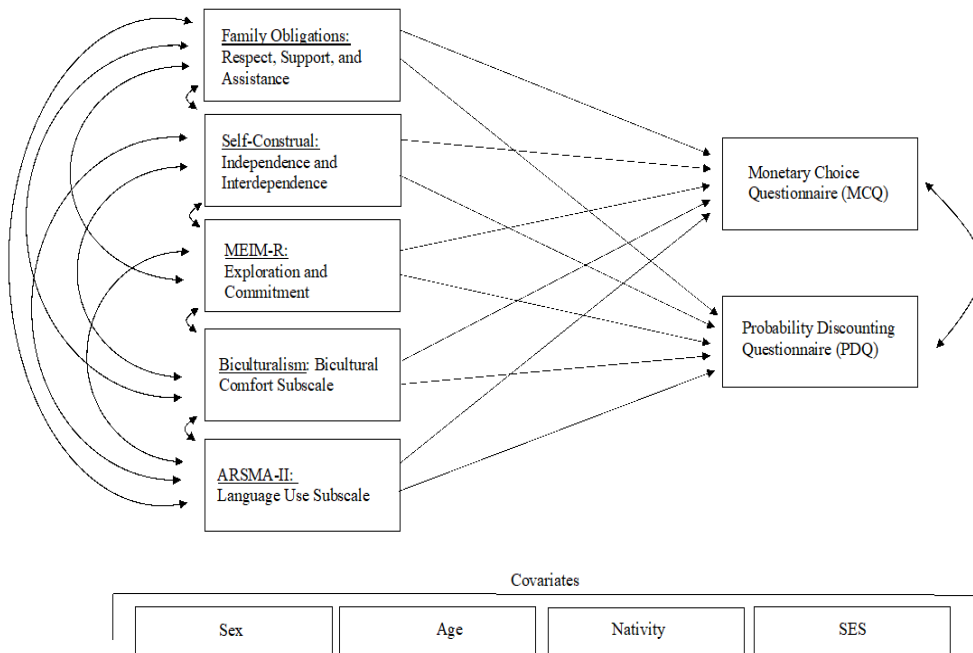
Hypothesized model for SAL: Cultural factors associated with behavior-based measures of impulsivity



Note. This figure shows the pathways in the model, excluding path connected to the covariates. No results are portrayed.

Figure 3

Hypothesized model for LYAS: Cultural factors associated with behavior-based measures of impulsivity



Note. This figure shows the pathways in the model, excluding path connected to the covariates. No results are portrayed.

CHAPTER IV

RESULTS

Flanker and MCQ Scores - SAL

Due to missing data on the Flanker task (arising from NIH toolbox app malfunction, or RA error), data from $n = 77$ was available from the full SAL sample. Our results indicated that the mean for the age corrected standard score of the current SAL sample was ($M = 97.6$, $SD = 14.7$, range: 75 - 128). Scores of 115 or 85 would indicate that the participant's performance is 1 standard deviation above or below the national average (100), respectively. Accordingly, adolescents in our study were, on average, within one standard deviation of the national average for the Flanker task. Due to our positively skewed sample distribution of the MCQ k values (very high ratios of their highest to lowest values), we did not use raw k values for our analysis. Instead, a natural logarithmic transformation was employed to normalize the distributions to calculate logged discounting rates (Kirby and Marakovic, 1996). The calculated mean k values for the SAL dataset sample was ($M = 4.6$, $SD = 1.5$) which are rates of discounting that are consistent, but in the opposite direction with previous studies using adolescent samples. Among a large sample of adolescents participating in a longitudinal study, Wang and colleagues (2016) reported logged mean k values for their sample to be ($M = -4.85$, $SD = 1.4$). Though the mean k scores reported by Wang et al (2016) are in the negative direction, this may be due to differences in our calculation of the log transformation. Our data analysis did not indicate any of the participants data consistency to pose values

under .70 and so no participants were filtered from this dataset. Cronbach alphas showed good internal consistency for the MCQ ($\alpha = 0.88$)

MCQ and PDQ Scores - LYAS

The calculated MCQ mean k and PDQ h values for the LYAS dataset sample was ($M = 3.5$, $SD = 1.9$) and ($M = 0.9$, $SD = 0.8$), respectively. These rates of discounting for our LYAS dataset sample are consistent with previous studies using logged mean k and h values. However, similar to the MCQ k scores that were calculated for SAL, the log transformation that was performed for the MCQ mean k scores for LYAS resulted in scores that were not negative. Jarmolowicz et al. (2017) used an internet-based platform (Amazon Mechanical Turk) to examine delay and probability discounting rates among a large sample of young adults and reported logged k values to be ($M = -4.23$; $SD = 1.2$) and logged h values to be ($M = .85$; $SD = 0.7$) with Cronbach alphas in the good-to-acceptable range (DD: $\alpha = 0.89$; PD: $\alpha = 0.72$). Cronbach alphas for the current study showed greater internal consistency for both the MCQ ($\alpha = 0.90$) and PCQ ($\alpha = 0.91$). The calculation of the consistency values under .70 allowed us to consider the quality and pattern of the data responses for the purpose of our analysis and study questions. Accordingly, we filtered out $n = 8$ participants for the MCQ and $n = 25$ participants for the PDQ with consistency values lower than 70%.

Descriptives and Bivariate Correlations - SAL

Descriptive statistics were run based on the data set with all participants included ($N = 92$). Covariates for the SAL study across the first two aims included sex, age, SES (household crowding), and nativity. The distribution of household crowding for the

current SAL dataset sample showed participants on the lower limit of the distribution to report approximately one person per room whereas participants on the higher end of the distribution reported approximately 3 people per room. Among the covariates of the SAL sample, only SES was found to have a negative association with MCQ performance that was marginally significant ($p = .05$). Results from the SAL dataset sample demonstrated no other significant associations between the covariates, different aspects of culture, and task performance on both the Flanker and MCQ outcome measure (see Table 4).

Table 4*Correlations and Descriptive Statistics for Study 1 - SAL*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Flanker (mean score)	--															
2. MCQ (mean score)	.04	--														
3. Familism (respect)	-.13	.09	--													
4. Familism (support)	-.09	-.1	.54**	--												
5. Familism (assistance)	-.22	-.02	.12	-.09	--											
6. Self-Construal (Independ)	-.22	-.04	.26	-.02	.57**	--										
7. Self-Construal (Interdepend)	-.04	.12	.26	.07	.16	.23	--									
8. Bicultural Comfort	.15	.14	.11	-.3*	.26	.14	.27*	--								
9. MEIM-R (exploration)	-.07	-.1	.16	.11	.32*	.51**	.19	-.07	--							
10. MEIM-R (commit)	0	-.07	.18	.24	.21	.3*	.23	-.04	.61**	--						

11. English Language use	.07	-.1	.27`	.23	.19	.4	.07	-.06	.31*	.47**	--					
12. Spanish Language use	.11	-.01	.08	-.16	.29*	.1	.12	.3*	-.02	.06	-.12	--				
13. Nativity	.13	-.06	.17	-.02	-.12	.15	-.01	-.12	-.03	-.06	.33	-.17	--			
14. Age	.22	-.16	.04	-.2	.06	.1	-.17	.05	.03	-.07	.12	-.06	.18	--		
15. Participant Sex	-.17	.26	-.04	.03	-.04	-.16	-.17	.01	-.08	-.04	-.15	-.01	-.01	-.07	--	
16. SES	-.07	-.27`	.05	.14	.06	-.19	.02	-.13	-.17	-.01	.05	.08	-.28*	-.06	-.05	--
<i>Mean</i>	97.6	4.6	4.2	3.5	3.6	5.4	5.1	2.2	3.7	3.9	3.4	4.5	.1	15.5	.6	1.1
<i>SD</i>	14.7	1.5	.5	.7	.6	.6	.5	.8	.7	.6	.8	.5	.3	1.7	.5	.3

Note. Nativity was dummy coded to be included in this table (0 = United States; 1 = Other country). *SD* = standard deviation.

`*p* = .05. **p* < .05. ***p* < .01

Descriptives and Bivariate Correlations - LYAS

Descriptive statistics were run based on the data set with all participants included ($N = 278$). Covariates for the LYAS study across all three aims included sex, age, SES (financial strain in past month), and nativity. Among the covariates for the LYAS sample, nativity was found to have a positive association with PDQ performance ($r = .13, p < .05$) such that being born in another country was significantly associated with greater preference for less risk averse choice (i.e., greater h values; greater discounting of probabilistic losses; less risk-decision making) when presented with two probabilistic choices. Moreover, participant sex was found to have a negative association with MCQ performance that was statistically significant ($r = -.16, p < .05$). Specifically, we found participants who did not identify as male to demonstrate significant preference for larger more delayed rewards (i.e., lower k values; lower discounting of smaller more immediate rewards; *less* impulsive decision making).

The bivariate correlations between the LYAS outcome and predictor variables can be found on Table 5. Results showed significant associations between several aspects of culture and task performance on both the MCQ and PDQ. Specifically, only Spanish language use, as measured by the Language subscale of the ARSMA-II, was found to be negatively associated with rates of delayed discounting on the MCQ ($r = -.13, p < .01$). Our results demonstrated higher preference/frequency for Spanish language use to have significant associations with preference for larger more delayed rewards (i.e., lower rates of discounting). No other significant associations were observed between MCQ performance and our other predictor variables (see Table 5.). Contrary to our hypothesis, we found significantly negative associations between rates of probability discounting

(i.e., preference for more risk averse choice) on the PDQ, our second outcome variable, and familism respect ($r = -.16, p < .05$) and bicultural comfort ($r = -.21, p < .001$). These relationships suggest stronger endorsement of familism respect, as well as bicultural comfort, to be significantly related with decreases in one's tendency to discount the negative value of probabilistic losses, also described as a preference for more risk-taking choices on the PDQ and represented by lower h values. No other significant associations were observed between PDQ performance and predictor variables (see Table 5).

Table 5*Correlations and Descriptive Statistics for Study 2 – LYAS/*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. MCQ (mean score)	--															
2. PDQ (mean score)	-.09	1.00														
3. Familism (respect)	.03	-.16*	--													
4. Familism (support)	.03	-.1	.66**	--												
5. Familism (assistance)	.09	-.09	.56**	.46**	--											
6. Self- Construal (Independ)	-.06	-.06	.41**	.24*	.33**	--										
7. Self- Construal (Interdepend)	-.04	-.06	.46**	.37**	.4**	.8**	--									
8. Bicultural Comfort	-.08	-.21**	.19	.02	.18	.3**	.19	--								
9. MEIM-R (exploration)	.08	-.11	.45**	.36**	.39**	.41**	.45**	0.1	--							

10. MEIM-R (commit)	.06	-.05	.43**	.36**	.37**	.43**	.43**	0.12`	.75**	--						
11. English Language Use	-.07	-.11	.28**	.13*	.29**	0.4**	.34**	.27**	.2	.17*	--					
12. Spanish Language Use	-.13*	.01	.25	.28**	.14*	.23**	.28**	.01	.24**	.26**	.02	--				
13. Age	.05	-.01	.18	.13*	.14*	.09	.09	.09	.06	.02	.01	.05	--			
14. Nativity (U.S)	-.02	.13*	.04	-.04	-.03	.05	.01	.01	-.08	-.08	-.05	.11	.11	--		
15. Participant sex	-.16*	.08	.1	.09	.05	.01	-.01	-.07	.14*	.18	.11	.08	-.06	-.15*		
16. SES	-.02	-.01	.04	.01	.08	.05	0	.08	-.01	-.06	.08	-.02	.12*	.17	.06	
M	3.5	.9	3.8	3.6	3.4	4.7	4.6	3.4	3.6	3.7	4.4	3.5	21.3	.2	.4	2.3
SD	1.8	.8	.8	.9	.8	1.1	1.1	1.2	1.0	.9	.7	1.0	2.4	.4	.5	1.0

Note. Nativity was dummy coded to be included in this table (0 = Other country; 1 = United States).

* $p < .05$; ** $p < .01$

Aim 1: T-tests

The first overall aim of the current thesis study was to test for potential differences in task performance based on nativity status. Using the SAL dataset sample, our independent group t tests analysis did not find evidence of a difference in mean performance based on nativity status for the Flanker task $t(12.561) = 0.21, p = .084$ or for the MCQ k index $t(12.529) = -.07, p = 0.94$ (see Table 6 for additional t tests statistics). Effect sizes for these mean differences are reported as Cohen's d . For the difference in mean performance on the Flanker task, our results indicated a Cohen's effect size value ($d = .08$) which suggests nativity status to have little to no effect. Similarly, for the difference in mean performance on the MCQ, our results indicated a Cohen's effect size value ($d = -.03$) which suggests nativity status to have little to no effect. I further assessed for differences in other cultural variables based on nativity status for the SAL dataset sample but found no differences that met statistical significance. The nonsignificant findings between nativity status and task performance suggest that among an adolescent sample of Latinx youth, birthplace origin did not have meaningful influences on performance scores for the Flanker and MCQ measures.

Among the young adult participants from the LYAS dataset sample, similar results were found such that independent group t tests did not find evidence of a significant difference in mean performance by nativity status for the MCQ k index $t(77.65) = -.50, p = .062$ or for the PDQ h index scores $t(73.72) = -1.82, p = .46$. The violin plots on Figure 4 shows the distribution of logged MCQ mean k scores by nativity status group (i.e., foreign-born and U.S-born group). As shown in Figure 4, there is no statistically significant difference in mean k scores between the two groups. shows little

to no difference in mean scores between the groups. A similar pattern can be observed on Figure 5 which shows the distribution of logged PDQ mean h scores by nativity status group. Although Figure 5 displays a difference between PDQ h scores slightly larger than what was observed for Figure 4, the higher PDQ h score shown for the U.S-born group was not found to be statistically different from the lower PDQ h scores of the foreign-born group.

Indeed, the nonsignificant differences in mean performance that were found for both the SAL and LYAS dataset samples suggest that birthplace origin is a dimension of culture with no statistically meaningful influence on different behavior tasks of impulsivity for the current study. As stated previously, effect sizes for these mean differences are reported as Cohen's d . For the difference in mean performance on the MCQ, our results indicated a Cohen's effect size value ($d = -.07$) suggesting nativity status to have a very small effect. For the difference in mean performance on the PDQ, our results indicated a Cohen's effect size value ($d = -.27$) which according to Funder and Ozer, indicates a small effect size (Funder & Ozer, 2019). Lastly, I assessed for further potential differences in other cultural variables based on nativity status using independent group t tests. Likewise, I found no evidence of a significant difference in other cultural variables based on nativity status (see Table 7 and Figures 5 and 6 for additional t tests statistics)

Table 6*Results of t-tests for Flanker and MCQ scores by Nativity – Study 1 (SAL)*

Outcome	Group				95% CI for Mean Difference	<i>t</i>	df
	United States		Other country				
	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>			
Flanker task	97.48	64	98.64	11	[-10.82, 13.12]	.21	12.561
MCQ	4.64	72	4.60	11	[-1.24, .1.15]	-.07	12.529
Respect	4.15	77	4.31	12	[-.12, .44]	. 1.23	15.94
Support	3.47	77	3.31	12	[-.54, .21]	-.94	16.461
Assistance	3.61	77	3.45	12	[-.53, .22]	-.89	14.627
Independence Self	5.32	62	5.41	10	[-.31, .51]	.511	13.413
Interdependence Self	5.13	61	4.97	11	[-.53, .21]	-.94	13.257
Bicultural comfort	2.29	78	1.98	12	[-.83, .19]	-1.32	15.386
Exploration	3.67	67	3.58	12	[-.42, .25]	-.52	20.848
Commitment	3.94	68	3.61	12	[-.74, .08]	-1.69	14.863
English Use	3.26	68	3.67	12	[-.16, .98]	1.54	14.448
Spanish Use	4.49	69	4.25	12	[-.73, .25]	-1.05	12.26

Table 7*Results of t-tests for MCQ and PDQ by Nativity – Study 2 (LYAS)*

Outcome	Group				95% CI for Mean Difference	<i>t</i>	df
	United States		Other country				
	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>			
MCQ	3.49	224	3.36	46	[-.61, .37]	-0.50	77.65
PDQ	.88	208	.78	45	[-.41, .02]	-1.82	73.72
Respect	3.84	231	3.92	47	[-.17, .33]	.66	67.99
Support	3.66	231	3.55	47	[-.40, .19]	-.72	64.67
Assistance	3.47	230	3.39	47	[-.32, .16]	-.65	69.99
Independence	4.64	231	4.81	47	[-.18, .52]	.95	68.77
Interdependence	4.60	231	4.64	47	[-.28, .35]	.32	71.99
Bicultural comfort	3.44	231	3.48	47	[-.34, .42]	.23	67.13
Ethnic identity-Exploration	3.59	230	3.39	47	[-.55, .15]	-1.13	60.12
Ethnic identity-Commitment	3.72	230	3.54	47	[-.51, .15]	-1.09	59.68
English Use	4.39	231	4.30	47	[-.31, .13]	-.84	63.86
Spanish Use	3.46	231	3.75	47	[-.03, .61]	1.82	66.61

Figure 4

Differences in mean MCQ k performance scores by nativity – Study 2 (LYAS)

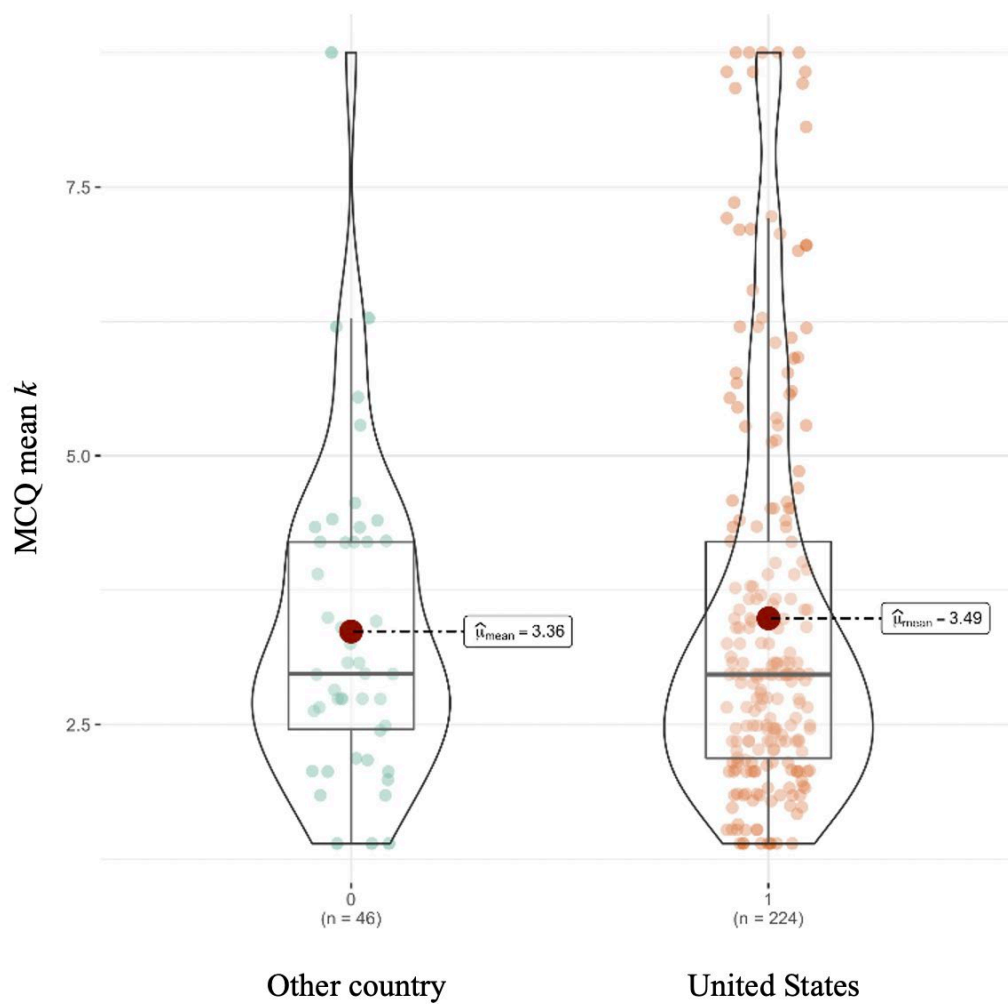
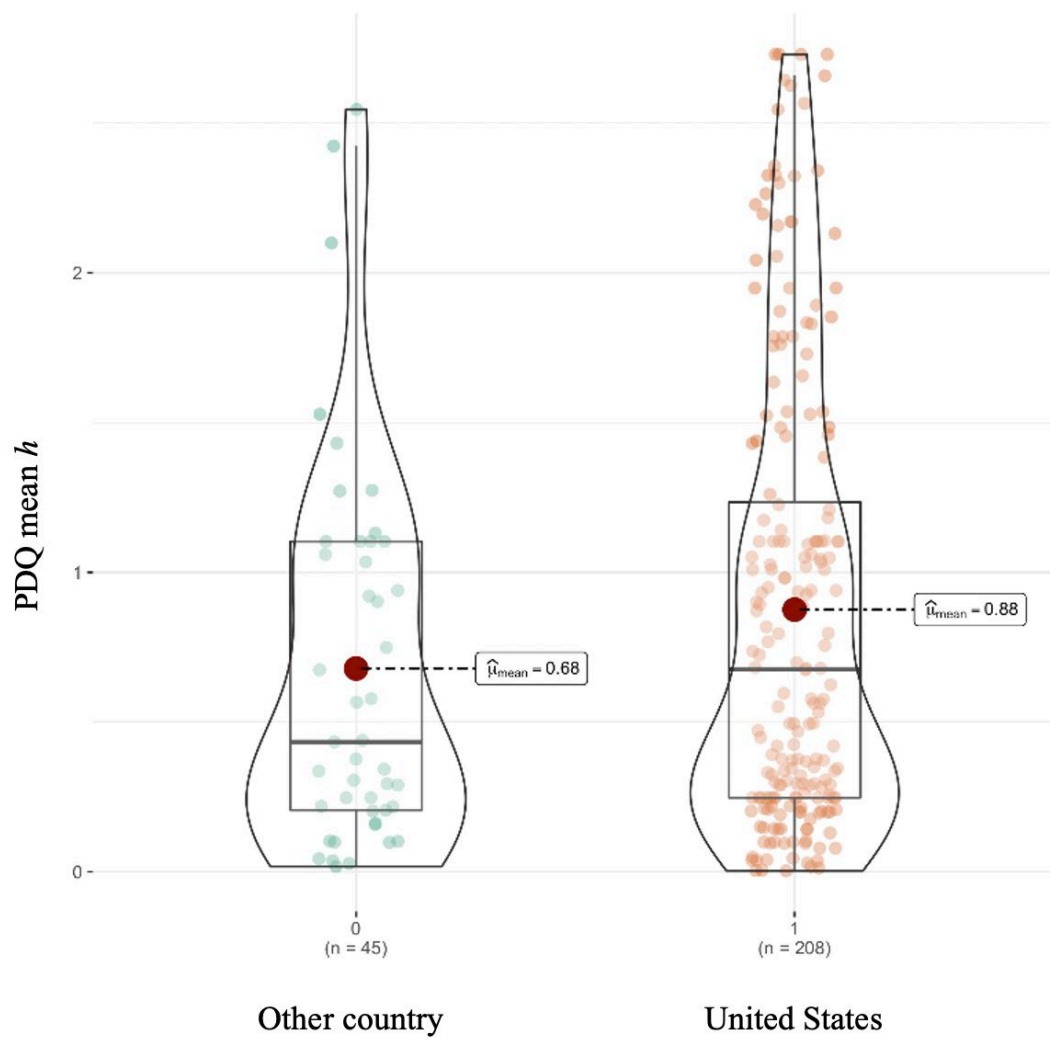


Figure 5

Differences in mean PDQ h performance scores by nativity – Study 2 (LYAS)



Aim 2: Path Analysis

The study's second overall aim was to model the associations between different aspects of culture (i.e., familism, interdependent versus independent self-construal, language use, and ethnic identity) as the predictor variables, and performance on the different tasks measures as the outcome variables. I first ran a covariate only path analysis to explore potential associations between our covariates and primary outcome variables. Our covariate only path models for the SAL dataset sample demonstrated participant age to be positively associated with inhibitory control capacities (i.e., resistance to distractor interference) on the Flanker ($b = 2.9, p < .05$). For participant sex (1 = female, 2 = male), females of the SAL sample had lower rates of discounting on the MCQ when compared to males ($b = -.69, p < .05$). Similarly, our covariate path analysis for LYAS found females to have lower rates of discounting on the MCQ when compared to males ($b = -.58, p < .05$). No other covariates for LYAS were found to have significant associations with rates of probability discounting on the PDQ.

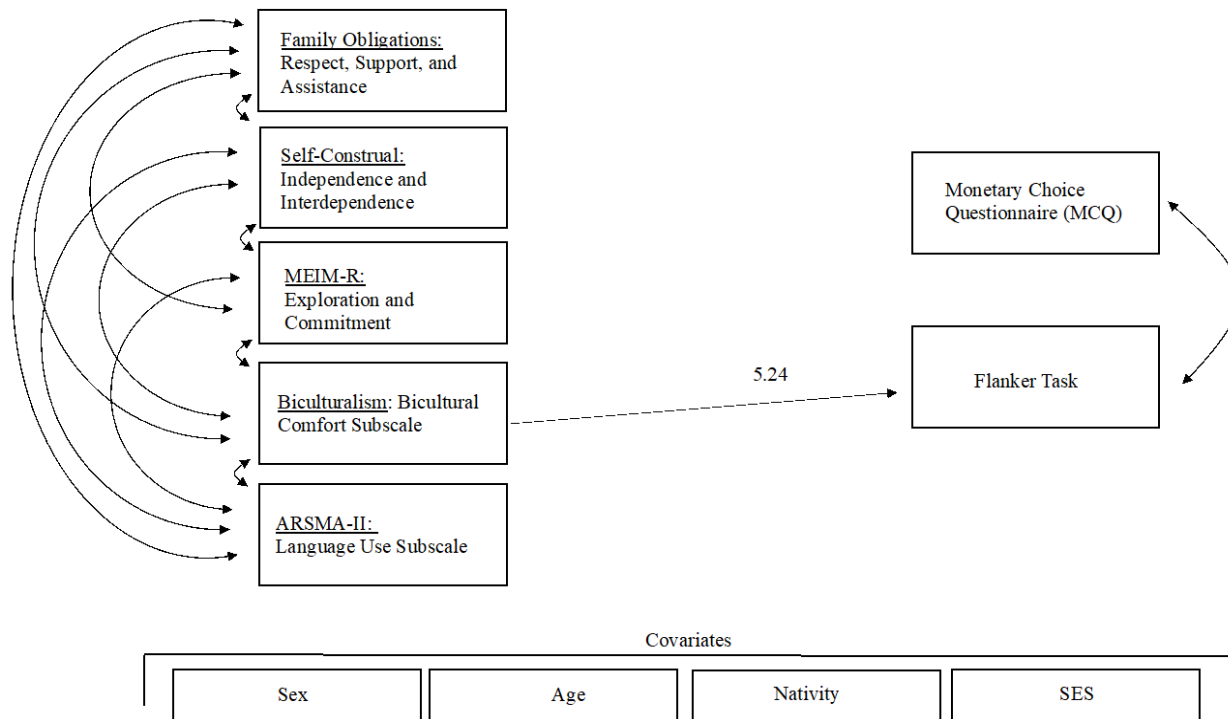
For both SAL and LYAS dataset samples, path analyses were conducted with each model adjusting for participant sex, age, nativity, and SES. Path analysis results for the SAL dataset found evidence of a significantly positive association between bicultural comfort and Flanker task performance ($b = 5.24, p < .05$; see Figure 4), adjusting for other cultural dimensions and covariates. These findings indicate that for every one unit increase in bicultural comfort, there is a 5.24 score increase in Flanker task performance. No other significant associations were observed.

Path analysis results for the LYAS dataset sample revealed significant negative associations between Spanish language use and performance on the MCQ ($b = -.31, p <$

.01), as well as bicultural comfort and performance on the PDQ ($b = -.12, p < .01$; see Figure 5) adjusting for other covariates. All other associations between the cultural predictors and the MCQ and PDQ performance outcome variables were not significant. Although findings from the path analysis demonstrated Spanish language use and bicultural comfort to have significant associations with performance on the MCQ and PDQ, the results should be interpreted with caution since the natural log transformation changes the coefficient estimate for both the MCQ and PDQ to approximate a percent change in outcome.

Figure 6

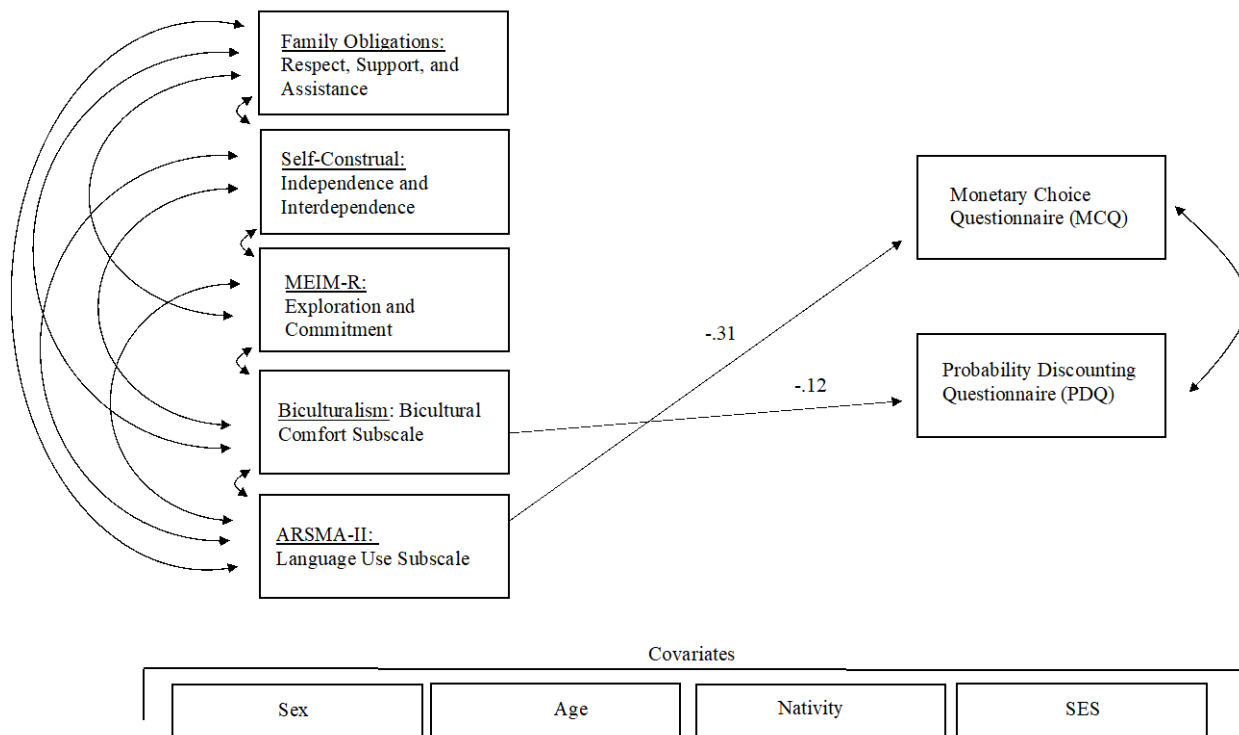
Results of Path Analysis Model for SAL: Cultural factors associated with behavior-based measures of impulsivity



Note. This figure shows the significant pathways in the model, excluding path connected to the covariates.

Figure 7

Path Analysis Model for LYAS: Cultural factors associated with behavior-based measures of impulsivity



Note. This figure shows the significant pathways in the model, excluding path connected to the covariates.

Aim 3: ANOVA

A one-way ANOVA was performed to test the hypothesis that mean scores in task performance of the three prime conditions (Control, Familism, and Individual) would be significantly and statistically different following the prime manipulation. To answer this last aim, only the LYAS dataset sample was analyzed with the sample mean differences in task performance by condition group found on Table 8 and Figures 11 and 12. The violin plot on Figure 11 shows the distribution of logged MCQ mean k scores across the three prime conditions following the prime manipulation and illustrates a pattern in MCQ scores that lends partial support to our hypothesis predicting participants in the familism/interdependent prime condition to have greater preference for larger delayed rewards (i.e., lower rates of delay discounting represented by lower k values) when compared to participants in the independent prime condition.. On the other hand, Figure 12 displays a pattern of distributed mean logged PDQ h scores that are inverse to the scores found for the MCQ, but also in partial support of our hypothesis predicting greater preference for less risk averse choices (i.e., higher rates of probability discounting represented by higher h values) among the participants in the familism/interdependent prime condition when compared to participants in the independent prime condition.

The distribution of recorded responses for the manipulation check items that were conducted for aim 3 are shown Figures 9 and 10. As displayed in Figure 9, the difference in mean scores (across all three conditions) for the independence manipulation check item indicate no statistically significant difference. The homogeneity observed in these scores suggest that the manipulation from the independence prime prompt did not have a

significant effect on the participant's responding respective of their condition. Similarly, Figure 10 displays the differences in mean scores (across all three conditions) for the familism/interdependence manipulation check item and also show no evidence of a statistically significant difference, suggesting the familism/interdependent prompt to also have no significant effects on how the participants responded.

Our one-way ANOVA yielded no significant effect of the prime condition on task performance means for both the MCQ ($F(2, 267) = 2.87, p = .06$; see Table 9) and PDQ performance ($F(2, 250) = 2.08, p = .13$; see Table 10). Our results also yielded an eta squared effect size ($\eta^2 = .02$) suggesting 2% of the variance in MCQ and PDQ scores to attributable the prime condition they were in. According to Funder and Ozer (2019), an effect size of this magnitude would equate to $r = .14$ and indicate the effect size of our manipulated conditions to be small "at the level of single events" (p. 156). Due to no statistical differences observed across the prime conditions, I did not run post hoc tests. See appendix for group-difference figures.

Figure 8

Independence manipulation Check Items for Prime Conditions

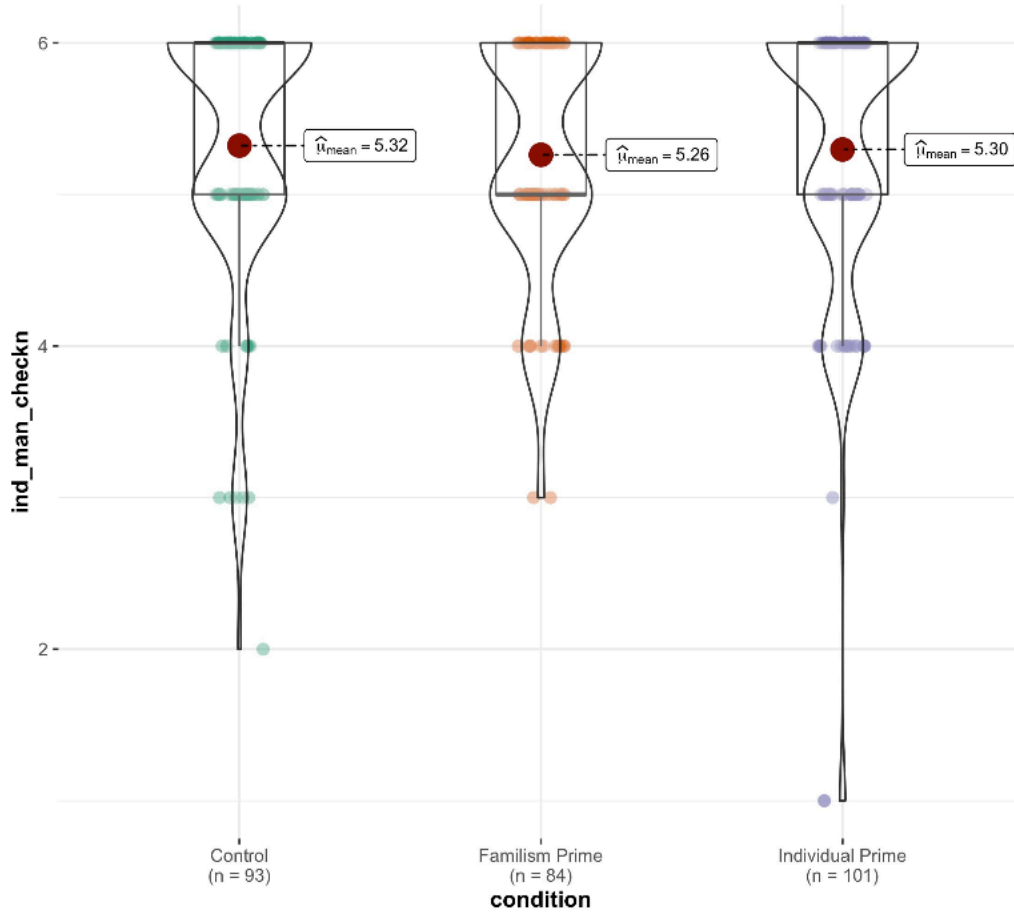


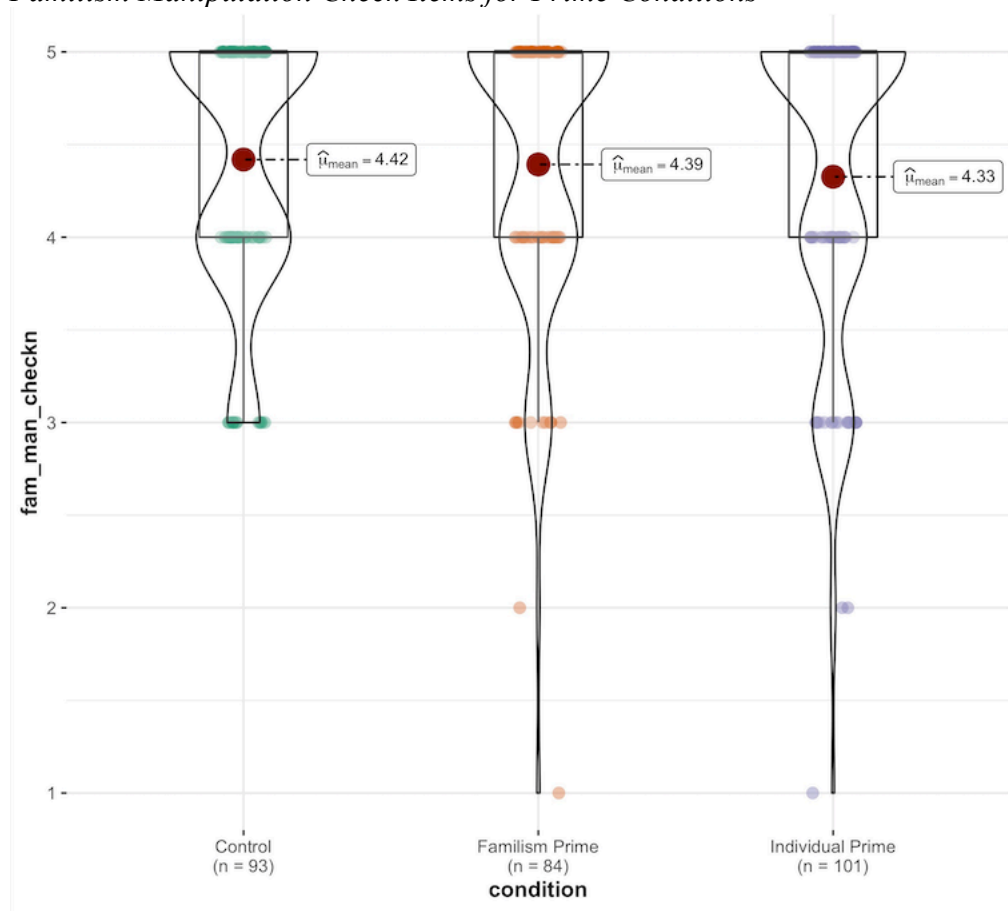
Figure 9*Familism Manipulation Check Items for Prime Conditions*

Table 8

Mean differences in task performance on both MCQ and PDQ by prime condition.

Outcome	Familism Prime		Conditions		Independence Prime	
			Control			
	<i>M/(SD)</i>	<i>n</i>	<i>M/(SD)</i>	<i>n</i>	<i>M/(SD)</i>	<i>n</i>
Monetary Choice Questionnaire	3.36(1.60)	83	3.20(1.59)	88	3.79(2.01)	99
Probability Discounting Questionnaire	.85(.74)	76	.96(.82)	84	0.73(.64)	93

Table 9

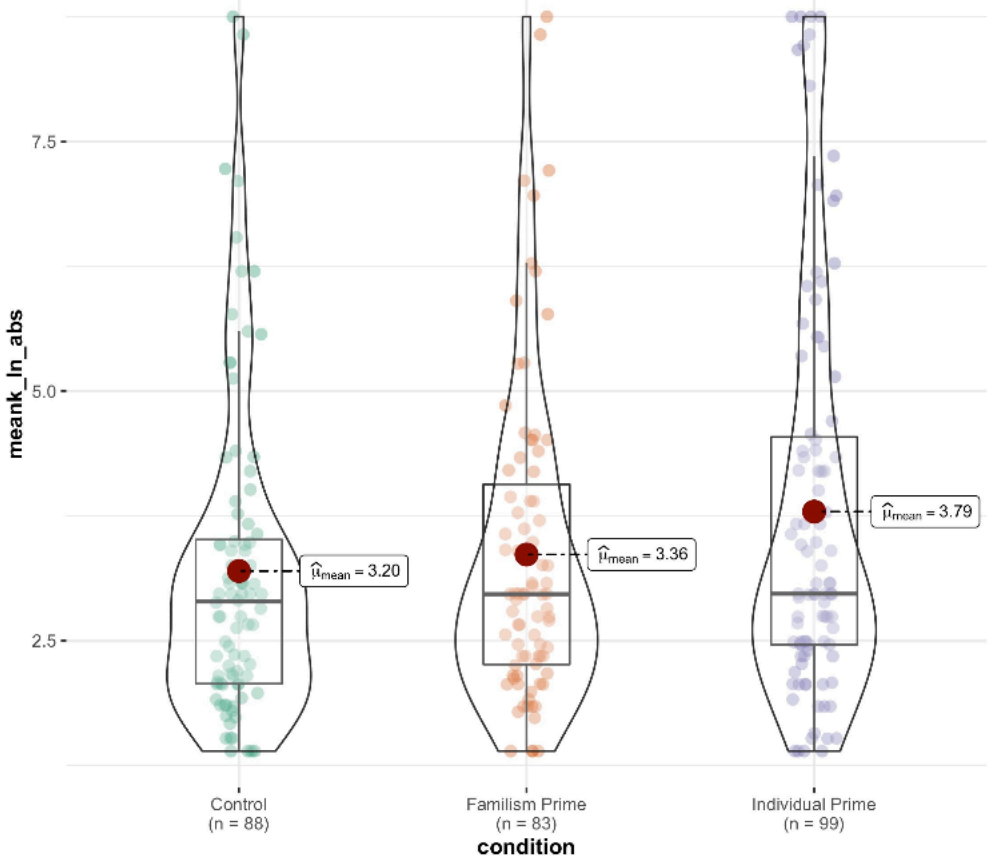
*Fixed-Effects ANOVA results using MCQ mean *k* value as the criterion*

Predictor	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	partial η^2	partial η^2 90% CI [LL, UL]
(Intercept)	899.34	1	899.34	289.74	.000		
condition	17.81	2	8.90	2.87	.059	.02	[.00, .05]
Error	828.74	267	3.10				

Note. LL and UL represent the lower-limit and upper-limit of the partial η^2 confidence interval, respectively.

Figure 10

Mean difference in task performance on MCQ by prime condition.



Pairwise test: **Games-Howell test**; Comparisons shown: **only significant**

Table 10

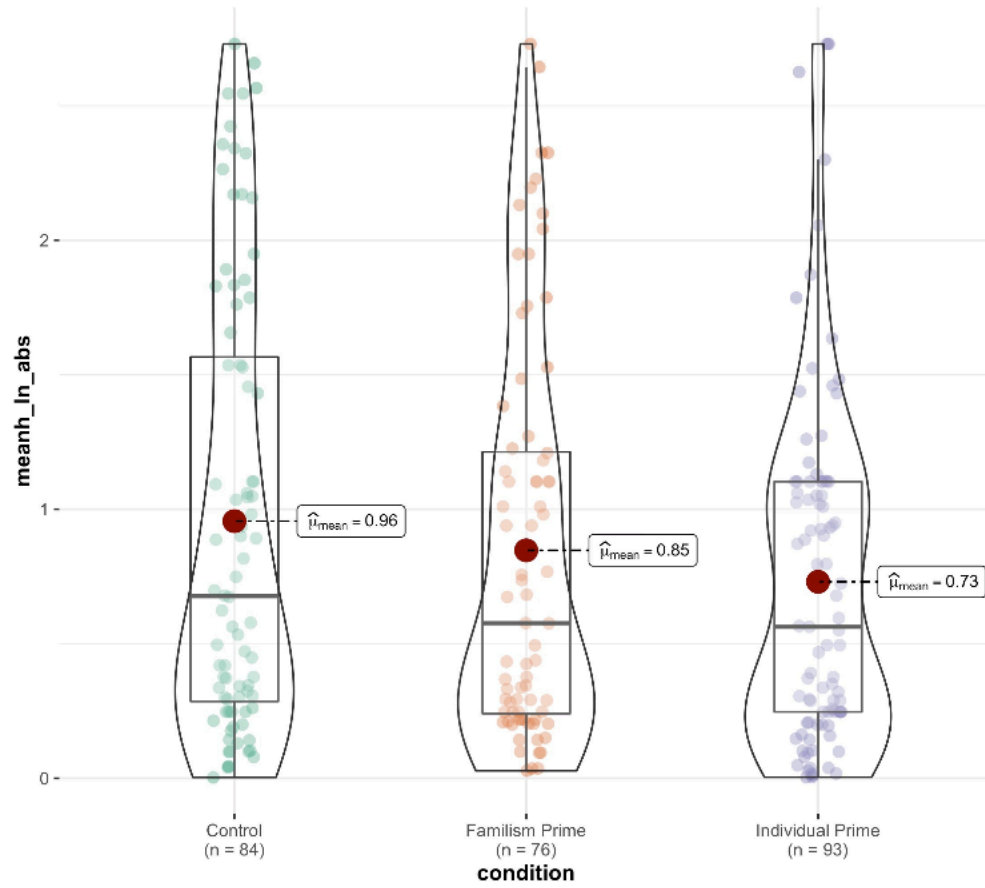
Fixed-Effects ANOVA results using PDQ mean h value as the criterion

Predictor	Sum of Squares	df	Mean Square	F	p	partial η^2	partial η^2 90% CI [LL, UL]
(Intercept)	76.74	1	76.74	142.58	.000		
condition	2.24	2	1.12	2.08	.127	.02	[.00, .05]
Error	134.55	250	0.54				

Note. LL and UL represent the lower-limit and upper-limit of the partial η^2 confidence interval, respectively.

Figure 11

Mean difference in task performance on PDQ by prime condition.



Pairwise test: **Games-Howell test**; Comparisons shown: **only significant**

CHAPTER IV

DISCUSSION

The overarching aim of this study was to investigate how different domains of one's cultural identity influenced performance on behavior-based measures of impulsivity among a population of Latinx adolescents and emerging adults. Prior research examining the relationship between cultural values and risk-taking behaviors has demonstrated stronger endorsement of familism related values is associated with more optimal performance on a risk-taking task (Telzer et al., 2013). More broadly, studies that have found the strong endorsement of heritage cultural values tends to be associated with fewer adolescent externalizing behaviors (Wheeler et al., 2017). Despite this knowledge, much of this research has been limited to child and/or adolescent samples and few studies have sought to examine the associated direct effects of other important cultural values on different behavior-based tasks of impulsivity. Accordingly, the present study endeavored to examine the direct associations between cultural identity domains such as cultural practices (i.e., language use), ethnic identification, and interdependent/independent self-construal with different dimensions of impulsivity. The current study used the Flanker task to examine inhibitory control processes of impulsivity as well as delay and probability discounting tasks to measure rates of discounting as decision-making processes of impulsivity. I sought to answer the overall aims of the present study by analyzing the data of two datasets that were different in participant characteristics (age) and data collection method, but almost identical in the variables that were collected.

Prior research among Latinx groups has proposed acculturation to U.S culture, as measured by demographic “proxy” indicators (i.e., place of birth, generational status; Alegria et al., 2007; Schwartz et al., 2015) to serve as risk factors for maladaptive outcomes (Gonzalez, Wahl, and McNulty Eitle, 2010; Schwartz et al., 2015). Accordingly, when compared to participants of foreign-born status with greater orientation to Latinx ethnic heritage, I predicted U.S born participants in both our study dataset samples to have lower inhibitory skills demonstrated by lower scores on the Flanker task, higher rates of delay discounting (greater preference for smaller and more immediate rewards) demonstrated by higher k value scores on the MCQ, and lower rates of probability discounting (greater preference for probabilistic losses that reflect riskier choices) demonstrated by lower h values on the PDQ. Conversely, we predicted reversed scores for participants who reported foreign-born status and/or reported stronger identification with Latinx ethnic heritage.

Findings for aim 1 of the current study did not find evidence to support our first hypothesis. Furthermore, nativity status was also not observed to have significant effects on any of the cultural domains that were included for the current study. Although reporting of nativity status allowed us to identify participants of first- or second-generation immigrant status, it may also be worth considering the amount years one has been living in the U.S given previous work finding immigrants’ mental and physical health to generally decline with increasing exposure to U.S culture and with successive generations in the U.S (Franzini et al. 2001). Nonetheless, our findings do not lend support to the notion that delay and probability discounting are decision-making processes that are uniquely and independently influenced by factors related to one’s

ethnic national orientation (Du et al., 2002). The null findings may indicate that U.S-born nativity status may have no risk-enhancing effects on decision-making behaviors involving inhibitory control and delay or probability discounting processes. It seems possible that the underlying processes of impulsivity, as measured by behavioral tasks used for the current study, are not sensitive to one's national birthplace of origin. Another possible explanation can be that U.S exposure for the study dataset samples, perhaps may have encouraged aspects of biculturalism that promote more adaptive decision-making processes (Nguyen & Benet-Martinez, 2013; Paap, 2018) and thus buffer the potential risk effects of American cultural orientation for U.S-born Latinxs.

The second aim of the present study sought to extend limited prior research on cultural factors and behavior task measures of impulsivity (Telzer et al., 2013). Contrary to my hypothesis and previous research findings, cultural values related to familism were not found to be significantly associated with any of the study's task measures for either the adolescent or young adult samples. However, in both our samples, increases in bicultural comfort was found to be significantly and uniquely associated with specific dimensions of impulsivity respective of dataset sample. That is, adolescents from the SAL sample who reported greater levels of bicultural comfort were found to have greater levels inhibitory control capacities relating to resisting distractor interference. The positive direction of this association suggests there may be aspects involved in one's subjective reporting of bicultural comfort that may possibly obtain protective effects promoting increased abilities to employ inhibitory control capacities. This finding is consistent with previous work highlighting the protective benefits associated with increased levels of biculturalism, such as increases in resiliency (Basilio et al., 2014;

Schwartz et al., 2015) and thus provides additional support for the promising implications associated with being bicultural, particularly for Latinx adolescents residing in the U.S.

However, the positive and promising effects that were observed to be associated with bicultural comfort was found to be unique to adolescents of the SAL sample and limited to inhibitory control processes from the different dimensions of impulsivity measured herein. In contrast, higher reported levels of bicultural comfort was found to have the opposite effect for the young adults of the LYAS sample. Specifically, we found a statistically significant association between Latinx young adults who reported greater levels of bicultural comfort and greater risk-taking decision making on the PDQ, such as demonstrating preference for the probabilistic loss choices (i.e., lower probability discounting). Although this association may suggest greater levels of bicultural comfort among Latinx young adults to possibly increase risk for displaying choice-making patterns representative of low probability discounting (preference for more risk-taking option), maintenance of one's heritage cultural practices (i.e., using the Spanish language) while residing in U.S culture was found to display significant associations with positive effects on rates of delay discounting for the same Latinx young adult sample. That is, young adults who indicated greater Spanish language use were found to discount immediate and more smaller rewards in efforts to obtain larger more delayed rewards (i.e., lower delay discounting). Since all young adult participants reported to have high proficiency in the English language, this finding may suggest that the cognitive capacities associated with being more bilingual, or switching between English and Spanish language use, may help promote more thoughtful decision-making behaviors and thus decrease the risk of impulsive choice-making among Latinx individuals entering

adulthood. Our findings lend support to previous research showing positive associations between Spanish language use among Latinxs living in the U.S and risk-taking behaviors (Ford & Norris, 1993; Lechuga & Wiebe, 2009).

Aim 3 of the present study explored the impact of independence versus family-related interdependence on both the MCQ and PDQ task via a modified cultural priming paradigm. The results did not support the hypothesis that priming would influence performance on the MCQ and PDQ. Although I carefully constructed this prime based on prior work (Mandel, 2003), it is important to note that this is the first study to use this priming paradigm. Results from our manipulation check analysis suggest that the different prime condition items did not indicate significant evidence of a prime manipulation. Moreover, the text words that I modified in my prime condition prompts may have been too subtle of an adaptation to produce a larger priming effect. Though past research has been able to demonstrate certain cultural prime manipulations to significantly affect group performance, the findings of our last aim did not observe any significant effect.

Limitations

The current study has several strengths, including the use of empirically validated behavior task measures of impulsivity, the use of two samples targeting different developmental age ranges, and in the LYAS study, quota-based sampling methods to obtain sample characteristic specifics, and the examination of a broad range of cultural factors as they relate to different dimensions of impulsivity. Nevertheless, the results of the present study should be interpreted in light of several limitations. First, online survey designs in general may increase risk to random and/or careless responding which poses

negative implications to the quality and validity of the data. Although I analyzed the data for careless and biased responding, I did not factor in response quality for the long text responses of the prime prompt. Moreover, the technology required to access and participate in the online LYAS study may have limited our ability to reach other diverse Latinx participants with demographic profiles that did not represent internet users in the U.S. It is also important to note that the cross-sectional design of the current study limited our potential to examine how cultural factors and self-regulatory behaviors intersect over time to influence later outcomes. Another key limitation is that the priming paradigm was exploratory in nature and may not be the ideal strategy.

Future Directions

An important direction for future research aimed at understanding differences in human functioning capacities is to consider the political and cultural implications for ethnic minorities that stem from such research. Without rigorous methodologies that take into account important sociocultural factors, the interpretation of research findings from the biologizing and/or psychological experimentation of self-regulatory capacities should warrant increased scrutiny. The evidence in our study found increased levels of bicultural comfort and Spanish language use to have potential protective effects in promoting greater inhibitory control among adolescents and lower delay discounting for young adults. Future research should further explore these domains of cultural identity from a strengths-based perspective to highlight the protective role of such factors. Nonetheless, these findings are preliminary and future research should build off this work to explore relationships past the level of direct main effects and into examining the potential mediating and/or moderating effects of other cultural variables.

Overall conclusion and implications

The current study adds to the literature examining links between acculturation and risk-taking behaviors by exploring multiple domains of acculturation in relation to performance on different behavioral task measures of impulsivity using two Latinx samples of different age groups. Results for the study found levels of bicultural comfort, within the domain of cultural identification, and Spanish language use, within the domain of cultural practices, to be the only aspects of the cultural identity domains measured herein with significant effects on task performance. A further breakdown of these associations emphasizes the significance of one's bicultural comfort as a domain of cultural identity or acculturation that may be protective for adolescents, but risk enhancing for young adults. Furthermore, the results highlight the significance in one's Spanish language use a cultural practice that may be uniquely protective for Latinx young adults.

Findings for the first two aims of the current study highlight the positive implications for Latinx adolescents who demonstrate and report higher levels of comfort and/or flexibility in navigating two cultures over and above other cultural factors analyzed in the current study, specifically as it pertains to impulsive-related dimensions involving inhibitory processes. Given the established link between inhibitory control processes and maladaptive outcomes, these findings highlight the protective nature in reducing one's risk for negative outcomes.

The last aim of the current study did not find an effect size large enough to provide evidence that an experimental manipulation designed to prime familism and collectivistic values could positively impact rates of discounting. Despite the lack of

effect of our familism prime on subsequent delay and probability discounting performance, results of this aim add to the literature on cultural prime experimentation by providing pilot methods and findings of a novel priming paradigm using an online survey study design. This study may also provide significant contributions in research areas of behavioral analysis and/or behavioral economics by providing an alternative framework for conducting experimental research using within group diversity and behavioral task paradigms.

Although the current study did not find evidence of potential protective effects from cultural domains associated with family values or collectivistic orientations, results of the last aim demonstrated an effect in the positive direction from the experimental prime and thus may provide important implications for prevention work with Latinx groups. Indeed, the literature highlighting the importance of these domains among Latinx groups continues to grow and thus should continue to be considered for the development of novel and creative research ideas.

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APPENDICES

Appendix A: Letter of Information



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Protocol # 11499
IRB Approval Date January 26, 2021
Consent Document Expires: January 25, 2026

v.9
Letter of Information

Latinx Young Adult Survey (LYAS)

Introduction

You are invited to participate in a research study conducted by Dr. Rick Cruz, an Associate Professor in the Department of Psychology at Utah State University. The purpose of this research is to examine the influences of cultural factors on decision-making among Latinx/Hispanic adults living in the United States. You are being asked to participate in this research because you indicated in your responses that you meet the eligibility criteria for this research. This form includes important information about the research to help you decide whether to participate. Please read it carefully before you agree to participate. **Your participation in this study is entirely voluntary** and you may withdraw your participation at any time for any reason.

Procedures

Your participation in this study will involve answering survey questions. The survey is completely anonymous. You will first be asked to provide background information about yourself, such as your whether you are enrolled in college, your living situation, and where you were born. You may be asked to think about a recent situation and respond to a brief prompt. Next, you will complete a series of hypothetical choice questions where you will indicate your preference between two money options. The last section of this study will ask questions regarding your behaviors and cultural background. It will take about 20-25 minutes to complete the survey. We anticipate that 300 people will participate in this research study across different regions in the United States.

Alternative Procedures

Rather than participate in this research, you might prefer alternatives such as learning more about mental health symptoms, screening tools, and providers at <https://www.apa.org/helpcenter/> or mentalhealthamerica.net.

Risks

This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. The foreseeable risks include possible discomfort regarding sensitive questions on the survey about drug and alcohol use, and mental health.

We do ask questions about drug and alcohol use behavior, which in some cases may be illegal. Your responses are anonymous and we appreciate your honest responses to these questions. There can be serious risks and consequences associated with drug and alcohol use. If you or others are worried about your alcohol or drug use, please call the national substance use hotline at 1-800-662-HELP. The survey also asks questions about depression and suicidal thoughts. Since this is an anonymous survey, we are unable to identify specific individuals that express suicidal thoughts or actions. If you are in crisis, we encourage you to contact the National Suicide Prevention Hotline at 1-800-273-8255 or text HOME to 741741 to connect with a Crisis Counselor.

Please note that you cannot get in trouble for any answer you provide, and we will not have the ability to share your answers with anyone.

If you have a bad research-related experience or are distressed in any way during your participation, please contact the principal investigator of this study right away at rick.cruz@usu.edu

Benefits

There is no direct benefit to you for participating in this research study. However, this study will help the researchers learn more about the relationship between aspects of culture and self-regulatory behavior among Latinx/Hispanic



young adults. Ultimately, this information can help behavioral health and substance use providers to be more equipped to help address the needs of Latinx/Hispanic adults.

Confidentiality

This is a completely anonymous survey. We will make every effort to ensure that the information you provide as part of this study remains confidential. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. We will collect your survey information through the Qualtrics survey program, and the data will be securely stored in a password-protected folder on Box.com, an encrypted, cloud-based storage system. Only individuals of the research team will have access to your data. It is unlikely, but possible, that others (Utah State University, or state or federal officials) may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share that information if law or policy requires us to do so. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. However, your participation in this online survey involves risks similar to a person's everyday use of the Internet. We encourage you to fill out this survey in a private place to avoid others seeing the information that you share on the survey. Your identity will not be revealed in any publications, presentations, or reports resulting from this research study.

Voluntary Participation & Withdrawal

Your participation in this research is completely voluntary. If you agree to participate now and change your mind later, you may withdraw at any time by exiting out of your browser. If you choose to withdraw, we will not be able to remove information you shared since the data are anonymous. There are no penalties to withdrawing from the study. We may also terminate your participation if your responses indicate you may be answering the survey questions carelessly.

Compensation

Compensation will be provided by Qualtrics Panels based on your completion of the survey. You will be compensated the amount you agreed upon before you entered into the survey. If you choose to withdraw from the study, no compensation will be provided.

IRB Review

The Institutional Review Board (IRB) for the protection of human research participants at Utah State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at rick.cruz@usu.edu. If you have questions about your rights or would simply like to speak with someone *other* than the research team about questions or concerns, please contact the IRB Director at (435) 797-0567 or irb@usu.edu.

Rick A. Cruz, Ph.D.
 Principal Investigator

Byron H. García, B.A.
 Student Investigator

Informed Consent

By clicking "I Agree to Participate" on the survey screen you are on, you agree to participate in this study. You indicate that you understand the risks and benefits of participation, and that you know what you will be asked to do. You also agree that you have asked any questions you might have, and are clear on how to stop your participation in the study if you choose to do so. Please be sure to retain a copy of this form for your records by printing this page. You may follow https://docs.google.com/document/d/1kWqEuuCE17Mf61rkUI_2k_hwpswBr2pDx5qI_HGbVaY/edit?usp=sharing to the document. If you do not want to participate, please simply close this webpage in your browser.

Appendix B: Codebook

Eligibility

Description: To meet eligibility for the current study, participants who volunteer must be between 18 and 25 years of age, self-identify with Hispanic, Latino, or Latinx ethnic, cultural, or national heritage, indicate that they are currently living in the United States, and report *both* their biological parents to also identify with Hispanic, Latino, or Latinx ethnic, cultural, or national heritage.

Quotas: We will employ quota-based sampling to recruit a U.S sample of Latinx emerging adults aged 18–25 years that is representative of national descriptives in ethnicity/race, gender, generational status, education status, and language use. Accordingly, we aim to achieve a final sample where at least 65% of our sample participants identify with Mexican ethnic heritage, at least 65% identify their gender as male, at least 15% indicate being foreign-born, at least 30% report no college experience, and least 20% state being fluent in Spanish. To assess participants bilingual proficiency in both the Spanish and English language, we are adapting our Spanish fluency/bilingual eligibility item from the Language and Social Background Questionnaire (LSBQ; Anderson et al., 2018). Drawing from the LSBQ, our item will be separated into two separate items that will assess self-rated proficiency for speaking and understanding both Spanish and English language using the following three response options: 1 = No proficiency; 2 = Medium proficiency, and 3 = High proficiency. To fall within our proposed quota criteria of at least 20% of the proposed final sample to be fluent in Spanish, participants must indicate at least “high proficiency” on both these items.

Instructions: *Thanks for your willingness to participate in this study. These questions ask about your background and personal characteristics. They will be used to determine if you are eligible for the study.*

Item #	Item text	Response Options
1	How old are you?	17 or younger; 18 = 18; 19 = 19; 20 = 20; 21 = 21; 22 = 22; 23 = 23; 24 = 24; 25 = 25; 26 or older = 26 or older; 999 = Prefer not to answer
2	Do you identify yourself being from Hispanic, Latino, or Latinx ethnic national heritage?	2 = Yes, 1 = No, 999 = Prefer not to answer
3	You indicated that you identify yourself being from Hispanic, Latino, or Latinx ethnic national heritage? What ethnic,	21 = Argentina (Argentine or Argentinian), 20 = Bolivia (Bolivian), 19 = Brazil (Brazilian), 18 = Chile (Chilean), 17 = Colombia (Colombian), 16 = Costa Rica (Costa Rican), 15 = Cuba (Cuban), 14 = Dominican Republic

	cultural, or national heritage do you identify with?	(Dominican), 13 = Ecuador (Ecuadorean), 12 = El Salvador (Salvadoran), 11 = Guatemala (Guatemalan), 10 = Honduras (Honduran), 9 = Mexico (Mexican), 8 = Nicaragua (Nicaraguan), 7 = Panama (Panamanian), 6 = Paraguay (Paraguayan), 5 = Peru (Peruvian), 4 = Puerto Rico (Puerto Rican), 3 = Spain (Spaniard or Spanish), 2 = Uruguay (Uruguayan), 1 = Venezuela (Venezuelan), 0 = Other (country not listed), 999 = Prefer not to answer
4	Were you born in the United States or in another country?	1 = United States, 0 = Other country, 99 = Don't know, 999 = Prefer not to answer
5	You indicated you were not born in the United States. What country were you born in?	20 = Argentina, 19 = Brazil, 18 = Bolivia, 17 = Chile, 16 = Colombia, 15 = Costa Rica, 14 = Cuba, 13 = the Dominican Republic, 12 = Ecuador, 11 = El Salvador, 10 = Guatemala, 9 = Honduras, 8 = Mexico, 7 = Nicaragua, 6 = Panama, 5 = Paraguay, 4 = Peru, 3 = Spain, 2 = Uruguay, 1 = Venezuela, 0 = Other (country not listed), 99 = Don't know, 999 = Prefer not to answer
6	Do you currently live in the United States (U.S) or U.S territory?	2 = Yes, 1 = No, 999 = Prefer not to answer
7	What state or U.S territory do you live in?	List of 50 states, including U.S territory Puerto Rico (Will add another response option with "Other"). Filtering out other territories like American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands.
8	Are you currently enrolled in College/University in the United States?	3 = Yes, I'm enrolled in a community college, 2 = Yes, I am enrolled in a 4-year University/College, 1 = No, I'm NOT enrolled in a community college or university; 0 = Other, 99 = Don't know, 999 = Prefer not to answer
9	Relative to a highly proficient speaker's performance, rate your proficiency level in <i>speaking</i> and	3 = High proficiency, 2 = Medium proficiency, 1 = No proficiency, 999 = Prefer not to answer

	<i>understanding</i> English language.	
10	Relative to a highly proficient speaker's performance, rate your proficiency level in <i>speaking</i> and <i>understanding</i> Spanish language.	3 = High proficiency, 2 = Medium proficiency, 1 = No proficiency, 999 = Prefer not to answer
11	What is your biological sex?	3 = Male, 2 = Female, 1 = Intersex, 999 = Prefer not to say
12	What is your current gender identity?	5 = Male, 4 = Female, 3 = Transgender, 2 = Genderqueer, 1 = Intersex, 0 = Other, 999 = Prefer not to say
13	Is your biological mother of Hispanic, Latino, or Latinx ethnic heritage?	2 = Yes, my biological mother is of Hispanic, Latino, or Latinx ethnic heritage; 1 = No, my biological mother is not of Hispanic, Latino, or Latinx ethnic heritage; 99 = Don't know; 999 = Prefer not to answer
14	What ethnic, cultural, or national heritage does your biological mother identify with?	21 = Argentina (Argentine or Argentinian), 20 = Bolivia (Bolivian), 19 = Brazil (Brazilian), 18 = Chile (Chilean), 17 = Colombia (Colombian), 16 = Costa Rica (Costa Rican), 15 = Cuba (Cuban), 14 = Dominican Republic (Dominican), 13 = Ecuador (Ecuadorean), 12 = El Salvador (Salvadoran), 11 = Guatemala (Guatemalan), 10 = Honduras (Honduran), 9 = Mexico (Mexican), 8 = Nicaragua (Nicaraguan), 7 = Panama (Panamanian), 6 = Paraguay (Paraguayan), 5 = Peru (Peruvian), 4 = Puerto Rico (Puerto Rican), 3 = Spain (Spaniard or Spanish), 2 = Uruguay (Uruguayan), 1 = Venezuela (Venezuelan), 0 = Other (country not listed), 999 = Prefer not to answer
15	Is your biological father of Hispanic, Latino, or Latinx ethnic heritage?	2 = Yes, my biological father is of Hispanic, Latino, or Latinx ethnic heritage; 1 = No, my biological father is not of Hispanic, Latino, or Latinx ethnic heritage; 99 = Don't know; 999 = Prefer not to answer

16	What ethnic, cultural, or national heritage does your biological father identify with?	21 = Argentina (Argentine or Argentinian), 20 = Bolivia (Bolivian), 19 = Brazil (Brazilian), 18 = Chile (Chilean), 17 = Colombia (Colombian), 16 = Costa Rica (Costa Rican), 15 = Cuba (Cuban), 14 = Dominican Republic (Dominican), 13 = Ecuador (Ecuadorean), 12 = El Salvador (Salvadoran), 11 = Guatemala (Guatemalan), 10 = Honduras (Honduran), 9 = Mexico (Mexican), 8 = Nicaragua (Nicaraguan), 7 = Panama (Panamanian), 6 = Paraguay (Paraguayan), 5 = Peru (Peruvian), 4 = Puerto Rico (Puerto Rican), 3 = Spain (Spaniard or Spanish), 2 = Uruguay (Uruguayan), 1 = Venezuela (Venezuelan), 0 = Other (country not listed), 999 = Prefer not to answer
*Participants who respond with “Don’t know” or “Prefer not to say” will not be eligible (i.e., will be excluded) for this study.		

Eligibility prompt

Not eligible	Thank you for filling out the eligibility questions. Unfortunately, you are ineligible for the survey based on your response to one of the previous questions. You are not eligible for this study because either we have reached our quota for one of the categories that you filled out or because one of your answers did not meet our specific eligibility criteria. Please contact the team at cruz.research.usu@gmail.com with any questions you may have regarding this. Thank you!
Eligible	Thank you for filling out the eligibility questions You are eligible to participate in the survey! If you are still interested, please click on the hyperlink below to read the survey’s letter of information outlining the details of the current survey study to better inform your decision on whether or not you agree to participate. If you are no longer interested, you are welcome to stop now by closing out your browser. Letter of Information (this will be a hyperlink on the actual survey). By clicking “I Agree to Participate” below, you agree to participate in this study. You indicate that you understand the

	<p>risks and benefits of participation, and that you know what you will be asked to do. You also agree that you have asked any questions you might have, and are clear on how to stop your participation in the study if you choose to do so. Please be sure to retain a copy of this form for your records by printing this page. You may also follow [Link to publicly accessible PDF] to the document. If you do not want to participate, please simply close this webpage in your browser.</p>
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Demographics

Item #	Item text	Response Options
17	Do you have a child?	2= Yes, 1 = No, 999 = Prefer not to answer
18	(If yes) How many children do you have?	1 = 1, 2 = 2, 3 = 3, 4 = 4, 5 or more = 5, 999 = Prefer not to answer.
19	What is your partnered status?	5 = Married, 4 = dating/In a relationship, 3 = Single, 2 = Divorced, 1 = Widowed, 99 = Don't know, 999 = Prefer not to answer
20	Are you an international student? (i.e., student who is originally from a country outside of the U.S undertaking all or part of their education in the U.S)	2 = Yes, 1 = No, 999 = Prefer not to answer
21	Was your biological mother born in the United States or in another country?	1 = United States, 0 = Other country, 99 = Don't know, 999 = Prefer not to answer
22	Was your biological father born in the United States or in another country?	1= United States, 0 = Other country, 99 = Don't know, 999 = Prefer not to answer
23	Were any of your grandparents (maternal and paternal) born outside the United States?	2 = Yes, 1 = No, 99 = Don't know, 999 = Prefer not to answer
24	Where do you live now? That is, where do you stay most often	5 = your parents' home, 4 = another person's home, 3 = your own place (apartment, house, trailer, etc.), 2 = group quarters (dormitory, barracks, group home, hospital, communal home, prison or penitentiary, etc.), 1 = homeless -- that is, you have no regular place to stay, 0 = other, 999 = prefer not to answer.

	What kind of group quarters are you living in?	7 = dormitory at a school, 6 = barracks in the armed services, 5 = half-way house, social rehabilitation facility, 4 = prison, penitentiary, 3 = group home, 2 = hospital, nursing home, physical rehabilitation facility, 1 = communal home, 0 = other, 999 = prefer not to answer
	Do you live alone or with others?	2 = alone, 1 = with others, 0 = other, 999 = prefer not to answer
25	How much difficulty did you have paying bills in the last 12 months?	4 = No difficulty at all, 3 = A little difficulty, 2 = Some difficulty, 1 = A great deal of difficulty, 999 = Prefer not to answer
26	In the last 12 months, how much money did you usually have at the end of each month?	5 = More than enough money left over, 4 = Enough money left over, 3 = Just enough to make ends meet, 2 = Slightly less than what I needed to make ends meet, 1 = Not enough to make ends meet, 999 = Prefer not to answer

Prime Manipulation Conditions

27	Familism	"For the next two minutes, please think of a time that you did something to help your family, or a specific family member. What did you do? How did it benefit your family member? How did it make you feel?" Please write 1 - 2 sentences describing your answer in the text box below to move on with the survey.
	Independent/self-reliant	"For the next two minutes, please think of a time that you did something to help yourself. What did you do? How did it benefit you? How did it make you feel?" Please write 1 - 2 sentences describing your answer in the text box below to move on with the survey.
	Control	Receives no prompt. Participant is directed to the next part of the survey.

Manipulation Check Items

28	Familism	“How important is it to make sacrifices for the family?”	Very important; Important; Moderately important; A little important; Not important at all
29	Independent/self-reliant	“I enjoy being unique and different from others in many respects”	Strongly agree; Agree; Somewhat agree; Somewhat disagree; Disagree; Strongly disagree

Self-regulation

Monetary Choice Questionnaire (MCQ)

Description: A fixed set of 27 choices between smaller, immediate rewards (SIRs) and larger, delayed rewards that are preconfigured to provide estimates of an individual's delay discounting rate. The higher one's discount rate (k) is, the more they discount larger future rewards.

Reference: Kirby, K. N., Petry, N. M., & Bickel, W. K. (1999). Heroin addicts have higher discount rates for delayed rewards than non-drug-using controls. *Journal of Experimental Psychology: General*, 128(1), 78.

Instructions: For this part of the survey, you will be asked to make a series of hypothetical choices between money delivered today and a larger amount of money delivered following delays ranging from 7 to 186 days. For each choice, select the amount that you want by clicking the chosen amount displayed on your screen. Although you will not receive any of the choices you make in this task, I would like you to make these choices as though they are real. There are no right or wrong answers, so please just answer honestly on all questions. Please click the “next button” on the bottom of the screen to begin the task

Item #	Item text
30	<i>Would you rather have \$54 today, or \$55 in 117 days?</i>
31	<i>Would you rather have \$55 today, or \$75 in 61 days?</i>
32	<i>Would you rather have \$19 today, or \$25 in 53 days?</i>
33	<i>Would you rather have \$31 today, or \$85 in 7 days?</i>
34	<i>Would you rather have \$14 today, or \$25 in 19 days?</i>
35	<i>Would you rather have \$47 today, or \$50 in 160 days?</i>
36	<i>Would you rather have \$15 today, or \$35 in 13 days?</i>
37	<i>Would you rather have \$25 today, or \$60 in 14 days?</i>

38	<i>Would you rather have \$78 today, or \$80 in 162 days?</i>
39	<i>Would you rather have \$40 today, or \$55 in 62 days?</i>
40	<i>Would you rather have \$11 today, or \$30 in 7 days?</i>
41	<i>Would you rather have \$67 today, or \$75 in 119 days?</i>
42	<i>Would you rather have \$34 today, or \$35 in 186 days?</i>
43	<i>Would you rather have \$27 today, or \$50 in 21 days?</i>
44	<i>Would you rather have \$69 today, or \$85 in 91 days?</i>
45	<i>Would you rather have \$49 today, or \$60 in 89 days?</i>
46	<i>Would you rather have \$80 today, or \$85 in 157 days?</i>
47	<i>Would you rather have \$24 today, or \$35 in 29 days?</i>
48	<i>Would you rather have \$33 today, or \$80 in 14 days?</i>
49	<i>Would you rather have \$28 today, or \$30 in 179 days?</i>
50	<i>Would you rather have \$34 today, or \$50 in 30 days?</i>
51	<i>Would you rather have \$25 today, or \$30 in 80 days?</i>
52	<i>Would you rather have \$41 today, or \$75 in 20 days?</i>
53	<i>Would you rather have \$54 today, or \$60 in 111 days?</i>
54	<i>Would you rather have \$54 today, or \$80 in 30 days?</i>
55	<i>Would you rather have \$22 today, or \$25 in 136 days?</i>
56	<i>Would you rather have \$20 today, or \$55 in 7 days?</i>

Text of answer choice	Numeric value
Smaller amount now	1
Larger amount later	2

ITEM VALUES: Higher scores indicate tendency for greater delay of rewards.

Probability Discounting Questionnaire (PDQ)

Description: The PDQ is composed of 30 preconfigured items of choices between two rewards that differ in size and the probability of their receipt. The procedure for calculating an individual's rate of probability discounting is generally analogous to the calculation of the k index of the MCQ, and instead uses an h value to index and reflect the discount rate.

Reference: Madden, G. J., Petry, N. M., & Johnson, P. S. (2009). Pathological gamblers discount probabilistic rewards less steeply than matched controls. *Experimental and clinical psychopharmacology*, 17(5), 283.

Instructions: We will now switch topics again. For this part of the survey, you will be asked to indicate your choices about outcomes with different probabilities of being delivered. One outcome is always money delivered “for sure” and the other is a larger amount of money delivered probabilistically. For each outcome choice, select the amount that you want by clicking the chosen amount displayed on your screen. Although you will not receive any of the choices you make in this task, I would like you to make these choices as though they are real. There are no right or wrong answers, so please just answer honestly on all questions. Please click the “next button” on the bottom of the screen to begin the task

Item #	Item text
57	Choose between “\$20 for sure” or “a 10% of winning \$80”
58	Choose between “\$20 for sure” or “a 13% of winning \$80”
59	Choose between “\$20 for sure” or “a 17% of winning \$80”
60	Choose between “\$20 for sure” or “a 20% of winning \$80”
61	Choose between “\$20 for sure” or “a 25% of winning \$80”
62	Choose between “\$20 for sure” or “a 33% of winning \$80”
63	Choose between “\$20 for sure” or “a 50% of winning \$80”
64	Choose between “\$20 for sure” or “a 67% of winning \$80”
65	Choose between “\$20 for sure” or “a 75% of winning \$80”
66	Choose between “\$20 for sure” or “a 83% of winning \$80”
67	Choose between “\$40 for sure” or “a 18% of winning \$100”
68	Choose between “\$40 for sure” or “a 22% of winning \$100”
69	Choose between “\$40 for sure” or “a 29% of winning \$100”
70	Choose between “\$40 for sure” or “a 33% of winning \$100”
71	Choose between “\$40 for sure” or “a 40% of winning \$100”
72	Choose between “\$40 for sure” or “a 50% of winning \$100”
73	Choose between “\$40 for sure” or “a 67% of winning \$100”
74	Choose between “\$40 for sure” or “a 80% of winning \$100”
75	Choose between “\$40 for sure” or “a 86% of winning \$100”
76	Choose between “\$40 for sure” or “a 91% of winning \$100”
77	Choose between “\$40 for sure” or “a 40% of winning \$60”
78	Choose between “\$40 for sure” or “a 46% of winning \$60”

79	Choose between “\$40 for sure” or “a 55% of winning \$60”
80	Choose between “\$40 for sure” or “a 60% of winning \$60”
81	Choose between “\$40 for sure” or “a 67% of winning \$60”
82	Choose between “\$40 for sure” or “a 75% of winning \$60”
83	Choose between “\$40 for sure” or “a 86% of winning \$60”
84	Choose between “\$40 for sure” or “a 92% of winning \$60”
85	Choose between “\$40 for sure” or “a 95% of winning \$60”
86	Choose between “\$40 for sure” or “a 97% of winning \$60”

Text of answer choice	Numeric value
Smaller guaranteed reward	1
Larger probabilistic reward	2

ITEM VALUES: Higher scores indicate greater discounting (i.e., steeper discounting) “those who placed a higher value on a probabilistic win (shallow probability discounting) tended to steeply discount the negative value of probabilistic losses (taking a “nothing bad will happen to me” stance). Shallow probability discounting of gains suggests gambling for gains is a valuable alternative. Steep discounting of probabilistic losses means that the individual is willing to forgo very little (a certain payment) to avoid rolling the dice on a probabilistic loss. If this negative correlation is a general tendency across conditions and outcomes, pathological gamblers would, on average, be expected to more steeply discount the negative value of contracting a sexually transmitted disease by engaging in risky sexual practices”

Short UPPS-P Impulsive Behavior scale

Description: Participants reported their levels of impulsivity in response to a number of situations, attitudes, and behaviors. For the current study, we will be using the 20-item short version of the full UPPS-P Impulsive Behavior Scale that was originally developed by Lynam and colleagues (2006). The short UPPS-P scale has been replicated and evidenced to be a valid and reliable alternative to the full scale (Cyder et al., 2014). For this measure, impulsivity was divided into five facets: Lack of premeditation, Negative urgency, Sensation seeking, Positive Urgency, and Lack of Perseverance. Participants were assessed in terms of degree to which they would describe themselves to each item by choosing between response options ranging from (1) “Not at all” to (5) “Very much

Reference: Cyders, M. A., Littlefield, A. K., Coffey, S., & Karyadi, K. A. (2014). Examination of a short English version of the UPPS-P Impulsive Behavior Scale. *Addictive Behaviors*, 39, 1372-1376.

Instructions: Now you will read some statements and then you choose the option that best describes you.

Item #	Subscale *	Reverse Coded	Item text
87	NU		When you feel bad, you often do things you later regret in order to make yourself feel better now.
88	NU		Sometimes when you feel bad, you can't seem to stop what you are doing even though it is making you feel worse.
89	NU		When you are upset, you often act without thinking.
90	NU		When you feel rejected, you will often say things that you later regret.
91	LP		You generally like to see things through to the end.
92	LP		Unfinished tasks really bother you.
93	LP		Once you get going on something you hate to stop.
94	LP		You finish what you start.
95	LPrem		Your thinking is usually careful and purposeful.
96	LPrem		You like to stop and think things over before you do them.
97	LPrem		You tend to value and follow a rational, "sensible" approach to things.
98	LPrem		You usually think carefully before doing anything.
99	SS		You really enjoy taking risks.
100	SS		You welcome new and exciting experiences and sensations, even if they are a little frightening and unusual.
101	SS		You would like to learn to fly an airplane.
102	SS		You would enjoy the sensation of skiing very fast down a high mountain slope.
103	PU		When you are in great mood, you tend to get into situations that could cause you problems.
104	PU		You tend to lose control when you are in a great mood.
105	PU		Others are shocked or worried about the things you do when you are feeling very excited.
106	PU		You tend to act without thinking when you are really excited.

***Subscales: NU = Negative urgency, LP= Lack of Perseverance, LPrem = Lack of Premeditation, SS = Sensation Seeking, PU = Positive Urgency**

Text of answer choice	Numeric value
Not at all like you	1
A little like you	2
Somewhat like you	3
Mostly like you	4
Very much like you	5
Prefer not to answer	999

Scores for the short UPPS-P Impulsive Behavior subscales are derived by calculating mean averages across the corresponding items. For each item, response options range from 1 ("Not at all describes me") to 5 ("Very much describes me"). Subscales included in the present study are (lack of) Premeditation, Positive Urgency, (lack of) Perseverance, Negative Urgency, and Sensation Seeking.

ITEM VALUES: Higher scores indicate greater levels of impulsivity

Validation Item

Item #	Item Text	Item response
107	<p>We just want to make sure you're still paying attention. For the following math question, please answer 5.</p> <p>What is $3 + 4$?</p>	8, 6, 5, 7

Thank you for your attention on the survey, we appreciate your effort! Please move on to the next question.

Culture

Family Obligations—current assistance subscale

Description: Adolescents will report their levels of familial obligation as well as how they perceived their parents' views. A total of 24 items were assessed in terms of degree to which they describe the participant. Items were categorized in the following three subscales: current assistance to the family (11 items), respect for family (7 items), and future support (6 items).

Reference: Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development*, 70(4), 1030-1044.

Instructions: Thanks for your answers. We will now talk about your family in general for the next few questions. Read the following statements about how often you are asked or required to do certain things with your family. Please select how often you are asked or required to....

Item #	Subscale	Item text
108	Family obligation	Spend time with your grandparents, cousins, aunts, and uncles
109	Family obligation	Spend time at home with your family
110	Family obligation	Run errands that the family needs done
111	Family obligation	Help your brothers or sisters with their homework
112	Family obligation	Spend holidays with your family
113	Family obligation	Help out around the house
114	Family obligation	Spend time with your family on weekends
115	Family obligation	Help take care of your brothers and sisters
116	Family obligation	Eat meals with your family
117	Family obligation	Help take care of your grandparents
118	Family obligation	Do things together with your brothers and sisters

Text of answer choice	Numeric value
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Almost never or never	1
Once in a while	2
Sometimes	3
A lot of the time (frequently)	4
Almost always or always	5
Prefer not to answer	999

ITEM VALUES: Higher scores indicate more family obligations.

Family Obligations—respect for family and future support subscales

Description: Adolescents will report their levels of familial obligation as well as how they perceived their parents' views. A total of 24 items were assessed in terms of degree to which they describe the participant. Items were categorized in the following three subscales: current assistance to the family (11 items), respect for family (7 items), and future support (6 items).

Reference: Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child Development*, 70(4), 1030-1044.

Instructions: Thanks for your answers. Read the following statements asking you how important or not important different values are in your family. How important is it in your family for you to....

Item #	Subscale	Item text
119	Respect for family	<i>Treat your parents with great respect?</i>
120	Respect for family	<i>Follow your parents' advice about choosing friends?</i>
121	Respect for family	<i>Do well for the sake of your family?</i>
122	Respect for family	<i>Follow your parents' advice about choosing a job or major in college?</i>
123	Respect for family	<i>Treat your grandparents with great respect?</i>
124	Respect for family	<i>Respect your older brothers and sisters?</i>
125	Respect for family	<i>Make sacrifices for your family?</i>
126	Future support	<i>Help your parents financially in the future?</i>

127	Future support	<i>Live at home with your parents until you are married?</i>
128	Future support	<i>Help take care of your brothers and sisters in the future?</i>
129	Future support	<i>Spend time with your parents even after you no longer live with them?</i>
130	Future support	<i>Live or go to college near your parents?</i>
131	Future support	<i>Have your parents live with you when you get older?</i>

Text of answer choice	Numeric value
Not important at all	1
A little important	2
Moderately important	3
Important	4
Very important	5
Prefer not to answer	999

Familism Pride

Description: This is a nine-item measure focused on the experience of pride when making one's family proud through achievements, and its motivational role in guiding achievement. Response options ranged from 1 to 6 on a Likert scale on level of agreement.

Reference: Stein, G. L., Cavanaugh, A. M., Castro-Schilo, L., Mejia, Y., & Plunkett, S. W. (2019). Making my family proud: The unique contribution of familism pride to the psychological adjustment of Latinx emerging adults. *Cultural Diversity and Ethnic Minority Psychology, 25*(2), 188–198. <https://doi.org/10.1037/cdp0000223>

Instructions: Next, I will ask you questions that will assess a variety of feelings and behaviors in various situations. Please respond with how much you agree or disagree with each statement.

Item #	Item text
132	When I have a big achievement, the first thing I want to do is share the good news with my family

133	One of the reasons I want to do well in life is to make my family proud
134	I feel fulfilled when I achieve something that will make my family proud
135	I share my successes with my family because I know it will make them happy
136	My motivation for achieving things is to make my family proud
137	My family celebrates my achievements as much as I do
138	My family believes in me
139	Making my family proud brings me happiness
140	My family's happiness is as important as my own happiness

Text of answer choice	Numeric value
Strongly disagree	1
Disagree	2
Somewhat disagree	3
Somewhat agree	4
Agree	5
Strongly agree	6
Prefer not answer	999

Singelis self-construal scale

Description: This 30-item questionnaire that measures a variety of feelings and behaviors in various situations. The items load onto two different scales: independence, and interdependence. Participants respond with how much they agree or disagree with each statement.

Reference:

Singelis, T. M. (1994). The Measurement of Independent and Interdependent Self-Construals. *Personality and Social Psychology Bulletin*, 20(5), 580–591.

[https://deepblue.lib.umich.edu/bitstream/handle/2027.42/106030/Survey%20Measures%20and%20Code%20Book%20\(Kitayama%20et%20al.,%20Psychological%20Science%20in%20press\).pdf?sequence=1](https://deepblue.lib.umich.edu/bitstream/handle/2027.42/106030/Survey%20Measures%20and%20Code%20Book%20(Kitayama%20et%20al.,%20Psychological%20Science%20in%20press).pdf?sequence=1)

Instructions: Next, I will ask you questions that will assess a variety of feelings and behaviors in various situations. Please respond with how much you agree or disagree with each statement.

Item #	Reverse score	Subscale	Item text
141		Independence	I enjoy being unique and different from others in many respects.
142		Independence	I can talk openly with a person who I meet for the first time, even when this person is much older than I am
143		Interdependence	Even when I strongly disagree with group members, I avoid an argument.
144		Interdependence	I have respect for the authority figures with whom I interact
145		Independence	I do my own thing, regardless of what others think.
146		Interdependence	I respect people who are modest about themselves.
147		Independence	I feel it is important for me to act as an independent person.
148		Interdependence	I will sacrifice my self interest for the benefit of the group I am in
149		Independence	I'd rather say "No" directly, than risk being misunderstood.
150		Independence	Having a lively imagination is important to me.
151		Interdependence	I should take into consideration my parents' advice when making education/career plans.
152		Interdependence	I feel my fate is intertwined with the fate of those around me.
153		Independence	I prefer to be direct and forthright when dealing with people I've just met.
154		Interdependence	I feel good when I cooperate with others.
155		Independence	I am comfortable with being singled out for praise or rewards.
156		Interdependence	If my brother or sister fails, I feel responsible
157		Interdependence	I often have the feeling that my relationships with others are more important than my own accomplishments.
158		Independence	Speaking up during a class (or a meeting) is not a problem for me.

159		Interdependence	I would offer my seat in a bus to my professor (or my boss)
160		Independence	I act the same way no matter who I am with
161		Interdependence	My happiness depends on the happiness of those around me.
162		Independence	I value being in good health above everything
163		Interdependence	I will stay in a group if they need me, even when I am not happy with the group.
164		Independence	I try to do what is best for me, regardless of how that might affect others
165		Independence	Being able to take care of myself is a primary concern for me.
166		Interdependence	It is important to me to respect decisions made by the group
167		Independence	My personal identity, independent of others, is very important to me
168		Interdependence	It is important for me to maintain harmony within my group
169		Independence	I act the same way at home that I do at school (or work).
170		Interdependence	I usually go along with what others want to do, even when I would rather do something different

Text of answer choice	Numeric value
Strongly disagree	1
Disagree	2
Somewhat disagree	3
Don't agree or disagree	4
Agree somewhat	5
Agree	6
Strongly agree	7
Prefer not to answer	999

Acculturation Rating Scale for Mexican Americans (ARSMA-II)-Language use subscale

Description: These items were taken from the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II), a bilingual, self-report scale that was developed by Cuellar, Arnold, and Maldonado (1995). The ARSMA-II is a 30 item scale designed to measure the degree to which a Mexican or Mexican American person is acculturated. We will use the Language subscale of the ARSMA-II which contains 10 items that aim to measure two acculturation orientations (i.e., Anglo Oriented Scale [AOS] and Mexican Oriented Scale [MOS]). The five-item Anglo orientation language subscale of the ARSMA-II will be used to measure the U.S. orientation. A sample item of this subscale is, “You enjoy watching TV in English.” The five-item Hispanic orientation language subscale of the ARSMA-II will be used to measure the Hispanic orientation. A sample item of this subscale is, “I enjoy speaking Spanish.”

Reference: Cuellar, I., Arnold, B., & Maldonado, R. (1995). Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA scale. *Hispanic Journal of Behavioral Sciences*, 17, 275-303.

Instructions: The next items are about your language use. Please respond with how often you do the following...

Item #	Reverse Coded	Item Text
171	R	You speak Spanish.
172		You speak English.
173	R	You enjoy listening to music in Spanish.
174		You enjoy listening to music in English.
175	R	You enjoy watching TV in Spanish.
176		You enjoy watching TV in English.
177	R	You write in Spanish
178		You write in English.
179	R	You think in Spanish.
180		You think in English.

Text of answer choice	Numeric value
Not at all	1
Not very often	2
Moderately	3
Very often	4
Almost always	5

Prefer not to answer	999
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Biculturalism—bicultural comfort subscale

Description: An adapted version of the Mexican American Biculturalism scale (Basilio et al., 2014) will be used to measure biculturalism. For this measure, biculturalism is divided into 3 subscales: bicultural comfort, which assess how the participant feels navigating their dual cultural world, bicultural facility, which assesses how well they respond to the behavioral demands of their dual cultural worlds, and bicultural advantages, which is what the participant thinks or perceives are inherent advantages in being bicultural.

Reference:

Basilio, C. D., Knight, G. P., O'Donnell, M., Roosa, M. W., Gonzales, N. A., Umana-Taylor, A. J., & Torres, M. (2014). The Mexican American Biculturalism Scale: Bicultural comfort, facility, and advantages for adolescents and adults. *Psychological Assessment, 26*(2), 539-554.

Instructions: Thanks for answering those questions. Next we will ask about your experiences as a Latino or Latino American. Latinos or Latino Americans may act differently when they are with other Latinos than when they are with White or European American people. Please read the following statements and select how comfortable you are in these different situations.

Item #	Item text
181	Sometimes you may need to speak Spanish, and other times you may need to speak English. Which of the following best describes you?
182	Sometimes you may feel a part of the Latino or Hispanic community, and other times, you may feel a part of the White or Gringo community. Which of the following best describes you?
183	Sometimes you may need to work with a group for the group to be successful, and other times you may need to compete with others for you to be successful. Which of the following best describes you?
184	Sometimes you may need to solve a problem in a Latino or Hispanic way, and other times you may need to solve a problem in a White or Gringo way. Which of the following best describes you?
185	Sometimes you may need to interact with other Latino or Hispanic Americans, and other times you may need to interact with Whites or Gringos. Which of the following best describes you?

186	Sometimes you may need to make an important decision on your own, and other times you may need to ask your family for advice. Which of the following best describes you?
187	Sometimes you may need to participate in Latino or Hispanic traditions, and other times you may need to participate in White or Gringo traditions. Which of the following best describes you?
188	Sometimes you may feel proud to be part of the Latino or Hispanic community, and other times you may feel proud to be part of the U.S. community. Which of the following best describes you?
190	Sometimes you may be obligated to satisfy your family's needs, and other times you may satisfy your own needs. Which of the following best describes you?

Text of answer choice	Numeric value
I am only comfortable when [enculturated response]	1
I am only comfortable when [acculturated response]	2
I am sometimes comfortable in both of these situations	3
I am often comfortable in both of these situations	4
I am most of the time comfortable in both of these situations	5
I am always comfortable in both of these situations	6
Prefer not answer	999

Multi-group Ethnic Identity Measure-Revised (MEIM-R)

Description: This is a brief instrument assessing affiliation with one's ethnic group. Exploratory and confirmatory factor analyses found ethnic identity to best be thought of as consisting of two factors, exploration and commitment, which are distinct processes that make separate contributions to the underlying structure of ethnic identity. Accordingly, the MEIM-R consists of 6 items with 3 items assessing exploration and 3 items assessing commitment. Exploration refers to efforts to learn more about one's

ethnic group and to participation in the cultural practices of this group. Commitment reflects positive affirmation of one's group and a sense of commitment to the group. (<http://isites.harvard.edu/fs/docs/icb.topic1063339.files/Phinney.Ong.2007.pdf>)

Reference: Phinney, J. S., & Ong, A. D. (2007). Conceptualization and measurement of ethnic identity: Current status and future directions. *Journal Of Counseling Psychology*, 54(3), 271-281. doi:10.1037/0022-0167.54.3.271

Item #	Subscale	Item text
190	Exploration	I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs
191	Commitment	I have a strong sense of belonging to my own ethnic group.
192	Commitment	I understand pretty well what my ethnic group membership means to me.
193	Exploration	I have often done things that will help me understand my ethnic background better.
194	Exploration	I have often talked to other people in order to learn more about my ethnic group.
195	Commitment	I feel a strong attachment towards my own ethnic group.

Text of answer choice	Numeric value
Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5
Prefer not to answer	999

Validation Item #2

Item #	Item Text	Item response
196	We just want to make sure you're still paying attention. For the following math question, please answer 1. What is 3 + 4 ?	8, 1, 5, 7

Thank you for your attention on the survey, we appreciate your effort! Please move on to the next question.

Patient Health Questionnaire - 9 (PHQ-9)

Description: The Patient Health Questionnaire (PHQ)-9 is the major depressive disorder (MDD) module of the full PHQ. Used to provisionally diagnose depression and grade severity of symptoms in general medical and mental health settings. Scores each of the 9 DSM criteria of MDD as “0” (not at all) to “3” (nearly every day), providing a 0-27 severity score. The last item (“How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?”) is not included in score, but is a good indicator of the patient’s global impairment and can be used to track treatment response. Higher PHQ-9 scores are associated with decreased functional status and increased symptom-related difficulties, sick days, and healthcare utilization.

Reference(s): Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, 16(9), 606-613.

Instructions: Thanks for your answers. Over the last two weeks, how often have you been bothered by any of the following problems?

Item #	Item text	Item response
197	Little interest or pleasure in doing things?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer

198	Feeling down, depressed, or hopeless?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
199	Trouble falling or staying asleep, or sleeping too much?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
200	Feeling tired or having little energy?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
201	Poor appetite or overeating?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
202	Feeling bad about yourself — or that you are a failure or have let yourself or your family down?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
203	Trouble concentrating on things, such as reading the newspaper or watching television?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
204	Moving or speaking so slowly that other people could have noticed? Or so fidgety or restless that you have been moving a lot more than usual?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
205	Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer
206	How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	1 = Not at all, 2 = Several days, 3 = More than half the days, 4 = Nearly every day, 999 = Prefer not to answer

Text of answer choice	Numeric value
Not at all	1
Several days	2
More than half the days	3
Nearly every day	4
Prefer not to answer	999

USAUDIT – The Alcohol Use Disorders Identification Test, adapted for use in the U.S

Description: The USAUDIT is a brief screening questionnaire used in medical and social service settings to identify individuals using alcoholic beverages in a hazardous or harmful way. The USAUDIT is based on the same 10 questions developed by WHO for the international version of the AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). In addition to providing information about the pattern and amount of alcohol use, the USAUDIT provides a simple scoring system that estimates the severity of hazardous and harmful use, including the likelihood of an AUD/alcohol dependence, as defined in the DSM-5 (APA, 2013) and the ICD-10 (WHO, 1993). Patients who score positive on the first three USAUDIT questions should complete the remaining seven questions so that the presence of alcohol-related problems and signs of dependence can be identified

Reference: Babor, T. F., Higgins-Biddle, J. C., & Robaina, K. (2014). The alcohol use disorders identification test, adapted for use in the United States: a guide for primary care practitioners. *Geneva: World Health Organization.*

Instructions: Alcohol can affect your health, medications, and treatments, so we ask patients the following questions. Your answers will remain confidential. Click the response that best represents your answer. Think about your drinking in the past year. A drink means one beer, one small glass of wine (5 oz.), or one mixed drink containing one shot (1.5 oz.) of spirits.

Item #	Item text	Item response
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207	How often do you have a drink containing alcohol?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = 2-3 times a week, 5 = 4-6 times a week, 6 = Daily, 999 = Prefer not to answer
208	How many drinks containing alcohol do you have on a typical day you are drinking?	0 = 1 drink, 1 = 2 drinks, 2 = 3 drinks, 3 = 4 drinks, 4 = 5-6 drinks, 5 = 7-9 drinks, 6 = 10 or more drinks, 999 = Prefer not to answer
209	How often do you have X (5 for men; 4 for women) or more drinks on one occasion?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = 2-3 times a week, 5 = 4-6 times a week, 6 = Daily or almost daily, 999 = Prefer not to answer
210	How often during the last year have you found that you were not able to stop drinking once you had started?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
211	How often during the past year have you failed to do what was expected of you because of drinking?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
212	How often during the past year have you needed a drink first thing in the morning to get yourself going after a heavy drinking session?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
213	How often during the past year have you had a feeling of guilt or remorse after drinking?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
214	How often during the past year have you been unable to remember what happened the night before because you had been drinking?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
215	Have you or someone else been injured because of your drinking?	0 = No, 2 = Yes, but not in the past year, 4 = Yes, during the past year, 999 = Prefer not to answer
216	Has a relative, friend, doctor, or other health care worker been concerned about your drinking and suggested you cut down?	0 = No, 2 = Yes, but not in the past year, 4 = Yes, during the past year, 999 = Prefer not to answer

The Cannabis Use Disorder Identification Test —Revised (CUDIT-R)

Description: The original CUDIT was developed as a brief (10-item) instrument that would identify individuals who were using cannabis in problematic or harmful ways

during the preceding 6 months. It was a direct modification of the Alcohol Use Disorders Identification Test (AUDIT; [Saunders et al., 1993](#)). The current study will use the CUDIT-R which is a revised version containing 8 total items, comprising 4 items from the original 10-item CUDIT and 4 new items. The CUDIT-R has been shown to be able to effectively distinguish between different levels of cannabis use, cannabis use disorders and stage of change. Accordingly, this 8-item scale may be of significant clinical utility, not just to identify cases (i.e. screening) but also to rate problem severity, which may facilitate better matching of patients to treatment intensity and assist in prognostication.

Reference: Adamson SJ, Kay-Lambkin FJ, Baker AL, Lewin TJ, Thornton L, Kelly BJ, and Sellman JD. (2010). An Improved Brief Measure of Cannabis Misuse: The Cannabis Use Disorders Identification Test – Revised (CUDIT-R). *Drug and Alcohol Dependence* 110:137-143.

Instructions: Thank you for your answers. Please answer the following questions about your cannabis use. Choose the response that is most correct for you in relation to your cannabis use over the *past six months*.

Item #	Item text	Item response
217	Have you used any cannabis over the past six months?	0 = No, 1 = Yes, 999 = Prefer not to answer
If YES, please answer the following questions about your cannabis use. Choose the response that is most correct for you in relation to your cannabis use <i>over the past six months</i>		
218	How often do you use cannabis?	0 = Never, 1 = Monthly or less, 2 = 2-4 times a month, 3 = 2-3 times a week, 4 = 4 or more times a week, 999 = Prefer not to answer
219	How many hours were you “stoned” on a typical day when you had been using cannabis?	0 = Less than 1, 1 = 1 or 2, 2 = 3 or 4, 3 = 5 or 6, 4 = 7 or more, 999 = Prefer not to answer
220	How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
221	How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
222	How often in the past 6 months have you devoted a great deal of your time to	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 =

	getting, using, or recovering from cannabis?	Daily or almost daily, 999 = Prefer not to answer
223	How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
224	How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children:	0 = Never, 1 = Less than monthly, 2 = Monthly, 3 = Weekly, 4 = Daily or almost daily, 999 = Prefer not to answer
225	Have you ever thought about cutting down, or stopping, your use of cannabis?	0 = Never, 2 = Yes, but not in the past 6 months, 4 = Yes, during the past 6 months, 999 = Prefer not to answer

E-Cigarette

Ask past month use (frequency and per day), then dependence scale

Instructions: Please respond to each question by selecting an answer from the list of responses.

Item #	Item text	Item response
226	How frequently have you used e-cigarettes in the past month?	0 – 30 days
227	How many minutes per day did you typically use your e-cigarette?	0, 1–10, 11–20, 21–30, 31–40, 41–50, 51–60, 61–90, 91–119, and ≥ 120 min

E-Cigarette Dependence Scale (EDS)

Description: The EDS is a modified version of the PROMIS measure of nicotine dependence, which originally was developed to assess cigarette dependence. The EDS can be used to assess e-cigarette dependence and has evidenced itself as a psychometrically sound measure for assessing e-cigarette dependence in adult e-cigarette users. The brief, 4-item EDS represents an advantage over other longer measures of e-cigarette dependence with results indicating little benefit of the longer versions over the 4-item EDS, which provides an efficient assessment of e-cigarette dependence. To score the measure, take the mean of the item scores.

Reference: Morean, M. E., Krishnan-Sarin, S., Sussman, S., Foulds, J., Fishbein, H., Grana, R., & O'Malley, S. S. (2019). Psychometric Evaluation of the E-cigarette

Dependence Scale. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, 21(11), 1556–1564.
<https://doi.org/10.1093/ntr/ntx271>

Instructions: Please respond to each question by selecting the item response that best describes your answer to the question.

Item #	Item text	Item response
228	I find myself reaching for my e-cigarette without thinking about it.	0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Almost always, 999 = Prefer not to answer
229	I drop everything to go out and get e-cigarettes or e-juice.	0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Almost always, 999 = Prefer not to answer
230	I vape more before going into a situation where vaping is not allowed.	0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Almost always, 999 = Prefer not to answer
231	When I haven't been able to vape for a few hours, the craving gets intolerable	0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often, 4 = Almost always, 999 = Prefer not to answer

Cigarette smoker (from e-cigarette article above)

Description: Participants reported on their current cigarette smoking status (“I have never been a cigarette smoker; I am a former smoker, meaning that I used to smoke cigarettes, but I successfully quit; I smoke cigarettes occasionally, meaning at least once a month; and I smoke cigarettes daily”).

232	Which of the following choice options best represents your cigarette smoking behavior?	0 = I have never been a cigarette smoker, 1 = I am a former smoker, meaning that I used to smoke cigarettes, but I successfully quit, 2 = I smoke cigarettes occasionally, meaning at least once a month, 3 = I smoke cigarettes daily, 999 = Prefer not to answer
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Modified ASSIST

Description: We adapted items from the NIDA modified assist. This instrument is a 17-item measure used to assess frequency and severity of use of alcohol, tobacco, and prescription drugs use for non-medical reasons using a 5-point scale ranging from “never” to “daily or almost daily”. It was designed to assist clinicians serving adult patients in screening for drug use. The NIDA Quick Screen was adapted from the single-question screen for drug use in primary care by Saitz et al. (available at <http://archinte.amaassn.org/cgi/reprint/170/13/1155>) and the National Institute on Alcohol Abuse and Alcoholism’s screening question on heavy drinking days (available at http://pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/clinicians_guide.htm). The NIDA-modified ASSIST was adapted from the World Health Organization (WHO) Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), Version 3.0, developed and published by WHO (available at http://www.who.int/substance_abuse/activities/assist_v3_english.pdf).

Reference: <https://www.drugabuse.gov/sites/default/files/pdf/nmassist.pdf>

NIDA. (2012, March 1). Resource Guide: Screening for Drug Use in General Medical Settings. Retrieved from <https://archives.drugabuse.gov/publications/resource-guide-screening-drug-use-in-general-medical-settings> on 2020, November 24

Instructions: *Thanks for your answers. Now we would like to know if you have used any of the following substances in the past year. Remember that all of your answers will be kept private. In the past year, how often have you used the following?*

233	Cocaine (coke, crack, etc.)
234	Prescription stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)
235	Methamphetamine (speed, crystal meth, ice, etc.)
236	Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)
237	Sedatives or sleeping pills (Valium, Serepax, Ativan, Xanax, Librium, Rohypnol, GHB, etc.)
238	Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)
239	Street opioids (heroin, opium, etc.)
240	Prescription opioids (fentanyl, oxycodone [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.)
241	Lean (purple drank, syrup, sizzurp)

Response options

Text of answer choice	Numeric value
Never	1
Once or twice	2
Monthly	3
Weekly	4

Daily or almost daily	5
Prefer not to answer	999

Pandemic Stress Index (PSI)

Description: 3-item measure of behavior changes and stress that individuals may have experienced during COVID-19 (coronavirus). The items presented are a "core" set of items that are recommended, however, additional population-specific items may be added depending on study / clinical needs. To stay within our estimated completion time of the current study, we will only ask 2 of the 3 items from this scale.

<https://elcentro.sonhs.miami.edu/research/measures-library/psi/index.html>

Reference: Harkness, A., Behar-Zusman, V., & Safren, S.A. (2020). Understanding the impact of COVID-19 on Latino sexual minority men in a US HIV hot spot. *AIDS and Behavior*. doi: 10.1007/s10461-020-02862-w

Item #	Item text	Response options
242	How much is/did COVID-19 (coronavirus) impact your day-to-day life?	1 = Not at all, 2 = A little, 3 = Much, 4 Very Much, 5 = Extremely, 999 = Prefer not to answer
243	Which of the following are you experiencing (or did you experience) during COVID-19 (coronavirus)? (check all that apply)	<input type="checkbox"/> being diagnosed with COVID-19 <input type="checkbox"/> fear of getting COVID-19 <input type="checkbox"/> fear of giving COVID-19 to someone else <input type="checkbox"/> worrying about friends, family, partners, etc. if yes: <input type="checkbox"/> locally <input type="checkbox"/> in other parts of the US <input type="checkbox"/> outside the US <input type="checkbox"/> stigma or discrimination from other people (e.g., people treating you differently because of your identity, having symptoms, or other factors related to COVID-19) <input type="checkbox"/> personal financial loss (e.g., lost wages, job loss, investment/retirement loss, travel-related cancelations) <input type="checkbox"/> frustration or boredom

		<p> <input type="checkbox"/> not having enough basic supplies (e.g., food, water, medications, a place to stay) <input type="checkbox"/> more anxiety <input type="checkbox"/> more depression <input type="checkbox"/> more sleep, less sleep, or other changes to your normal sleep pattern <input type="checkbox"/> increased alcohol or other substance use <input type="checkbox"/> a change in sexual activity (if yes – was this an increase or decrease?) <input type="checkbox"/> loneliness <input type="checkbox"/> confusion about what COVID-19 is, how to prevent it, or why social distancing/isolation/quarantines are needed <input type="checkbox"/> feeling that I was contributing to the greater good by preventing myself or others from getting COVID-19 <input type="checkbox"/> getting emotional or social support from family, friends, partners, a counselor, or someone else <input type="checkbox"/> getting financial support from family, friends, partners, an organization, or someone else <input type="checkbox"/> other difficulties or challenges (We want to hear from you! Please tell us more) </p>
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