

Substance Abuse Among American Indians and Alaska Natives: An Integrative Cultural Framework for Advancing Research

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Abstract Research consistently highlights the high prevalence of substance-related psychopathology in the American Indian/Alaska Native (AIAN) population. Recent epidemiological literature suggests that these trends are not diminishing, despite decades of etiological work and prevention programs. The aim of this article was to examine the literature on risk and protective factors for substance-related psychopathology in the AIAN population from the perspective of Betancourt's integrative model of culture, psychological processes, and behavior (Betancourt et al. 1993, 2010, 2011). This model specifies the structure of relations among sociostructural (e.g., income and education), cultural (e.g., values and norms), and psychological (e.g., cognition and emotion) factors influencing behavior. Articles were reviewed that identified one or more determinants of substance-related psychopathology in the AIAN population. An analysis of the reviewed articles revealed that the factors investigated in relation to substance-related psychopathology have typically been studied independently of each other. Also, most studies have examined factors that are rather distal from behavior (e.g., sociostructural). Results suggest that research on the interrelations among cultural and

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psychological, in addition to sociostructural, determinants may enhance our understanding of substance-related psychopathology in this population. To this end, suggestions for future research are derived from results of the studies reviewed. Such theoretically driven research may contribute to more effective interventions and the reduction of substance-related disparities among the AIAN population.

Keywords American Indian · Alaska Native · Substance use · Substance use disorder · Abuse · Dependence · Predictors · Determinants

The American Indian/Alaska Native (AIAN) people constitute a diverse population within the USA, with over 500 federally recognized tribes with many different traditions, beliefs, languages, and histories (Brave Heart et al. 2011). This population has historically suffered from alarming rates of maladaptive substance use compared to other ethnic groups. Decades of research have been conducted to explain such disparities and construct interventions aimed at altering these maladaptive patterns. Despite these efforts, current epidemiological studies indicate that large substance-related disparities still exist.

Data from 11 of the past annual National Survey on Drug Use and Health (NSDUH) surveys suggest that the AIAN population consistently exhibited the highest prevalence of substance abuse or dependence from the years 2002-2013 (see NSDUH 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014). In 2012, the NSDUH found that the prevalence of substance abuse or dependence among AIANs was double that of any other ethnic group surveyed (21.8%; NSDUH 2012). These disparities are not limited to adults, as NSDUH data from 2004 to 2009 suggest that AIAN adolescents exhibited past-month rates of cigarette, marijuana, and prescription drug use that were higher than the national average.

Substance use can result in many adverse physical sequelae for individuals, in addition to its impact at the family and community level (Whiteford et al. 2013). Health risks also tend to increase with the frequency and quantity of substance use (Degenhardt and Hall 2012). Between 2001 and 2005, an average of 1514 alcohol-attributable deaths occurred annually in the AIAN population, which accounted for over 11.7% of all AIAN deaths (CDC 2008). In this same time span, AIANs were more than twice as likely to die from alcohol-related causes compared to the U.S. general population (CDC 2008).

To mitigate the negative consequences of these behaviors, research has identified numerous risk and protective factors for the maladaptive patterns of substance use observed in this population. Risk factors range from childhood physical or sexual abuse (e.g., Libby et al. 2004) to responses to historical traumas experienced by the AIAN community (Brave Heart 1998), colonialism, and ongoing oppression (Hilton 2011). Other literature in the field has focused on biological aspects of substance use, such as the heritability of alcoholism (Wilhelmsen and Ehlers 2005) and ethnic differences in sensitivity to the subjective effects of substances (Garcia-Andrade et al. 1997).

Protective factors, or those that moderate the effects of risk exposure, have largely been neglected in regard to substance use behaviors in the AIAN population, perhaps due to the field's emphasis on etiological considerations. Existing research identifies several variables that may mitigate risk, such as enculturation (LaFromboise et al. 2006), the sense of belonging in school (Napoli et al. 2003), and religious affiliation (Yu and Stiffman 2007), which perhaps account for some of the inter-tribal differences in the prevalence of substance use disorders (SUDs) found in the AIAN population (e.g., Koss et al. 2003).

Research on risk and protective factors has been significantly hindered by a lack of an integrative theoretical structure. Many studies have examined sociostructural/demographic, cultural, or psychological determinants of substance-related behaviors in this population without utilizing a theoretical model to explore the potential interrelations among these variables or their proximity to substance use. This trend has resulted in a lack of comprehensiveness in research, as well as a disproportionate number of studies identifying sociostructural and demographic risk factors, which are generally more distal determinants of health behavior (Betancourt et al. 2010; Betancourt and Lopez 1993; Flynn et al. 2011). Such research methodology may hinder progress toward reducing the prevalence of SUDs in this population. Through a review of key risk and protective factors for substance-related behaviors in this population, this article highlights the necessity and potential benefits of applying an integrative model that can guide research and interventions focusing on the structure of relations among sociostructural/demographic, cultural, and psychological factors relevant to substance-related behaviors in the AIAN population.

Theoretically Driven Research on Risk and Protective Factors

Betancourt’s integrative model of culture, psychological processes, and behavior (Betancourt et al. 1992; Betancourt and Lopez 1993), hereafter referred to as Betancourt’s Model, is based on the study of culture in psychology, and has been used to guide research on and interventions for various health behaviors in minority and underserved populations (e.g., Betancourt and Flynn 2009; Betancourt et al. 2010, 2011). As seen in Fig. 1, an important underlying assumption of this model is that relations among the variables conceived as determinants of health behavior are structured from most distal to more proximal (moving from A to D), with those variables in closer proximity to behavior exhibiting greater influence. This model depicts how behavior (D) is a function of psychological processes (C), which are the most proximal determinants and therefore have the greatest influence on behavior. Culture (B) can also influence behavior, either directly or indirectly through mediating psychological processes.

From distal... to more proximal determinants of behavior

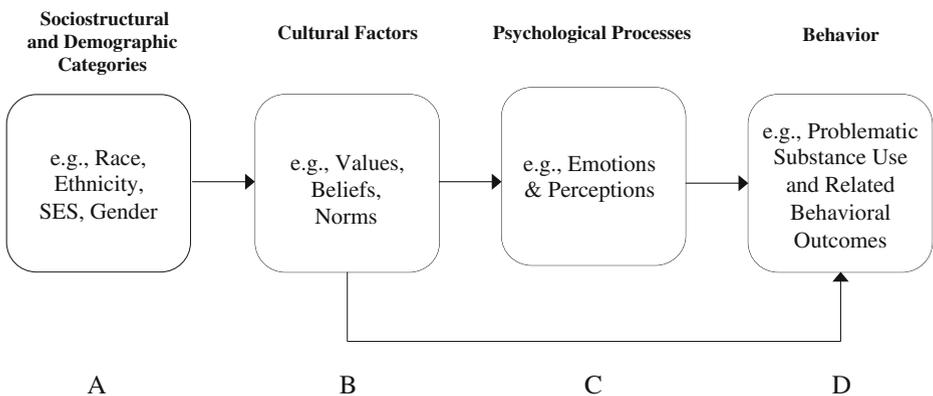


Fig. 1 Betancourt’s integrative model of culture, psychological processes, and behavior, adapted for the study of substance-related behaviors in the AIAN population

By contrast, sociostructural (e.g., socioeconomic status [SES]) and demographic (e.g., age, ethnicity) factors (A) are considered to be sources of cultural variation, and thus are generally not directly associated with behavior.

The model's integrative nature allows joint consideration of the interrelationships among sociostructural/demographic, cultural, and psychological determinants of a given behavior (i.e., substance use). It provides a theoretical framework for understanding ethnic health disparities and offers insight regarding the relative influence of each proposed variable on substance use (Flynn et al. 2011, 2015). The following sections of this article utilize Betancourt's Model to highlight key risk and protective factors for substance use in the AIAN population that have been identified by previous studies in an attempt to advance integration and illustrate a methodological approach that can guide research and interventions in the field.

Sociostructural and Demographic Risk and Protective Factors

Sociostructural and demographic factors are considered sources of cultural variation (see Betancourt et al. 2010, 2011; Betancourt and Lopez 1993) and can be thought of as groups to which one belongs. Factors such as SES, race, ethnicity, and religious affiliation are representative of this category. Such factors are considered sources of cultural variation because membership in such groups tends to generate socially shared beliefs, values, norms, and practices specific to that group. Although sociostructural and demographic variables can sometimes help explain behavior directly, the socially shared values, beliefs, and norms derived from membership in these groups are likely to mediate the effects of sociostructural and demographic variables on behavior (Betancourt and Lopez 1993). Furthermore, limiting explanations of behaviors such as substance use to demographic factors (e.g., race/ethnicity) can reinforce racist explanations of human behavior (Betancourt and Lopez 1993).

The vast majority of sociostructural and demographic risk and protective factors examined pertain to circumstances that are typically outside of an individual's control. Specifically, factors such as age, sex, education, and employment status have all been proposed as relevant to substance-related problems in this population (e.g., Herman-Stahl et al. 2003). One study of American Indian (AI) adults found that individuals aged 18–24 years were nine times more likely to be heavy drinkers than adults over 65 years of age (Herman-Stahl et al. 2003). Those with a high school diploma or less were more likely to be heavy drinkers than those with more than a high school education (Herman-Stahl et al. 2003). Males in this study were almost two times more likely to have an alcohol use disorder (AUD) than females, and those who were unemployed were over five times more likely to have an AUD than those employed full-time (Herman-Stahl et al. 2003).

Research on demographic factors in the general US population mirrors the finding that younger age and male gender are positively related to alcohol consumption (Moore et al. 2005). However, findings from the general US population suggest that higher educational attainment and employment can be associated with greater alcohol consumption (Moore et al. 2005). In accordance with the model, future research might examine potential variation between these populations in cultural beliefs, values, or norms related to these variables and substance use. Perhaps AIANs who are employed share a social norm of abstinence, whereas employed individuals of other ethnicities in the USA share norms of more frequent substance use.

Adverse childhood experiences (e.g., physical abuse, sexual abuse, neglect) are predictive of substance use for the general US population (Dube et al. 2001) as well as the AIAN population. For AIs, both childhood physical and sexual abuse are associated with higher lifetime rates of substance abuse and dependence (Libby et al. 2004). For AI men, combined physical and sexual abuse can significantly increase the likelihood of subsequent alcohol dependence (Koss et al. 2003). For AI women, sexual abuse and boarding school attendance seem to increase the odds of alcohol dependence (Koss et al. 2003).

Family structure also seems to play a role in the initiation of substance use for some AIAN groups. One study of AI adolescents found that there was an increased likelihood of alcohol and marijuana initiation for those living in single-parent or nonparent family member's homes versus original two-parent homes (Lonczak et al. 2007).

Recently, much attention has been given to the concepts of historical trauma, oppression, and colonialism for their role in the etiology of various mental health issues such as substance abuse in the AIAN population (e.g., Brave Heart et al. 2011; Brave Heart 1998, 2003; Hilton 2011). The implementation of federal off-reservation boarding schools in the late nineteenth century (Adams 1995), massacres (Brown 1970), broken treaties (McNickle 1957), the loss of land and forced relocations (Hilton 2011), and coercive sterilizations in the 1970s (Lawrence 2000; Rutecki 2011) have become a source of culture for the AIAN people. Those affected by these events (directly or indirectly) share thoughts regarding the loss of Native language, land, self-respect, and other factors (Whitbeck et al. 2004a). These socially shared thoughts appear to be prevalent in the minds of the current generation of AI adults, and are positively related to the maladaptive use of substances (Ehlers et al. 2013; Whitbeck et al. 2004a, b).

Many studies have also explored demographic risk factors typical of adolescence as they relate to the substance use problems seen in many AIAN communities. Specifically, research in this area has examined predictors such as peer alcohol use, adolescents' easy access to alcohol, exposure to peer misbehaviors, and exposure to drug offers through relatives and friends. In a study of AI and Anglo adolescents, association with peers who use alcohol was related to increased alcohol involvement for both ethnic groups (Oetting et al. 1989). AI youth's exposure to drug use offers via parents, cousins, and peers predicts more frequent use of a variety of substances (Kulis et al. 2006), while exposure to peer misbehavior (e.g., having a friend who uses substances or is unemployed and not in school) predicts adolescent alcohol abuse/dependence symptoms (Yu and Stiffman 2007). Lastly, some AIs identify the ease of access to alcohol (e.g., alcohol within the home) as a contributing factor to excessive drinking (Yuan et al. 2010).

Factors such as reservation status (i.e., living on/off reservation), harsh socioeconomic conditions, and family members' substance abuse problems have also been identified as contributors to substance use among AIANs. It has been found that AI youth who live on reservations experience double the rates of lifetime alcohol abuse/dependence than their urban dwelling counterparts (Yu and Stiffman 2007). Socioeconomic conditions in many AIAN communities are extremely poor (e.g., Antell et al. 1999; Cornell and Kalt 1990; Taylor and Kalt 2005). According to the 2007–2011 American Community Survey, the AIAN ethnic group ranked highest in percentage of individuals living below poverty level (27%), which at that time was almost double that of the general US population (14.3%; Macartney et al. 2013). Congruent with this high prevalence of poverty, lower SES of family members seems to be related to alcohol abuse/dependence symptoms in AI youth (Yu and Stiffman 2007).

AIs living in the Los Angeles area who were considered to be "heavy drinkers" were more likely to have had heavy-drinking models in their family of origin (Weisner et al. 1984).

Likewise, Yu and Stiffman (2007) found that having family members with substance abuse problems positively predicts alcohol abuse/dependence symptoms in the AI adolescent population. This finding is congruent with research suggesting the influence of family on substance use may be greater on AI versus Anglo teens (Waller and Okamoto 2003). Further investigation is needed to determine more proximal predictors of use that arise from determinants such as socioeconomic conditions, reservation status, or having a family member with a substance use problem. Utilizing Betancourt's Model, researchers could examine how variation in cultural factors such as norms, practices, and beliefs shared by families or groups may be associated with variation in psychological processes and behaviors related to substance use.

Literature examining resiliency or protective factors against substance use among the general population is expansive, yet few studies have been conducted examining these factors in the AIAN population (LaFromboise et al. 2006). Of the relatively small number of sociostructural and demographic protective factors identified in the literature, most were identified from studies of AIAN youth.

One study utilizing focus groups to identify resilience factors in AIAN youth found that same-generation family members can serve as both protective and risk factors in regard to substance use offers, depending on the situation (Waller and Okamoto 2003). In some cases, respondents' relatives pressured them to use drugs and alcohol; in other cases, respondents' relatives discouraged their use of substances (Waller and Okamoto 2003). According to Betancourt's Model, it is likely that the protective effects resulting from familial discouragement of substance use are accounted for by changes in cultural factors such as expectations, beliefs, values, and norms regarding substance use. For example, having a same-generation relative who discourages the use of substances may create an expectation regarding abstinence that could account for the denial of the substance use offer. Accordingly, prevention programs may have a larger impact by facilitating expectations of abstinence within small family groups, as opposed to teaching an entire school generic refusal skills for drug offers (Waller and Okamoto 2003). Future researchers could also utilize Betancourt's Model to investigate psychological factors derived from such expectations. Perhaps the protective effects provided by the socially shared expectation of abstinence among AIAN youth are mediated by psychological variables, such as negative alcohol expectancies or reduced psychological stress during substance use offers. Identifying these related cultural and psychological variables would allow prevention programs to target more impactful variables directly related to substance use.

Religious affiliation has also been shown to stimulate protective effects against substance abuse in AI youth. The endorsement of religious affiliation is negatively related to alcohol abuse/dependence symptoms and demonstrates moderating effects with regard to numerous risk factors in this population (Yu and Stiffman 2007). For example, among AI youth who are witness to peer misbehavior (i.e., a risk factor) belonging to an organized religious group reduces alcohol abuse/dependence symptoms (Yu and Stiffman 2007). Future research on the protective value of religious affiliation should further investigate what specific cultural variables are derived from religious participation. For example, it is possible that religious affiliation increases perceived norms of abstinence among peers or socially shared beliefs regarding the negative effects of substance use. Such cultural factors may help these adolescents deny substance use offers outside of their religious group.

The fact that many of these sociostructural and demographic factors, both risk and protective, are largely impermeable to individual influence renders psychological intervention at this level problematic. Altering one's history or membership in a specific demographic or sociostructural group poses a greater challenge than altering the group's socially shared

beliefs, values, or norms regarding substance use. As proposed by Betancourt's Model (see Fig. 1), demographic factors are more likely to be associated with variations in aspects of culture rather than directly with health behavior (Betancourt and Flynn 2009; Flynn et al. 2011). Once identified, interventions, prevention programs, and treatment plans can be created that target such cultural or psychological factors directly.

Cultural Risk and Protective Factors

As noted by Betancourt and Lopez (1993), an important obstacle to progress in psychological research has been the "lack of a clear definition and understanding of culture from a psychological perspective" (p. 630). Although many definitions of culture have been proposed (see Cohen 2009), the notion that culture includes socially shared values, beliefs, norms, expectations, and practices of a particular population is common in American psychology today (e.g., Betancourt et al. 2010, 2011; Flynn et al. 2011). When culture is defined in terms of psychologically relevant elements (e.g., roles and values) it becomes more amenable to measurement (Betancourt and Lopez 1993). Thus, for the literature review on cultural risk and protective factors that follows, articles were selected that examined psychologically relevant and socially shared variables such as values, norms, beliefs, expectations, and practices.

Regarding culture, many family and community-related risk factors have been identified as relevant to substance use among AIANs. For example, the value of family cohesion and loyalty may play a role in the "enabling" of AI family members' substance use. Yuan et al. (2010) noted that AI individuals avoided interacting with authorities "because they did not want their spouses and children to get into trouble or go to jail" (p. 9). This value may stem from sensitivity to the historical tactics used to divide and destroy American Indian tribes (Yuan et al. 2010). As a result, members of the AIAN community may be more protective of their family relationships and thus less willing to behave in a way that might jeopardize them.

Many socially shared beliefs and norms regarding the use of substances seem to be related to an increased risk for substance use in this population (Yuan et al. 2010). Some AI individuals hold the belief that alcohol use is a part of native life and identity, and associate AI drinking with courage and masculinity (Yuan et al. 2010). Fatalistic beliefs can also play a role in the facilitation of substance use; AI adolescent males tend to place the responsibility of their alcohol use on heredity and fate more so than their Euroamerican counterparts (Sage and Burns 1993). Beauvais (1998) suggested that many Indian tribes hold the belief that behaviors are a result of spiritual forces; thus, members of such tribes can easily say that their behavior is outside their control and continue drinking. Such beliefs could reduce self-efficacy and promote helplessness, which in turn may maintain drinking.

Regarding historical trauma and unresolved grief, the pioneering work of Whitbeck et al. (2004a) provided the field with an objective means of measuring thoughts of historical trauma (the *Historical Loss Scale*), as well as a methodology for connecting these thoughts with symptoms of emotional distress (the *Historical Loss Associated Symptoms Scale*). The fact that these thoughts of historical loss are socially shared and prevalent among a notable percentage of the AI population places them in the realm of cultural factors. Whitbeck et al. (2004a) found that thoughts of historical loss are quite common in the current generation of AI adults, and that these thoughts are positively associated with symptoms of emotional distress. Historical loss seems to mediate the effects of perceived discrimination on 12-month diagnosis of alcohol abuse among AI women (Whitbeck et al. 2004b). Furthermore, the

affective symptoms (e.g., anger, anxiety or nervousness, shame) accompanying thoughts of historical loss are correlated with substance dependence among AIs (Ehlers et al. 2013).

Research suggests there are also cultural factors that protect against substance use in the AIAN population. Two related concepts in the realm of protective cultural factors are enculturation and cultural orientation. *Enculturation* is the process by which individuals identify with their own minority culture. Enculturation in this population includes elements such as participation in traditional activities, identification with AI culture, and traditional spiritual involvement. *Cultural orientation* refers to an individual's level of identification with various aspects of the minority or majority culture. For example, AIAN individuals can be classified as more "Indian oriented," less Indian oriented, or "bicultural" (Herman-Stahl et al. 2003). Both enculturation and a high degree of affiliation with AIAN culture have been shown to provide protective effects against the use of substances (LaFromboise et al. 2006; Whitbeck et al. 2004b; Herman-Stahl et al. 2003). It has also been found that one of the strongest predictors of resilience (defined by prosocial behavior and the absence of problem behaviors such as substance use) for AI adolescents is a higher level of enculturation (LaFromboise et al. 2006).

While there is strong empirical support for the protective effects of identification with the AIAN culture, findings are mixed with regard to biculturalism. Herman-Stahl et al. (2003) demonstrated that bicultural or less Indian-oriented individuals tend to use alcohol more than their more Indian-oriented counterparts, and that these orientations seem to vary in relation to age and employment status. However, a higher degree of "bicultural competency," or the blending of the values and roles of both the culture in which one was raised as well as the culture in which one is surrounded, has been shown to have protective effects against substance abuse for AI adolescents (Schinke et al. 1988). These mixed findings suggest a differentiation between possessing knowledge and skills related to interacting with both the AIAN and majority culture (i.e., bicultural competency) and actually identifying as bicultural. Such findings highlight the need for continued research and clarification of the influence of cultural orientation on substance use as well as the consideration of potential mediating psychological factors.

Spirituality seems to be a cultural protective factor against substance abuse in both the general population (Chitwood et al. 2008; Hodge et al. 2001; Stewart 2001) and among AIANs (Hazel and Mohatt 2001; Walters et al. 2002; Yu and Stiffman 2007). Spirituality permeates many areas of Native life, and the participation in traditional spiritual practices can serve to both heal as well as sustain AI health (Walters et al. 2002). Spirituality has been labeled a "critical protective factor in dealing with adversity and other stressors" (Walters et al. 2002, p. 112). Increased levels of spirituality can also play a role in cessation from the use of certain substances in the AI population (e.g., Torres Stone et al. 2006). However, the participation in "generic" cultural activities (e.g., powwows) has been linked to substance abuse in some studies. For example, Yu and Stiffman (2007) found that participation in generic cultural activities is related to alcohol abuse/dependence symptoms in AI youth. Specifically, this effect was attributed to informal social gatherings ("49s") following powwows.

Given the protective effects of spirituality on substance abuse in the general population, and its expansive role in traditional AIAN culture (Walters et al. 2002), this factor seems to be a promising avenue for future research and intervention. Further research on spirituality among AIANs could examine psychological factors that potentially mediate its protective effects on substance use. Perhaps participation in traditional spiritual ceremonies increases psychological well-being, which in turn decreases the desire to use substances. Based on

Betancourt's Model and methodological approach, research exploring the direct and/or indirect effects of cultural factors on substance use may provide a more comprehensive and integrative analysis of these determinants.

Psychological Risk and Protective Factors

According to Betancourt's Model, psychological processes such as emotions and perceptions are the most proximal determinants and thus typically have the greatest influence on behavior (Betancourt and Flynn 2009; Betancourt and Lopez 1993; Flynn et al. 2011, 2015). Culture has a strong influence on these psychological processes, and these psychological processes can mediate culture's effects on behavior (see Fig. 1; Betancourt et al. 2011; Flynn et al. 2011). Perceived discrimination, perceived maternal warmth, affective symptoms associated with historical loss, anger, depression, and alcohol expectancies are all psychological factors relevant to substance use in the AIAN population.

Research suggests that perceived discrimination affects both mental and physical health in the general population (Pascoe and Smart Richman 2009; Kessler et al. 1999). Perceived discrimination seems to have an effect on substance use in the AIAN population as well, although research is limited in this area. In one study, perceived discrimination was positively associated with 12-month diagnostic criteria for alcohol abuse among AI parents/caretakers (Whitbeck et al. 2004b). A separate study of AI 5th through 8th graders found that the effects of perceived discrimination on substance abuse are mediated by adolescent anger and delinquent behaviors (Whitbeck et al. 2001).

Many models of addiction highlight the role of stress in substance use and relapse (Sinha 2001). Stress, and the exposure to stressors, is associated with substance use in both adolescents and adults in the general population (e.g., Keyes et al. 2011; Sinha 2001; Wills 1986). Similarly, it has been shown that heavy drinkers in the AI population tend to score higher on psychophysiological stress indices (Weisner et al. 1984). Furthermore, psychomolletic stress, or stress which weakens resistance thus increasing susceptibility to a disease, has been proposed as a factor relevant to AI alcohol use (Mail 1989). Researchers in this area might utilize Betancourt's Model and methodology to examine sociostructural or cultural antecedents and the potentially mediating role of stress on substance use. Cultural factors such as socially shared thoughts of historical loss could heighten psychophysiological stress, which in turn increase one's susceptibility to the use of substances as a way of reducing such stress.

Positive alcohol expectancies and sensation-seeking have also been examined in relation to the use of various substances. *Positive alcohol expectancies*, or greater expectations of positive outcomes and fewer expectations of negative outcomes from consuming alcohol, have been found to be stronger in alcoholics versus nonalcoholics (Brown et al. 1985) and predict quantity and frequency of heavy drinking (Carey 1995). These results seem to generalize well to the AI population, as alcohol expectancies have been noted as relevant to drinking patterns in some AI groups (Garcia-Andrade et al. 1996). *Sensation-seeking*, or the tendency to seek novel or thrilling experiences, is related to the initiation of the use of certain substances in adolescence among both AIs (e.g., Spillane et al. 2012; Howard et al. 1999) and the general population (e.g., Martin et al. 2002).

With regard to affect, many emotional states are directly related to substance use in both majority and minority populations. For example, higher levels of depression, particularly in

older adults, are related to concurrent alcohol and drug use and impairment (Conner et al. 2009). In multiethnic populations, anger has been associated with the use of various substances (Nichols et al. 2008). Among AI adolescents, anger seems to be related to early onset substance use (Whitbeck et al. 2001). Depressive symptomatology is also related to substance use in AI adolescent populations, even after controlling for factors such as SES and reservation status (Yu 2006). Affective symptoms associated with socially shared thoughts of historical loss (e.g., anger, sadness/depression) are significantly and positively correlated with substance abuse and/or dependence (Ehlers et al. 2013; Whitbeck et al. 2004b).

The body of literature examining psychological risk factors is quite substantial in comparison to the amount of research exploring processes that provide buffering effects against substance use in this population. In majority populations, there is a general trend of focusing on protective factors against substance use as they relate to adolescence. For example, factors such as school connectedness, a “warm-directive” perceived family environment, school bonding, and school interest provide protective effects for adolescents against the use of various substances (Bond et al. 2007; Bryant et al. 2003; Foxcroft and Lowe 1995). The perception of a sense of belonging in school seems to delay the initiation of, and provide protective effects against, the use of various substances among AI youth (Napoli et al. 2003). One study of AI student youth found that those who endorsed a stronger sense of belonging in school reported lower lifetime use of alcohol and cigarettes, lower past month cigarette and marijuana use, and decreased levels of current use of these substances (Napoli et al. 2003). Similarly, the perception of a supportive community that is concerned with schools, sports, language, and customs seems to lead to more resilient outcomes (e.g., high levels of prosocial behaviors and an absence of problem behaviors such as substance use) for AI youth (LaFromboise et al. 2006). Lastly, it has been shown that there is a significant increase in the likelihood of resilience among AI youth who perceive higher levels of maternal warmth (LaFromboise et al. 2006). Thus, the perception of a supportive environment may provide protective effects for youth in this population.

Research on psychological protective factors is limited, especially for AIAN adults. Nonetheless, there seems to be a general consensus on psychological risk factors such as increased stress, negative affect, and positive expectancies of the effects of substances. There also seems to be a consensus on the protective effects of a supportive environment and sense of belonging in the community, at home, and at school for AIAN adolescents. Future research utilizing Betancourt’s Model as a guide could examine the impact of, for example, an Indian cultural orientation on the sense of belonging in various settings within AIAN populations. Perhaps those who are more Indian-oriented experience a greater sense of belonging in the community and other areas, which decreases their risk for problematic substance use. Given their direct and highly influential relationship with behavior, these psychological risk and protective factors pose potentially rewarding targets for research and intervention.

Prevention programs targeting adolescents at this level could focus on building a supportive community environment for adolescents, increasing warmth within homes, and fostering a sense of belonging in schools. The field could benefit from future research seeking to identify additional psychological protective factors related to substance use that are specific to AIAN adults. Researchers should seek to identify the interrelations among such psychological factors and the values, norms, beliefs, and expectations that may influence them, as suggested by Betancourt’s Model.

Discussion

Substance use has been, and continues to be, a serious mental health concern for the AIAN people (Bachman et al. 1991; Brod 1975; Wanberg et al. 1978; Young 1988; NSDUH 2013), calling into question the utility of findings and approaches used to study and deal with these substance-related disparities. Many sociostructural, demographic, cultural, and psychological determinants have been identified as relevant to substance use in this population, and this research has influenced prevention and intervention efforts (e.g., Gone 2013; Hawkins et al. 2004; Schinke et al. 1988). Many of these studies have focused on sociostructural or demographic determinants such as sex, education, SES, and sexual abuse, which typically explain little variance in behavior once cultural and psychological factors are accounted for.

Traditionally, a previously identified risk or protective factor for substance use is tested for its impact within an AIAN population; this approach can increase the chances of neglecting factors specific to AIANs. Research utility may be enhanced by first identifying a sociostructural or demographic factor specific to the AIAN population and then exploring the socially shared beliefs, values, and norms brought about by membership in such groups. Additionally, few studies have examined the interrelations among multiple determinants. Assessing for significant interrelations may result in the development of more comprehensive treatment programs. With the application of Betancourt's Model, many of these obstacles to progress may be eliminated.

Betancourt's Model has been used to guide research on the determinants of various health behaviors in minority and underserved populations (e.g., Betancourt and Flynn 2009; Betancourt et al. 2011; Flynn et al. 2011, 2015). The integrative nature of this model increases its potential utility as a conceptual and methodological guide for research in this field, given the rather large number of risk and protective factors identified as relevant to substance use behavior in the AIAN population. Betancourt's Model emphasizes the need to move beyond confirmatory analyses based on the identification of sociostructural/demographic categories and ascertain more proximal and influential factors related to substance abuse in this population. This is not to suggest that identification of these factors is unimportant, but rather that more influential and clinically useful variables related to such factors can be identified and targeted for intervention. Once a demographic risk factor of substance use in the AIAN population is identified, such as the experience of childhood sexual abuse, researchers should ask what it is about this experience that makes a member of this population more susceptible to using substances or developing a SUD in the future. For instance, are there socially shared expectations, norms, values, or beliefs among AIANs that have been sexually abused that may be related to substance use either directly or indirectly through a mediating psychological process such as negative affect? What is the structure of relations among those multiple factors and their effects on substance-related behaviors? Answering such research questions could provide the field with valuable information to enhance prevention and intervention programs.

It is suggested that once a set of variables relevant to substance use in this population is identified, researchers should seek to understand the interrelations among those determinants. Betancourt's Model provides an integrative framework concerning the structure of relations among such determinants that can serve as a theoretical guide. For example, historical trauma seems to be related to thoughts of historical loss among at least the contemporary generation of AI adults, and these socially shared thoughts are significantly correlated with affective symptoms (Whitbeck et al. 2004a); moreover, these affective symptoms are positively correlated with substance dependence (Ehlers et al. 2013). The relations among these factors seem

to fit well with the model (see Fig. 2). On the rare occasion that a study has examined the structure of relations among two or more determinants of substance use in this population, an integrative theoretical guide for the examination is lacking.

Researchers who fail to find a direct relationship between a specific demographic factor or socially shared belief, value, or norm and substance use should not rule out its potential influence on substance-related behavior. Perhaps the demographic or cultural factor indirectly affects substance use through a mediating cultural or psychological factor. Research confirming the structure of relations proposed in this model could be used to create a substance use prevention program targeting a particular demographic category (e.g., those living on reservations) high in a given cultural factor (e.g., thoughts of historical loss) and related psychological process (e.g., psychophysiological stress).

Supportive research is needed in many areas, above and beyond the necessity for methodological guidance from an empirically supported integrative theoretical model. Many studies seem to group together multiple American Indian and Alaska Native tribes as a single sample. Given the variation in values, beliefs, and norms between different SES groups, there may also be variation in factors that influence risk for substance use between tribes. This notion is evidenced by the presence of significant inter-tribal differences in the prevalence of SUDs. For example, prevalence rates as low as 1% (for men) and 2% (for women) have been observed within certain tribes (e.g., Koss et al. 2003). Investigating these tribal differences may lead to the discovery of factors that could be used to supplement prevention and intervention programs. Perhaps protective cultural or psychological factors such as enculturation or perceptions of community support are higher among tribes with low lifetime prevalence rates of SUDs. Furthermore, despite ample research on risk factors, relatively few protective factors specific to this population have been identified. The continued investigation and identification of these factors, guided by an integrative theoretical model, is needed for comprehensive

From distal... to more proximal determinants of behavior

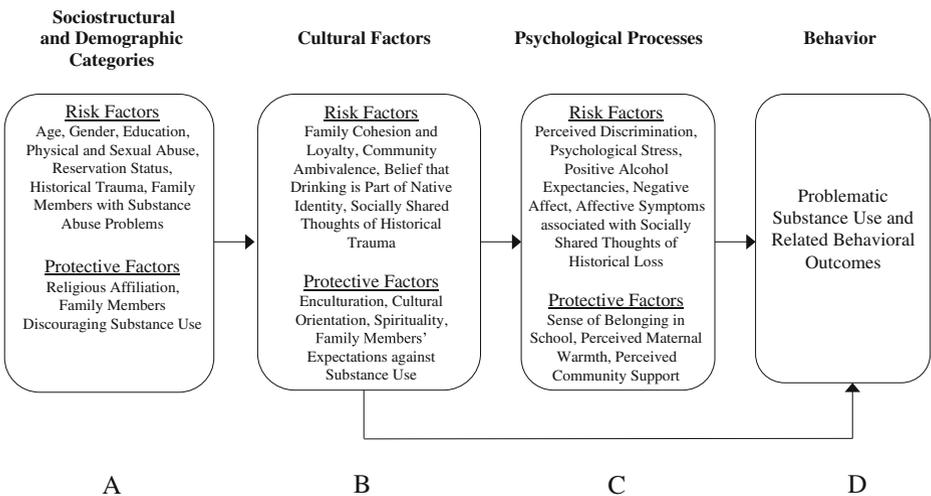


Fig. 2 An illustrative example of previously identified risk and protective factors for substance-related behaviors in the AIAN population, organized according to Betancourt’s integrative model of culture, psychological processes, and behavior

treatment and prevention to reduce the chronic, elevated prevalence of substance-related psychopathology in the AIAN population.

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