Adolescents' Social Norms across Family, Peer, and School Settings: Linking Social Norm Profiles to Adolescent Risky Health Behaviors

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Abstract

Social norms around adolescent risky health behaviors have been often studied in separate developmental settings (e.g., family norms, peer norms), and little is known regarding the overall patterns of social norms across contexts and how they influence adolescent risky health behaviors. This study explored profiles of social norms around risky health behaviors across family, peer, and school settings, using data from 11,086 adolescents (50% female; 49% White, 22% Black, 18% Latinx, 8% Asian American, 3% other race/ethnicities) in the National Longitudinal Study of Adolescent to Adult Health. Five profiles of social norms around risky health behaviors emerged. Only a small portion of the sample experienced either *congruent-restrictive* (6%) or *congruent-permissive* (10%) social norms across settings. The majority experienced incongruent social norms, including the *developmentally normative-low risk* (30%), *developmentally normative-high risk* (40%), and *resilient* (5%) profiles. Adolescents with the congruent-restrictive profile and developmentally normative-low risk profiles exhibited the least risky health behaviors over time, followed by those with the resilient profile, and adolescents with the developmentally normative-high risk and the congruent-permissive profile exhibited the greatest risky health behaviors over time. Each profile was associated with unique developmental, socio-demographic, and psychosocial characteristics. The findings highlighted the complexity of social norms across contexts and the developmental versus risky natures of these social norm profiles.

Introduction

Social norms are critical determinants of adolescent risky health behaviors. Extensive research shows that adolescent risky health behaviors are influenced by social norms in multiple developmental settings, including the behaviors and attitudes held by parents, friends, and schoolmates (Donovan, 2004; Kotchick et al., 2001). While restrictive norms (e.g., low prevalence, high disapproval) by important others often mitigate risky health behaviors, more permissive norms are consistently linked to increases in these behaviors, such as alcohol use (Lynch et al., 2015) and risky sex (Coley et al., 2013).

However, the developmental settings in which these norms are established are often studied separately, and little is known about the overall profiles of social norms across settings. Examining social norms holistically across adolescents' proximal settings is important, as such information could be used to identify adolescents who face unique challenges in particular social settings, allowing for more tailored intervention and prevention efforts targeting different profiles of social norms (Lanza & Cooper, 2016). To fill in this gap, this study explores constellations of social norms around alcohol use and sexual behaviors across multiple settings (i.e., families, peers, schools) in a nationally representative sample of adolescents from the National Longitudinal Study of Adolescent to Adult Health (Add Health). This study investigates how these social norms are associated with adolescents' risky health behaviors, including binge drinking, risky sexual behaviors, and the joint occurrences of alcohol use and sex, both concurrently and longitudinally. This study also investigates adolescents' developmental, socio-demographic, and psychosocial characteristics that are associated with social norm profiles, seeking to understand *who* receives *what* configuration of social norms across contexts.

Profiles of Social Norms across Family, Peer, and School Settings

The investigation of social norm profiles is rooted in developmental theories that emphasize the importance of multiple developmental systems (Bronfenbrenner, 1979; Lerner, 2002). According to these theories, development occurs within multiple social settings, and the interrelations among settings influence well-being. As the social settings become increasingly complex and diverse in adolescence, there is an increased likelihood that settings communicate complex messages about developmental goals and behavioral expectations that may or may not be congruent with each other (Bronfenbrenner, 1979). Young people must constantly process and negotiate complex social messages from various important others, including their families, friends, and schoolmates (Blakemore & Mills, 2014; Nurmi, 2004). Bioecological theory distinguishes between congruent versus incongruent social settings, positing that adaptation is maximized when multiple socialization settings are consistent in their prosocial developmental goals and behavioral expectations for the child (Bronfenbrenner, 1979). The congruent versus incongruent social norms across developmental settings could also occur for risky health behaviors

(Schulenberg & Maggs, 2002). For example, as alcohol use and sexual behaviors become increasingly common in adolescence (Johnston et al., 2018; Mahalik et al., 2014), peer norms around these behaviors are likely more permissive than the norms established by parents. Recognizing such complexities, the current study explores patterns of social norms toward alcohol use and sexual behaviors that are either congruent or incongruent across family, peer, and school settings.

Regarding congruent patterns of social norms around risky health behaviors, informed by the bioecological theory highlighting the benefits of social settings that convey consistent prosocial norms (Bronfenbrenner, 1979), it is expected that a group of adolescents will be identified whose families, friends, and schoolmates are consistently restrictive about alcohol use and sexual behaviors (*congruent-restrictive*). Similarly, another group of adolescents is expected to emerge from the most disadvantaged environments, ones in which permissive messages are consistently received from families, friends, and schoolmates (*congruent-permissive*). In addition to congruent patterns of social norms, mixed messages (i.e., incongruent norms) across developmental settings may also occur. For example, research has identified an incongruent pattern of social norms in which peers are more permissive toward drinking than parents in adolescence (Mrug & McCay, 2013) and emerging adulthood (Cail & LaBrie, 2010). This incongruent profile is especially likely given the typical increase in risky behaviors in adolescence (*developmentally normative*) (Johnston et al., 2018; Mahalik et al., 2014). On the other hand, not all families are restrictive towards adolescent risky health behaviors (Maggs & Staff, 2018), and social settings outside families may also afford resilience and developmental resources, especially when family environments are permissive (Tucker, Ellickson, & Klein, 2008). Thus, it is expected that another pattern of incongruence will emerge, wherein adolescents have parents who are tolerant of risky health behaviors but peers who are restrictive (*resilient*).

Although patterns of social norms have yet to be explored in the extant research base, a small but burgeoning scholarship has begun to examine risks in multiple developmental settings using person-centered approaches (Lanza & Cooper, 2016). This research identifies, for example, adolescents with consistently high or low risks across developmental settings, as well as adolescents who have risks in certain settings but not others (Copeland et al., 2009; Roy & Raver, 2014). Similarly, congruent and incongruent profiles are expected to emerge for social norms around risky health behaviors across family, peer, and school settings.

Utilizing the multiple informant design of Add Health, the current study assesses parent, peer, and schoolmate reports of their own behaviors, which are considered a more accurate assessment of social norms than adolescents' perceptions (Henry, Kobus, & Schoeny, 2011). This study selected social norms that have been shown to be particularly influential for adolescent risky health behaviors, including parents' own alcohol use, parent-child communications about sexual risks, peers' own alcohol use and sexual behaviors, as well as schoolmates' alcohol use and sexual behaviors. Most of these social norms typically fall into the category of descriptive norms (the prevalence of others' behaviors; Cialdini & Trost, 1998) as opposed to injunctive norms (others' attitudes towards risky health behaviors; Cialdini & Trost, 1998), as research has documented greater impact of descriptive norms

than injunctive norms for adolescents' alcohol use (Lac & Donaldson, 2018) and sexual behaviors (van de Bongardt et al., 2014). Moreover, parent-child communications about sexual risks have been documented as effective in conveying norms of sexual behaviors and promote healthy sexual development (Rogers, 2017; Widman et al., 2016). The next section reviews research on each of these indicators and discuss how these indicators may form social norm profiles to influence adolescent risky health behaviors.

Linking Social Norm Profiles to Adolescent Risky Health Behaviors

Informed by social norm theories (Cialdini & Trost, 1998; Lapinski & Rimal, 2005) and developmental theories (e.g., Bronfenbrenner, 1979), social norms in various developmental settings are important determinants of adolescent risky health behaviors. Empirical research has consistently documented the influence of social norms on adolescent risky health behaviors in the general and using Add Health data in particular. Specifically, adolescents are more likely to drink when their parents are heavy drinkers (Campbell & Oei, 2010; Lynch et al., 2015), and when their friends and schoolmates have high alcohol use (Burk et al., 2012; Lynch et al., 2015). Similarly, adolescents engage in more risky sexual behaviors when such behaviors are more normative in peer groups or at school (Coley et al., 2013; van de Bongardt et al., 2014). They also exhibit more risky sexual behaviors (Hutchinson et al., 2003; Usher-Seriki et al., 2008) or increasing sexual behaviors over time when there is a lack of parent-child communication around sexual risks (Coley et al., 2013), particularly when peer sexual behaviors are high (van de Bongardt et al., 2014).

While the independent influences of social norms are well-documented, it is less clear how various social norms come together to influence youth risky behaviors, especially when mixed or incongruent social norms occur across contexts. Bioecological theory highlights the developmental benefits of congruent prosocial norms across settings (Bronfenbrenner, 1979). Moreover, a small body of empirical work has examined the interactive effects of parent and peer norms around alcohol use (Mrug & McCay, 2013; Wood et al., 2004) and identified the greatest benefits for congruently restrictive parent and peer norms. As such, it is hypothesized that youth will be least inclined to engage in binge drinking and risky sexual behaviors when they receive congruent norms deterring risky health behaviors (i.e., the congruent-restrictive profile), but most likely to do so when they receive congruently permissive messages from their important others (i.e., the congruent-permissive profile). Youth may also be more likely to engage in risky health behaviors when the social norms are more permissive in peer groups compared to at home (i.e., the incongruent-developmentally normative profile), as recent work has documented increased alcohol use among emerging adults who perceived greater approval from peers versus parents (Cail & LaBrie, 2010). How incongruent norms in the opposite direction (i.e., permissive parents but restrictive peers; the incongruent-resilient profile) are linked to youth risky behaviors is unclear and remains to be explored. It is possible that this group may capture youth resilience from parental problems and permissiveness (Tucker et al., 2008). Utilizing the first two waves of data from Add Health, this study examines both concurrent and longitudinal associations between the social norm profiles and adolescents' risky health behaviors.

Linking Adolescent Characteristics to Social Norm Profiles

In addition to exploring social norm profiles and their linkages to adolescent risky health behaviors, the present study also explores adolescent characteristics that are associated with the social norm profiles they receive. This investigation is motivated by theoretical work on adolescent risky health behaviors that highlights the importance of adolescents' developmental, socio-demographic, and psychosocial characteristics in understanding their risky health behaviors (Donovan, 2004; Kotchick et al., 2001). This study seeks to understand who are likely to receive what configuration of social norms.

Regarding developmental characteristics, because older adolescents tend to engage in more risky health behaviors (Johnston et al., 2018; Mahalik et al., 2014) and have more permissive social norms across contexts (Byers, Sears, & Weaver, 2008; Mrug & McCay, 2013), social norm profiles likely also vary by these developmental factors. Specifically, adolescents in higher grade levels and in high schools are more likely to experience the congruent-permissive profile of social norms, or the developmentally normative profile of social norms where peers and schoolmates are more permissive than their families, as opposed to the congruent-restrictive profile of social norms.

How adolescents' socio-demographic characteristics (i.e., SES and racial/ethnic factors at family, peer, and school levels) are associated with social norms is complex. On the one hand, studies have identified more permissive social norms in White and high SES families particularly toward alcohol use (Griffin, Scheier, Botvin, & Diaz, 2000; Maggs & Staff, 2018). On the other hand, adolescents from low SES and racial/ethnic minority backgrounds are likely to find themselves in less advantaged settings (e.g., low SES, segregated schools), wherein social norms around risky health behaviors are more permissive (O'Donnell, Myint-U, O'Donnell, & Stueve, 2003). As such, while this study does not pose hypotheses for how socio-demographic characteristics are associated with social norm profiles in general, it is expected that adolescents from low SES and racial/ethnic minority backgrounds are less likely to have the resilient profile.

In relation to psychosocial characteristics, theories of adolescent risky health behaviors have highlighted factors in religiosity, psychological, and cognitive domains (Kotchick et al., 2001; Zimmer-Gembeck & Helfand, 2008). As such, this study investigates how adolescent religiosity, depressive symptoms, and cognitive abilities are associated with the social norms. It is possible that adolescents who are religious (Nonnemaker, McNeely, & Blum, 2003), less depressed (Hallfors, Waller, Ford, Halpern, & Brodish, 2004), and demonstrate higher levels of cognitive abilities (and self-control; Casey, 2015) are more likely to have the congruent-restrictive profile of social norms as opposed to the congruent-permissive profile. Moreover, because cognitive abilities are critical for resilience (Wright, Masten, & Narayan, 2013), this factor is also expected to be associated with the resilient profile.

The Present Study

The present study employs a person-centered approach to address three research aims (see conceptual model in Figure 1). First, this study explored profiles of social norms around alcohol use and sexual behaviors across family, peer, and school settings. It is expected that

profiles of congruent and incongruent social norms across developmental settings. Second, this study investigated how these social norms were associated with adolescent risky health behaviors both concurrently and longitudinally. Finally, this study investigated how adolescents with various developmental, socio-demographic, and psychosocial characteristics experience different profiles of social norms.

Methods

Participants

The current study used data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Add Health is a longitudinal, nationally representative study that followed 7th to 12th grade students, starting in the 1994–95 school year and continuing through their adolescence and young adulthood. Using a multistage, stratified, school-based cluster design, Add Health selected a nationally representative sample of schools based on region, urbanicity, school type, racial composition, and size. Almost all students in the selected 144 schools (ranging in size from 25 to 2,559 students per school) participated in the In-School survey in 1994 ($N = 90,118$). Within the same school year, a nationally representative sample was selected for in-home interviews in 1995 (Wave 1; $N = 20,745$). These adolescents were followed in multiple waves into their adulthood. In addition to adolescent reports, contextual data were collected from parents and school administrators. Peer network data were also collected at the In-School Wave, for which adolescents nominated up to 10 of their close friends.

To construct social norms using reports from parents, peers, and schoolmates, this study selected the analytic sample from adolescents who participated in both the In-School Wave and Wave 1 ($N = 15,355$). The study further excluded 4,269 adolescents who were married or younger than age 15, as they were not eligible for questions on sexual behaviors. The final analytic sample includes 11,086 adolescents (50% females). The sample is racially/ethnically diverse (49% White, 22% Black, 18% Latinx, 8% Asian American, 3% other race/ethnicities). Participants' average grade level at Wave 1 was 10.43 ($SD = 1.15$). The age range was between 15 to 20 years old (Mean = 16.44, $SD = 1.14$). The average level of parents' highest education was between high school and some college. A majority (75%) of the adolescents whose parents were both born in the U.S.

Regarding school characteristics, 93% of the sample attended public schools, 4% attended private non-religious schools, and 3% attended religious schools. The school geographic locations (16% Northeast, 24% West, 22% Midwest, 38% South) and urbanicity (29% urban, 55% suburban, 16% rural) were diverse. Regarding school grade span, 4% of the participants attended middle schools, 25% attended schools with both middle and high school grade levels, and 71% attended high schools. Average school size was 1,387 ($SD = 827$), and the average proportion of racial/ethnic minority population at the schools was 49% ($SD = 34$).

Two sets of analyses were conducted to examine sample selection and attrition patterns. First, the analytic sample was compared with those who were excluded from the current analyses. The analytic sample were more likely than the excluded participants to be male

($\chi^2(1) = 28.64$, $p < .001$), racial/ethnic minority ($\chi^2(1) = 28.35$, $p < .001$), have parents whose education levels were lower ($t(15,119) = -4.16$) and who were foreign-born ($\chi^2(1) = 146.17$, $p < .001$), from the South ($\chi^2(1) = 36.01$, $p < .001$), West ($\chi^2(1) = 47.91$, $p < .001$), and suburban areas ($\chi^2(1) = 13.03$, $p < .001$), and from larger schools ($t(15,352) = 51.15$, $p < .001$) with a larger minority student population ($t(15,352) = 4.82$, $p < .001$). Second, within the analytic sample, comparisons were made between adolescents who participated in both Waves 1 and 2 versus those who participated only in one wave. Adolescents who participated in both Waves were more likely to be female ($\chi^2(1) = 5.09$, $p < .05$), White ($\chi^2(1) = 5.77$, $p < .05$), from the Middle West ($\chi^2(1) = 26.02$, $p < .001$), South ($\chi^2(1) = 14.95$, $p < .001$), and rural areas ($\chi^2(1) = 40.61$, $p < .001$), and from smaller schools ($t(11,084) = -6.11$, $p < .001$) with fewer minority students ($t(11,084) = -3.68$, $p < .001$). These differential selection and attrition patterns were addressed by including adolescent socio-demographic characteristics in the analyses.

Measures

Descriptive statistics for primary study variables are shown in Table 1.

Social norms—Family, peer, and school norms around adolescents' risky health behavior were assessed at the In-School Wave and Wave 1 (Coley et al., 2013; Lynch et al., 2015). All social norm variables were coded such that higher scores indicated more permissive norms, and lower scores indicated more restrictive norms.

Family norms were assessed by parental reports (primarily mothers' reports) at Wave 1. Parents reported their own *alcohol use* on a single item ("How often do you drink alcohol?") using a scale ranging from 1 (*never*) to 6 (*nearly every day*). Parents also reported on 4 items regarding the extent to which they talked to their children regarding sexual risks (e.g., "the negative or bad things that would happen if pregnant") using a scale ranging from 1 (*not at all*) to 4 (*a great deal*). The variable was reverse coded so that it represents a *lack of sexual risk communication*. Greater parental alcohol use has been linked to greater alcohol use by adolescents in prior research using Add Health data (e.g., Lynch et al., 2015). Prior Add Health research has linked the lack of parental sexual risk communication to adolescent risky health behaviors (Usher-Seriki, Bynum, & Callands, 2008; see exceptions in Deptula, Henry, & Schoeny, 2010).

Peer norms were assessed based on peer network data at the In-School Wave. Adolescents nominated up to 10 friends (*Mean* = 7, *SD* = 4), and 58% of the sample had their friends also participating in Add Health. *Peer norms on alcohol use* were created by aggregating friends' reports of their own alcohol use (single item, "During the past 12 months, on how many days did you drink alcohol?") on a scale of 0 (*never*) to 6 (*every day/almost every day*). Greater alcohol use by peers has also been linked to adolescent alcohol use by Add Health research. *Peer norms on sexual behaviors* was created by aggregating friends' reports of their own sexual behaviors (single item, "Have you ever had sexual intercourse?") on a scale of 0 (no) to 1 (yes). The same approach has been used in prior research to investigate risky behaviors in peer networks using Add Health data (Ali & Dwyer, 2010). Sensitivity analyses were conducted including adolescent-reported family and peer norms around

alcohol use and risky health behaviors as covariates of the social norm profiles, yielding highly consistent profiles and linkages with adolescent risky health behaviors.

School norms on alcohol use and sexual behaviors were created by aggregating Wave 1 adolescent reports of their own alcohol use and sexual behaviors within each school separately. Greater alcohol use and sexual behaviors by schoolmates have been linked to adolescent risky health behaviors (Coley et al., 2013; Lynch et al., 2015).

Risky health behaviors.—Adolescents reported their risky health behavior at both Waves 1 and 2 (Hallfors et al., 2004).

Risky alcohol use was assessed by adolescents' reports of the frequency of their binge drinking ("Over the past 12 months, on how many days did you drink five or more drinks in a row?") using a scale ranging from 0 (*not at all*) to 6 (*nearly every day*).

Risky sexual behaviors were determined by a combination of their sexual behaviors ("Have you ever had sexual intercourse?") and use of birth control ("Did you or your partner use any method of birth control when you had sexual intercourse most recently?"). Each adolescent was identified as either (0) *not having sex* or (1) *having sex and using birth control (safe sex) or* (2) *having sex but not using birth control (risky sex).* Across waves, adolescents' sexual behaviors were categorized into (0) *consistently not having sex,* (1) *initiation into or consistently having safe sex,* or (2) *initiation or consistently having risky sex.* Sensitivity analyses showed that this coding scheme yielded similar results as a more nuanced categorization that distinguished initiation into versus consistently having a particular type of sexual behaviors. Finally, adolescents rated four items on whether they had *joint occurrences of alcohol use and sexual activities* (e.g., "The first time you had sexual intercourse, had you been drinking alcohol?"). A sum score was created for the four items (ranging from 0 to 4).

Adolescent characteristics

Adolescent characteristics were assessed at Wave 1.

Developmental factors included adolescents' *grade level* and their *school grade span.*

SES factors were assessed at the family (*parental education*, ranging from less than high school to college degree or higher), peer (*average parental education among all nominated friends*), and school levels (*average parental education within each school*).

Racial/ethnic factors included adolescents' *race/ethnicity* (1= White, 0 = racial/ethnic minority), *cross-race friends* (1= one or more, 0 = no cross-race friends), and *school racial/ethnic minority concentration*. For adolescents' race/ethnicity, racial/ethnic minority groups (Latinx, Black, Asian, Other) were combined for ease of interpretation, as they exhibited similar patterns of differences when compared to White adolescents in sensitivity analyses.

Other adolescent characteristics included *adolescent religiosity* ("How important is religion to you?"), *depressive symptoms* (summed scores of 15 items from the Center for

Epidemiological Studies Depression Scale; Radloff, 1991), and *cognitive abilities* (standardized scores from Add Health Picture Vocabulary Test).

Covariates.

All analyses controlled for factors that have been linked to social norms around risky health behaviors, including adolescents' gender, generational status, school region, urbanicity, sector, and size.

Analysis Plan

Data analyses were conducted in a structural equation modeling framework in two steps. First, latent profile analysis (Lanza & Cooper, 2016) was used to explore various patterns of social norms around alcohol use and sexual behaviors across family, peer, and school settings (six indicators, standardized scores). A set of models were fitted sequentially estimating one to six profiles. The optimal solution was chosen based on multiple fit indices (Nylund, Asparouhov, & Muthén, 2007), including Bayesian information criterion (BIC), the sample size adjusted BIC (ABIC), entropy, and a log-likelihood-based test (i.e., Lo-Mendel-Rubin test). Second, path analyses were conducted to test how various Wave 1 social norm profiles were linked to risky health behaviors at Wave 1 and again at Wave 2, controlling for risky health behaviors at Wave 1. Outcome variables were binge drinking (continuous), risky sexual behavior (categorical, with adolescents who did not have sex at Wave 1 or who did not have sex across waves as the reference group), and joint occurrences of alcohol use and sex (continuous). Dichotomous social norm profile variables were created to capture each profile, and the reference group was rotated for all possible comparisons. Finally, multinomial logistic regression models were conducted to investigate how adolescent characteristics were linked to these social norm profiles. Each model estimated the link between a given adolescent characteristic and the relative probability of having a particular profile compared to the reference profile. Reference groups were rotated to get all possible comparisons between profiles.

All analyses were conducted in M*plus* 8 (L. K. Muthén & Muthén, 1998–2017). To handle non-independence in the data where students were nested in the same schools, the cluster command in M*plus* was applied in all the analyses to obtain robust estimation of standard errors. Moreover, missing data (e.g., due to the use of multiple-informant reports) was handled by the full-information maximum likelihood (FIML) method, a preferred approach that uses all the available information to provide a maximum likelihood estimation (Enders, 2010). FIML is also robust to large missingness (e.g., 50%) in nested data structures (Larsen, 2011). When examining the associations between social norm profiles and adolescent risky health behaviors and adolescent characteristics, sampling weights were used to generate estimates that were generalizable to the larger population. According to Add Health guidelines (Chen & Chantala, 2014), weights from the wave of the outcome variables were used (e.g., use Wave 1 weights in the models for Wave 1 risky health behaviors; use Wave 2 weights in the models for Wave 2 risky health behaviors). Participants who did not have valid sampling weights ($n = 702$) were excluded from these analyses per Add Health guidelines.

Results

Identifying Profiles of Social Norms across Family, Peer, and School Settings

This study first explored social norm profiles based on family, peer, and school norms around alcohol use and sexual behaviors. Latent profile analyses results are shown in Table 2. The five-profile solution was identified as the optimal solution, based on multiple model fit indices and class interpretations (B. O. Muthén, 2003). Specifically, BIC and ABIC values decreased from the one-profile solution to the six-profile solution, indicating an improvement in model fit. Moreover, all LMR tests were significant, indicating a better fit to the data when comparing each model with the previous model. Although entropy values above .80 are generally considered as desirable and higher entropy values indicate better classification, the entropy values of the four- to six-profile solutions were within an acceptable range (Asparouhov & Muthén, 2014). Finally, regarding class interpretations, this study identified two classes with very similar patterns in the six-profile solution. As such, the five-profile solution was selected, as it showed a better fit to the data and yielded the most conceptually meaningful classes.

The five profiles of social norms are shown in Figure 2. This study identified two profiles with congruent social norms across family, peer, and school settings. The first group of adolescents (6%; $n = 690$) had restrictive social norms around alcohol use and sexual behaviors congruently across all settings; this profile was labeled *congruent-restrictive*. An additional 10% of the sample ($n = 1,115$) experienced congruently permissive social norm across settings; this profile was labeled as *congruent-permissive*.

The other three profiles had incongruent social norms around alcohol use and sexual behaviors across family, peer, and school settings. The first group of adolescents (39%; $n = 4,308$) had restrictive norms from family and friends but slightly permissive norms from the schoolmates. The second group of adolescents (40%; $n = 4,445$) had restrictive social norm at home, but permissive norms in peer and school settings. While both profiles were consistent with the developmental trend wherein risky health behaviors increase in adolescence (thus leading to more permissive norms in peer and/or school settings), they differed by the extent to which multiple settings were permissive. Thus, the first profile was labeled as *developmentally normative-low risk*, and the second profile *developmentally normative-high risk*. A third group of adolescents (5%; $n = 528$) had permissive parents but more restrictive peers and schoolmates; this profile was labeled as *resilient*.

Linking Profiles of Social Norms to Adolescent Risky Health Behaviors

This study then investigated the associations between profiles of social norms at Wave 1 and adolescent risky health behaviors (binge drinking, risky sexual behavior, joint occurrences of alcohol use and sex) concurrently and longitudinally. Estimates from path analyses are shown in Table 3. Reference groups were rotated to obtain all possible comparisons between social norm profiles. For ease of interpretation, the reference groups were ordered based on how they were associated with adolescent risky health behaviors (congruent-restrictive, developmentally normative-low risk, resilient, and developmentally normative-high risk).

In general, how each social norm profile was linked to subsequent risky health behaviors was consistent with the implications of its profile label: adolescents with the *congruent-restrictive* profile reported the least risky health behaviors over time, and adolescents with the *developmentally normative-low risk* profile reported similarly low levels of risky health behaviors; adolescent with the *resilient* profile exhibited moderate levels of risky health behaviors; finally, adolescents with the *developmentally normative-high risk* profile and the *congruent-permissive* profile reported the most risky health behaviors over time.

Specifically, comparing adolescents with the congruent-restrictive profile and those with the developmentally normative-low risk profile (see the first row in Table 3), no significant differences emerged for most risky health behaviors with one exception: the latter group reported more binge drinking at Wave 1. Next, compared with adolescents with the congruent-restrictive and developmentally normative-low risk profiles (see Models 1 and 2 in Table 3), the other three groups all exhibited greater risky health behaviors both concurrently and longitudinally. Compared with adolescent with the resilient profile (see Model 3 in Table 3), those with the developmentally normative-high risk and the congruent-permissive profiles exhibited greater risky health behaviors both concurrently and longitudinally, with one exception: adolescents with the developmentally normative-high risk reported less binge drinking than the resilient group over time. Finally, there were no significant differences between the developmentally normative-high risk group and the congruent-permissive group (see Model 4 in Table 3).

Linking Adolescent Characteristics to Social Norm Profiles

Next, this study examined the associations between adolescent characteristics and social norm profiles, seeking to understand who were more likely to have what social norm profile. Results from multinomial logistic regression are shown in Table 4. For ease of interpretation, comparisons were first made between all incongruent social norm profiles versus congruent profiles (see Models 1 and 2 in Table 4 using congruent profiles as the reference group). The three incongruent social norm profiles were then compared with each other (see Models 3 and 4 in Table 4).

Concerning developmental characteristics (see the top section in Table 4), consistent with the hypothesis, adolescents in higher grade levels and in high schools (versus middle schools) were least likely to have the congruent-restrictive profile and most likely to have the congruent-permissive profile. Moreover, adolescents in higher grade levels and in schools with mixed grade levels or high schools (versus middle schools) were also more likely to have the developmentally normative profiles that were of either high or low risk, but less likely to have the resilient profile.

Regarding socio-demographic characteristics (see the second and third sections in Table 4), in general, the developmentally normative-high risk profile was associated with more disadvantaged SES and racial/ethnic backgrounds, whereas the resilient profile was associated with most advantaged socio-demographics. Specifically, for SES factors, adolescents of higher SES levels and with higher SES friends were less likely to have the developmentally normative-high risk profile than the other profiles. In contrast, adolescents of higher SES levels in higher SES schools tended to have the resilient profile than the other

profiles. For racial/ethnic factors, White adolescents were more likely than racial/ethnic minority adolescents to have the resilient profile. Adolescents in schools with more minority students were more likely to have the developmentally normative-high risk profile than either the developmentally normative-low risk or the congruent-permissive profiles.

Finally, regarding psychosocial characteristics (see the bottom section in Table 4), religious adolescents were most likely to have the congruent-restrictive profile and least likely to have the congruent-permissive and resilient profiles. Adolescents with more depressive symptoms were more likely to have the developmentally normative-high risk and the congruent-permissive profiles than the other profiles. Adolescents with higher cognitive test scores were most likely to have the resilient profile and developmentally normative-low risk profiles than the other profiles.

Discussion

Social norms in various developmental settings (families, peer groups, schools) are critical in understanding of which adolescents are more likely to engage in risky health behaviors (Donovan, 2004; Kotchick et al., 2001). However, little is known regarding the overall configurations of social norms across adolescents' developmental settings, or how these social norm profiles are associated with adolescent risky health behaviors. Using nationally representative, multi-informant, longitudinal data from Add Health, this study explores profiles of social norms around alcohol use and sexual behaviors across family, peer, and school settings. Findings highlight the complexity of social norms to which adolescents are exposed to from various contexts: five profiles of social norms emerged, with only a small portion of the sample (16%) receiving congruent social norms across family, peer, and school settings, whereas the majority of the sample (84%) receiving some incongruence in the social norms they received. The normative versus risky natures of these profiles are discussed, in terms of their implications for risky health behaviors, as well as their developmental, socio-demographic, and psychosocial characteristics.

Regarding congruent social norm profiles, the most restrictive social norm profile (6% of the sample), in which adolescents had congruently restrictive social norms around risky health behaviors across family, peer, and school settings (i.e., congruent-restrictive profile), was associated with the least risky health behaviors over time. This group of adolescents were more likely to be more religious, in lower grade levels, and in middle schools, wherein risky health behaviors were least tolerated (Byers et al., 2008; Mrug & McCay, 2013). Moreover, this finding is consistent with theoretical framework (Bronfenbrenner, 1979) and empirical research highlighting the benefits of having congruently restrictive social norms across developmental settings in deterring risky health behaviors (Mrug & McCay, 2013; Wood et al., 2004). On the other end of the continuum, another 10% of the sample received congruently permissive social norms around alcohol use and sexual behaviors across family, peer, and school settings, exhibiting the highest levels of risky health behaviors over time. This group of adolescents likely had cumulative risks across developmental settings, which are associated with the least desirable outcomes (Bronfenbrenner, 1979; Lanza & Cooper, 2016).

Regarding incongruent social norm profiles, the current study identified two common profiles that can be expected by the typical increase in risky health behaviors during adolescence (Johnston et al., 2018; Mahalik et al., 2014). Adolescents with the *developmentally normative-low risk* profile (39% of the sample) had restrictive parents and peers but permissive schoolmates, whereas adolescents with the *developmentally normative-high risk* profile (40% of the sample) had restrictive parents but permissive peers and schoolmates. The two profiles were particularly likely to be identified among adolescents in higher grade levels and high schools, suggesting that they are likely to be developmentally common. Yet, the two profiles also differed in their risk levels. The low risk profile was associated with relatively low levels of risky health behaviors over time, a pattern similar to the congruent-restrictive profile. It is possible that the consistent messages around alcohol use and sexual behaviors from their parents and peers helped offset some of the negative impacts of having more permissive schoolmates. This profile likely captured a developmentally common and adaptive pattern of social norms across settings, wherein adolescents observe the increase of risky health behaviors in their distal peer groups (e.g., schoolmates), but maintain a prosocial environment constructed by their closer important others (families, peers).

In contrast, the developmentally normative-high risk profile was associated with high levels of risky health behaviors, just as the congruent-permissive profile. Perhaps for this groups of adolescents, permissive peers and schoolmates are particularly influential (Cail & LaBrie, 2010) and the incongruence may create additional challenge for adolescents to take in the restrictive messages they receive from their parents (Bronfenbrenner, 1979). Moreover, this high risk profile was associated with a range of disadvantaged socio-demographics—being from low SES and racial/ethnic minority families, attending minority concentrated schools —all of which pointing to an unfavorable developmental environment where risky health behaviors were common and more tolerated (O'Donnell et al., 2003). Adolescents with high risk profiles also reported greater depressive symptoms than those with the low risk profiles. As such, although both groups need to navigate a permissive school environment, adolescents with the high risk profiles may lack the social and individual capital to form more prosocial peer networks. Future prevention and intervention programs would be fruitful to help these adolescents better navigate the incongruent socialization messages across developmental settings.

The last incongruent social norm profile characterized 5% of the sample, who had permissive parents but restrictive friends and schoolmates (i.e., *resilient*). This group of adolescents showed moderate risky health behaviors even though their family environment was most permissive within the sample. This is in line with prior work highlighting the buffering effects of peer contexts for adolescents who were from at-risk families (Tucker et al., 2008). Moreover, the findings showed that this group of adolescents had some advantaged backgrounds: they tended to be White, in high SES peer networks and schools, and had high cognitive abilities. It is possible that these adolescents had more social capital and more prosocial school environment that enabled them to build resilience outside their family settings.

The current findings should be interpreted within the study's limitations. To create an objective assessment of social norms in family, peer, and school settings (Henry et al., 2011), this study used reports from each socialization agents on their own behaviors. This is a strength of the study, but also limited the ability to use other dimensions of social norms (e.g., parental approval of alcohol use was not available in Add Health). Moreover, this study was not able to examine the stability of these social norm profiles over time (e.g., parental reports were only available at Wave 1). Future research with more comprehensive, longitudinal measures of social norms across settings will be better positioned to investigate these issues.

Conclusion

Although the existing literature has demonstrated the influence of social norms on adolescent risky health behavior, the overall profiles of social norms across multiple developmental settings has rarely been established or examined. The present study used objective measures across family, peer, and school settings to construct the overall patterns of social norms around two important dimensions of adolescent health behaviors, alcohol use and sexual behaviors. The findings identified complex but meaningful configurations of risk and protective factors across various settings, highlighting the need to understand adolescents' developmental contexts using a holistic, person-centered approach. Importantly, the majority of the current sample received incongruent social norms across settings, highlighting adolescence as a time when young people need to constantly navigate complex, sometimes contradicting, messages and norms. Such incongruence is also more likely to occur as adolescents get older. As such, understanding how incongruent patterns of social norms influence adolescent risky health behaviors becomes particularly important. The current study sheds light on the normative versus risky natures of the various social norm profiles within a one-year period. More research is needed to understand the long-term implications of these profiles into young adulthood and beyond. In addition to research, this study also has implications for practices. The current findings highlight the need for prevention and intervention efforts to identify adolescents with unique challenges in particular social settings, and design tailored programs targeting different profiles of social norms. For example, adolescents with various incongruent profiles may benefit from support to strengthen their ability to reconcile incongruent, permissive messages in some social settings. These targeted efforts may help improve adolescent health more effectively.

Acknowledgment

Data Sharing Declaration

The data that support the findings of this study are available from the University of North Carolina at Chapel Hill's Carolina Population Center but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. More information about obtaining the restricted-use data are available at http://www.cpc.unc.edu/projects/addhealth.

Biography

Yijie Wang is an Assistant Professor in the Department of Human Development and Family Studies at Michigan State University. She received her Ph.D. in Human Development and Family Sciences at the University of Texas at Austin. Her research investigates how sociocultural processes across developmental settings such as family, peer, and school contexts influence adolescents' psychosocial and physiological adjustment.

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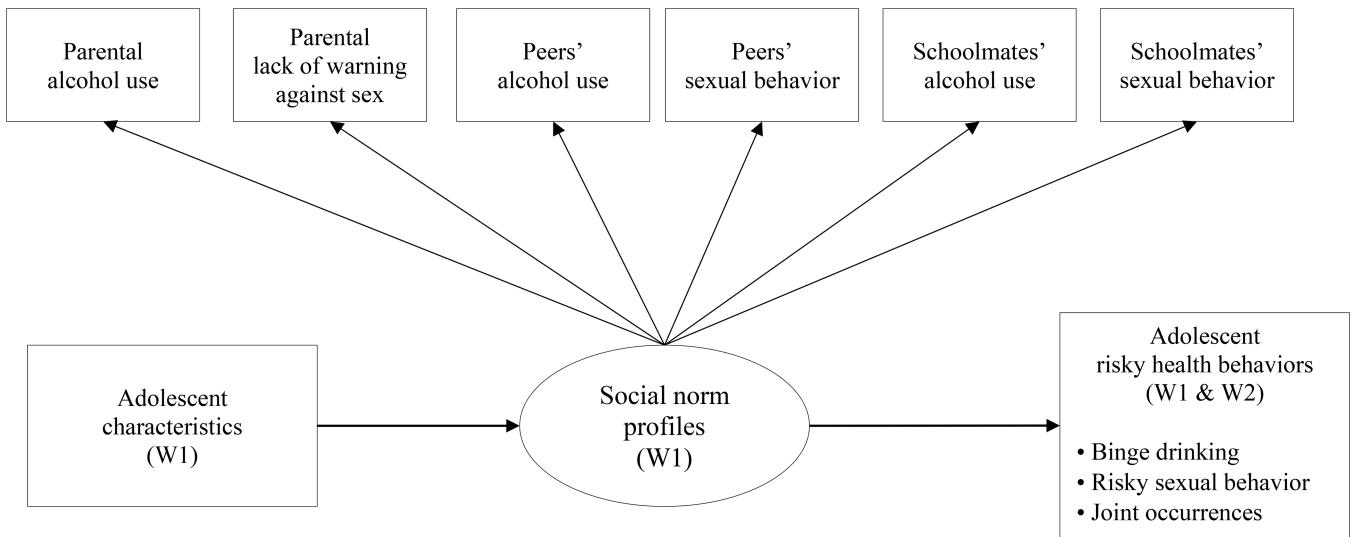
Figure 1.
Conceptual model linking profiles of social norms across family, peer, and school settings to adolescent risky health behaviors and adolescent characteristics.
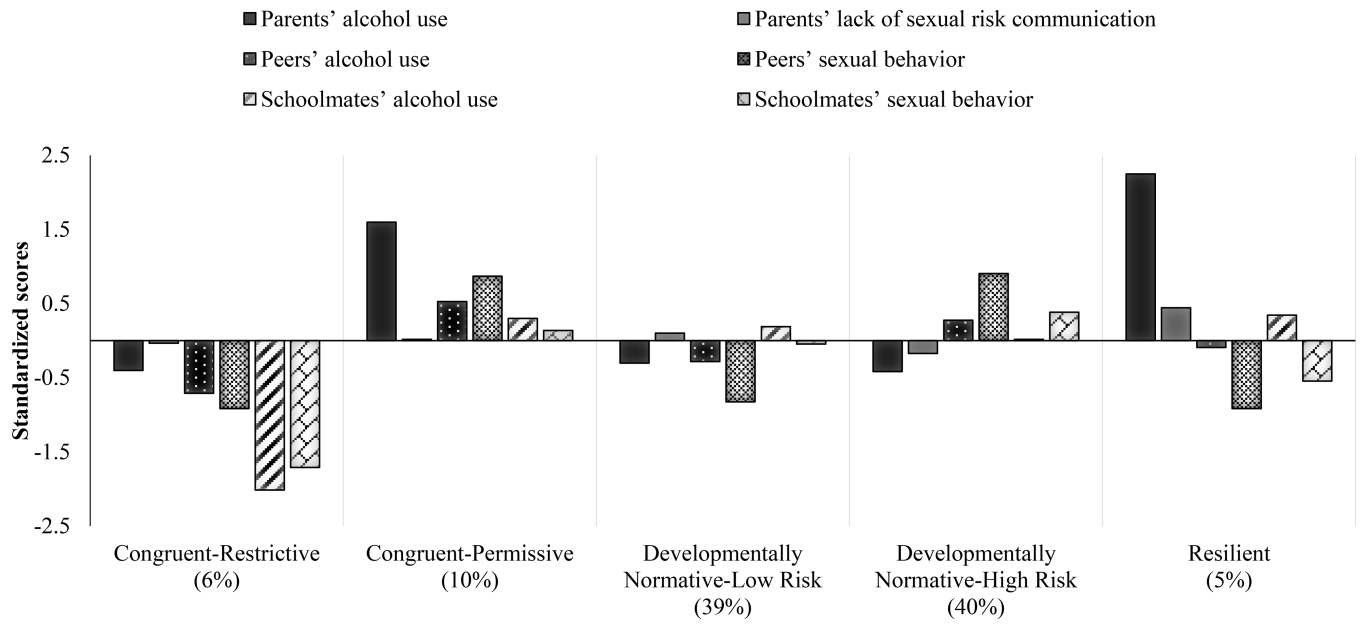
Figure 2.
Profiles of social norms around alcohol use and sexual behaviors across family, peer, and school settings.

Table 1:

Descriptive Statistics for Primary Study Variables

	N	%	Mean	SD	Min	Max
Social Norm Predictors						
Parents' alcohol use (P)	9228		1.93	1.17	1.00	6.00
Parents' lack of sexual risk communication (P)	9199		2.03	0.84	1.00	4.00
Peers' alcohol use (N)	6441		1.32	1.23	0.00	6.00
Peers' sexual behaviors (N)	6445		0.50	0.41	0.00	1.00
Schoolmates' alcohol use (S)	11086		1.22	0.31	0.00	6.00
Schoolmates' sexual behaviors (S)	11086		0.46	0.14	0.00	1.00
Adolescent characteristics						
Developmental factors						
Grade level (A)	10,896		10.43	1.15		
Grade span (AD) [a]	11,086					
Middle school	411	4				
Mixed school (middle and high school grades)	2,814	25				
High school	7,861	71				
Socio-demographic factors						
Family SES (A)	10,902		2.80	1.04	1.00	4.00
Peer SES (N)	6261		2.83	0.86	1.00	4.00
School SES (S)	11086		2.80	0.18	1.38	4.00
Race/ethnicity (A) [b]	11,082					
White	5,397	49				
Latinx	1,984	18				
Black	2,488	22				
Asian	917	8				
Other	296	3				
Cross-race friends (N) [c]	7208					
Having one or more cross race friends	2044	28				
Having no cross-race friends	5164	72				
School minority concentration (AD)	11,086		.49	.34	.05	1.00
Psychosocial factors						
Religiosity (A)	9,577		3.33	.76	1.00	4.00
Depressive symptoms (A)	11,073		7.52	5.98	0.00	45.00
Picture Vocabulary Test scores (A)	10,554		100.41	14.91	13.00	132.00

Note. P = parent reports. N = peer network data. S = school data created by aggregating adolescent reports within each school. A = adolescent reports. AD = school administrator reports. SES = Socioeconomic status.

[a] Middle schools were treated as the reference group.

[b] Racial/ethnic minority groups (Latinx, Black, Asian, Other) were combined for ease of interpretation, as they exhibited similar patterns of differences when compared to White adolescents in sensitivity analyses. Racial/ethnic minorities were treated as the reference group.

[c] Having no cross-race friends were treated as the reference group.

Table 2:

Latent Profile Analyses of Social Norms across Family, Peer, and School Settings

Indicator	1 class	2 classes	3 classes	4 classes	5 classes	6 classes
Number of parameters	12	19	26	33	40	47
BIC	151895.62	148245.38	145504.32	144011.18	142618.72	140263.59
ABIC	151857.48	148185.00	145421.69	143906.31	142491.61	140114.23
Entropy	--	.83	.85	.69	.71	.69
LMR p value	--	.000	.000	.000	.000	.002
Class %	--	84–16	7–11–81	6–45–37–11	6–40–39–5–10	29–6–6–23–34–5

Note. Dashes indicate that estimates were not available. BIC = Bayesian information criterion. ABIC = sample size adjusted BIC. LMR = Lo-Mendel-Rubin test. Class % = Class proportions for the latent classes based on their most likely latent class membership.

Table 3:

Estimates from Path Analyses Linking Profiles of Social Norms at Wave 1 to Adolescent Risky Health Behaviors at Waves 1 and 2

		Wave 1				Wave 2 (control for Wave 1)			
		Binge drinking	Sexual behaviors (reference is no sex)			Binge drinking	Sexual behaviors (reference is stable no sex)		
			Safe sex	Risky sex	Joint		Initiate to /stable safe sex	Initiate to /stable risky sex	Joint
Target profile	Reference profile	β (SE)	b(SE)	b(SE)	β (SE)	β (SE)	b(SE)	b(SE)	β (SE)
Model 1									
DevNorm-LowRisk	Cgr-Restrict	.13(.06)*	.14(.27)	.37(.36)	.06(.05)	.04(.03)	.32(.26)	–.20(.37)	.03(.04)
Resilient	Cgr-Restrict	.10(.03)**	.46(.30)	.42(.46)	.04(.03)	.06(.02)**	.73(.30)*	–.14(.49)	.05(.03)
DevNorm-HighRisk	Cgr-Restrict	.21(.06)**	.98(27)***	1.21(.36)**	.11(05)*	.04(.04)	1.15(26)***	.56(.38)	.05(.04)
Cgr-Perm	Cgr-Restrict	.16(.04)***	1.00(.28)***	1.16(36)**	.08(.03)*	.05(.03)	1.06(.27)***	.50(.40)	.07(.03)*
Model 2									
Resilient	DevNorm-LowRisk	.04(.02)*	.32(18)	.05(.27)	.01(.02)	.04(.02)**	.40(.17)*	.07(.36)	.04(.02)
DevNorm-HighRisk	DevNorm-LowRisk	.08(.02)**	.84(12)***	.85(11)***	.05(.02)*	.01(.02)	.83(13)***	.76(15)***	.03(.02)
Cgr-Perm	DevNorm-LowRisk	.07(.02)***	.86(14)***	.79(17)***	.04(.02)*	.02(.02)	.74(15)***	.70(18)***	.06(.02)*
Model 3									
DevNorm-HighRisk	Resilient	–.02(.04)	.52(19)**	.80(.29)**	.03(.05)	–.08(.04)*	.42(.20)*	.70(.38)	–.06(.05)
Cgr-Perm	Resilient	.01(.02)	.54(.20)**	.74(.30)*	.03(.03)	–.04(.03)	.34(.20)	.64(.42)	.00(.04)
Model 4									
Cgr-Perm	DevNorm-HighRisk	.02(.01)	.02(.12)	–.06(.17)	.01(.02)	.02(.02)	–.08(.14)	–.06(.21)	.04(.03)

Note. Cgr-Restrict = Congruent-restrictive norms across all settings. Cgr-Perm = Congruent-permissive norms across all settings. DevNorm- LowRisk = Developmentally normative-low risk (restrictive parents and peers but permissive schoolmates). DevNorm-HighRisk = Developmentally normative-high risk (restrictive parents but permissive peers and schoolmates). Resilient = permissive parents but restrictive peers and schoolmates. The reference group was rotated in each model to examine all possible comparisons. Standardized coefficient estimates (*β*) were reported for models using continuous endogenous variables. Unstandardized coefficient estimates (*b*) were reported for models using categorical endogenous variables.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.

Linking Adolescent Characteristics to Profiles of Social Norms

Table 4:

	Model 1				Model 2			Model 3		Model 4
	Cgr-Perm vs. Cgr-Restrict	DevNorm- HighRisk vs. Cgr-Restrict	DevNorm- LowRisk vs. Cgr-Restrict	Resilient vs. Cgr-Restrict	DevNorm- HighRisk vs. Cgr-Perm	DevNorm- LowRisk vs. Cgr-Perm	Resilient vs. Cgr-Perm	DevNorm- LowRisk vs. DevNorm- HighRisk	Resilient vs. DevNorm- HighRisk	Resilient vs. DevNorm- LowRisk
	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)	b(SE)
Developmental factors										
Adol grade	.30(.09) ***	.35(.08) ***	.10(.08)	−.04(.09)	.05(.04)	−.20(.06) ***	−.33(.06) ***	−.26(.04) ***	−.39(.05) ***	−.13(.06) *
Sch grade span										
Mix vs. mid	1.51(.98)	1.89(1.06)	2.35(1.04)	.38(.90)	.38(.49)	.85(.64)	−1.12(.53) *	.46(.57)	−1.50(.54) **	−1.97(.56) ***
High vs. mid	9.26(1.45) ***	9.78(1.56) ***	9.67(1.51) ***	7.68(1.42) ***	.52(.49)	.42(.64)	−1.58(.49) **	−.10(.55)	−2.09(.49) ***	−1.99(.55) ***
Socio-demographic factors										
SES factors										
Adol SES	.16(.09)	−.04(.07)	.10(.07)	.27(.11) *	−.20(.06) **	−.06(.06)	.11(.10)	.15(.04) ***	.32(.08) ***	.17(.08) *
Peer SES	−.36(.23)	−.45(.21) *	−.19(.20)	−.23(.24)	−.09(.08)	.17(.09)	.13(.13)	.25(.06) ***	.22(.11)	−.03(.11)
Sch SES	.04(.84)	−.09(.86)	.14(.84)	1.24(.82)	−.13(.24)	.10(.33)	1.20(.37) **	.23(.38)	1.33(.41) **	1.10(.29) ***
Racial/ethnic factors										
Adol race	.13(.30)	.07(.27)	.25(.27)	.96(.32) **	−.06(.17)	.12(.17)	.83(.29) **	.18(.11)	.89(.27) **	.71(.25) **
Crs peer	.62(.37)	.38(.35)	.36(.34)	.41(.34)	−.24(.12)	−.26(.14)	−.22(.20)	−.02(.10)	.02(.17)	.04(.17)
Sch min %	−.00(.01)	.01(.01)	−.01(.01)	.00(.01)	.01(.00) **	−.00(.00)	.00(.01)	−.01(.00) *	−.01(.01)	.01(.01)
Psychosocial factors										
Adol relig	−.82(.19) ***	−.53(.19) **	−.60(.19) **	−.62(.19) **	.30(.07) ***	.22(.07) **	.20(.10) *	−.07(.06)	−.10(.10)	−.03(.09)
Adol dep	.46(.16) **	.39(.15) *	.28(.15)	.21(.18)	−.08(.08)	−.19(.08) *	−.25(.13)	−.11(.05) *	−.18(.13)	−.07(.14)
Adol cog	.08(.10)	.08(.10)	.19(.10)	.25(.11) *	−.00(.04)	.11(.05) *	.17(.07) *	.11(.04) **	.17(.07) *	.06(.07)

Note. Cgr-Restrict = Congruent-restrictive norms across all settings. Cgr-Perm = Congruent-permissive norms across all settings. DevNorm- LowRisk = Developmentally normative-low risk (restrictive parents and peers but permissive schoolmates). DevNorm-HighRisk = Developmentally normative-high risk (restrictive parents but permissive peers and schoolmates). Resilient = permissive parents but restrictive peers and schoolmates. The reference group was rotated in each model to examine all possible comparisons. Adol = Adolescent. Sch = School. Adolescent race compared white versus minority groups. Crs peer = Cross-race peers. Sch min % = School minority proportions. Relig = Religiosity. Dep = Depression. Cog = Cognitive abilities.

*
p < .05.

**
p < .01.

***
p < .001.