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Running head: PARENTAL SOCIALIZATION FOR ADOLESCENTS' SUBSTANCE USE
BEHAVIORS

**A Longitudinal Study of Parental Anti-Substance-Use Socialization for Early Adolescents'
Substance Use Behaviors**

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Abstract

The present study examines the role of communication in shaping norms and behaviors with significant personal and societal consequences. Based on primary socialization theory and the general theory of family communication, parental anti-substance-use socialization processes were hypothesized to influence early adolescents' substance use norms and behaviors. Using longitudinal data ($N=1,059$), the results revealed that parent-adolescent prevention communication about substance use in the media and parental anti-substance-use injunctive norms were positively associated with early adolescents' personal anti-substance-use norms, which, in turn, led to decreases in recent alcohol, cigarette, and marijuana use. It was also found that family expressiveness and structural traditionalism positively related to the hypothesized association between parental socialization processes and early adolescents' norms and behaviors.

Keywords: parental socialization, family communication environments, parent-child communication, norms, youth substance use

A Longitudinal Study of Parental Prevention Efforts for Early Adolescents' Substance Use Behaviors

Recent national survey data from *Monitoring the Future* (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015) indicated that alcohol is the most commonly consumed substance in past-30 days among 8th grade students (9.7%), followed by cigarettes (3.6%) and illicit drugs including marijuana (8.1%). The same data also reported that substance use often increases as adolescents grow older and advance to higher grade-levels. That is, reports of 12th grade students in their past-30 days substance use have increased by 35.3%, 11.4%, and 23.6% for alcohol, cigarette, and illicit drugs respectively.

One influential factor that may increase the likelihood of using substances is exposure to mass media portrayals of substance use. The Center on Alcohol Marketing and Youth (CAMY, 2009) reports that adolescents' exposure to alcohol advertising in the United States increased by 71 percent from the year of 2001 to 2009. More importantly, the same survey points out that adolescents' exposure to alcohol advertisements was 44 percent higher than that for adults above 21 years old. Mass media play a significant role in impacting adolescents' perceptions of substance use, although mass media often represent substance use in a way that makes use appear normative (Everette, Schnuth, & Tribble, 1998; Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). Most advertisements, music videos, movies, and television programs depict substance use as a positive experience (CAMY, 2009) and adolescents' exposure to mass media portrayals of substance use has been associated with initiation of and continued use of alcohol, tobacco, and marijuana (Anderson, Bruijn, Angus, Gordon, & Hastings, 2009; Kelly, Slater, & Karan, 2002; Sargent, Gibson, & Hatherton, 2009).

Although adolescents face a number of risk factors (e.g., positive portrayals of substance

use in the media), protective resources also exist that might shield adolescents from the potentially harmful effects of mass media portrayals of substance use. Adolescents may have multiple protective resources, such as parental communication prevention efforts that serve to buffer adolescents against many risks, including substance use and abuse (Kam, Potocki, & Hecht, 2012; Reimuller, Hussong, & Ennett, 2011). These prevention efforts are often conceptualized generally, such as asking if the parents have ever talked with their adolescent about a certain topic (Yes/No) (Carlson et al., 2000) to more detailed examination of parental prevention communication (Miller-Day & Kam, 2010). Yet, among the prevention communication that parents might employ to protect their adolescent children from substance use and abuse, few studies investigate specific parental prevention communication for countering pro-substance use portrayals in the media.

To address this research gap, the current study focuses on parent-child prevention communication about substance use in the media and how this communication might influence adolescents' substance use norms and behaviors. More importantly, these variables are investigated over time in early adolescence. Longitudinal study designs have long been recognized as important vehicles for obtaining high quality evidence to test causal models assessing effects of early events on later outcomes and to tease out the relative contributions of numerous factors on human development (Farrington 1991; Rutter 1994). By examining adolescent self-reported, longitudinal data, our findings have important implications for understanding the role of parent-child prevention communication on adolescents and if that communication is consequential over time in preventing adolescent substance use.

Parents as Prevention Agents

As Fitzpatrick and Caughlin (2002) noted, “family is where most of us learn to

communicate and, even more important, where most of us learn how to think about communication” (p. 726). Children learn how to communicate and interpret family members’ verbal and nonverbal communicative behaviors through family interaction. Across the life span, family members share experiences and meanings associated with those experiences (Fitzpatrick & Badzinski, 1994; Goodnow, 2005; Socha, 2009). Although a number of socialization agents exist (e.g., parents, peers, school, media), parents have a profound impact on youths’ behavioral outcomes, specifically during the developmental period of adolescence (Miller-Day, 2008; Miller-Day & Kam, 2010). Primary socialization theory (Oetting & Donnermeyer, 1998) suggests that parents shape adolescents’ prosocial and/or deviant norms and behaviors, emphasizing the role of communication between parent and child in establishing norms and standards of behavior, preventing adolescent involvement with deviant behaviors such as substance use. This parental influence on adolescent norms has a long and significant history in many disciplines such as psychology and prevention science (Biglan, Flay, Embry, & Sandler, 2012).

The influence of parents on adolescent norms. Norms have been conceptualized from a variety of theoretical perspectives across a number of disciplines (Lapinski & Rimal, 2005). Within the prevention science literature, researchers have come to address the multi-dimensional aspects of norms, including injunctive norms and personal norms to investigate their effects on behavioral intentions and behavior changes (Cialdini, Kallgren, & Reno 1991; White, Smith, Terry, Greenslade, & McKimmie, 2009). Injunctive norms reflect individuals’ perceptions of what behaviors receive approval or disapproval from influential others, whereas personal norms refer to an individuals’ own approval/disapproval of certain behaviors (Cialdini et al., 1991). For the current study, *parental anti-substance-use injunctive norms* are defined as adolescents’

perceptions of their parents' approval or disapproval of adolescent substance use, while *adolescent personal norms* are conceptualized as adolescent anti- or pro-substance use perceptions. Norms differ from other theoretical constructs like attitudes because they focus us on approval or disapproval of behaviors, rather than evaluations (attitudes) of those behaviors (Cialdini, et al., 1991; Hansen & Graham, 1991). One can, for example, think it is fun to drink alcohol (i.e., positive attitude) but disapprove (i.e., negative personal norm).

Empirical studies reveal that different types of norms have independent effects on intentions to use substances. In the context of adolescent substance-use prevention interventions, prior research has found that parental anti-substance-use injunctive norms had indirect effects on early adolescents' substance-use intentions (Kam, Matsunaga, Hecht, & Ndiaye, 2009). Kam and her colleagues indicated that parents' injunctive norms about substance use significantly affected adolescents' intention to use substances, through attitudes, personal norms, and perceived behavior control (Kam et al., 2009; Kam & Middleton, 2013; Kam & Yang, 2013). Other research (Connor & McMillan, 1999; Elek, Miller-Day, & Hecht, 2006; Kosterman, Hawkins, Guo, Catalano, & Abbott, 2000) has discovered that personal norms, in particular, appear to be the strongest significant predictor of substance use among the different types of norms. Connor and McMillan (1999) found that adding measures of personal norms to a regression equation that predicted intentions to use marijuana (from attitude, injunctive norms, and perceived behavioral control) improved the predictive ability of the equation but reduced the influence of injunctive norms to nonsignificance. Kosterman et al. (2000) revealed that personal norms against substance use inhibited both alcohol and marijuana use and Elek et al. (2006) discovered that personal anti-substance use norms predicted lower recent and lifetime use of alcohol, tobacco, and marijuana use, lowered intentions to use or to accept offers of a substance. These studies

suggest that personal norms may have the most significant direct effect on substance use behavior. These studies reveal that parental injunctive norms can positively influence adolescents' personal anti-substance use norms and self-efficacy to refuse drug offers, which, in turn, may decrease their intentions to ever use illicit substances.

Although research evidence supports the potential for parents to indirectly affect adolescents' personal norms, perceptions of injunctive norms, and subsequent intentions to use, it is unclear if these parental messages impact actual adolescent substance use behaviors.

Therefore, we posed the following hypothesis:

RH1: Parental anti-substance-use injunctive norms indirectly predict early adolescents' substance use behaviors through personal anti-substance-use norms.

Substance specific prevention communication (SSPC). In addition to parental injunctive norms, parental communication specifically focused on substance use plays a key role in adolescents' substance use behaviors (Miller-Day & Dodd, 2004; Pettigrew et al., in press; Rangarajan, & Kelly, 2006). For example, Henriksen and Jackson (1998) found that parent-child communication about knowledge, attitudes, and skills to refuse offers of tobacco reduced children's intention to smoke. Parent-child communication about home rules about tobacco use and tobacco abstinence was found effective in preventing adolescents' initiation of smoking (Gordon, Biglan, & Smolkowski, 2008). Other research has found that conversations about substance use with parents decreased adolescents' acceptance of substance use offers, weakened adolescents' positive expectancies of drinking alcohol, and decreased adolescents' intentions to use alcohol (Kelly, Comello, & Hunn, 2002; Miller-Day, 2002). Through communication, parents socialize adolescents by conveying rules, expectations, and providing information about health choices related to substance use and other risky behaviors (Ary, James, & Biglan, 1999;

Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005). Conversely, a lack of parental communication about substances may result in adolescent substance use (Biglan, 1995; Irvine, Biglan, Smolkowski, Metzler, & Ary, 1999). What is worse, inappropriate communication may result in boomerang effects. For example, parents' discussion of the negative consequences of their own past substance use was inversely related to parental anti-substance-use injunctive norms for Latino adolescents (Kam & Middleton, 2013). There are several studies that indicate if adolescents engage in communication with parents who shared their past substance use experience this may inadvertently lead adolescents to perceive parental sanctioning of substance use behaviors (Ebersole, Miller-Day, & Raup-Krieger, 2014; Kam & Middleton, 2013).

Family scholars have made significant contributions to advancing our knowledge of general parent-child communication about substance use and its effects on adolescents' substance use behavior. For example, it was found that targeted parent-child communication about substance use had significant indirect effects on adolescent personal norms via adolescent personal norms as well as direct effects on adolescent personal norms (Kam & Middleton, 2013; Kam & Yang, 2013). Alcohol-specific communication containing negative alcohol messages did not significantly reduce adolescents' alcohol use, whereas permissive messages were positively related to frequency of adolescents' alcohol use (Reimuller et al., 2011). In Miller-Day and Kam's (2010) study of parent-adolescent communication about alcohol, messages such as discussing how to handle offers of alcoholic drinks or providing rules to obey about drinking alcohol were negatively associated with the adolescent's alcohol use. This study also suggested that parental messages addressing media portrayals of substance use within a context of an open and expressive family environment might serve to protect adolescents from substance use risks

(Miller-Day & Kam, 2010). The study, however, did not specifically test for direct or indirect effects of these media-related parental messages on adolescents' alcohol use outcomes. Thus, while there is a plethora of research demonstrating the efficacy of parent-adolescent communication about substances in general to deter and delay adolescent substance use (see for example, Kam & Miller-Day, 2017), there is very little research examining how parental messages about media portrayals of substance use impact adolescent substance use.

Media Portrayals of Substance Use

Prior research indicates that media portrayals of substance use often make substance use appear normative (Cin et al., 2009; Heatherton & Sargent, 2009; Primack, Kraemer, Fine, & Dalton, 2009). This, of course, complicates the task of parents trying to encourage anti-use norms. Therefore, greater attention needs to be paid to the effects of parent-adolescent communication *about* media portrayals of substance use on early adolescents' substance use. Mass media tend to present messages or images, including advertisements, music videos, movies, and popular television programs, that depict substance use as normative (Everette et al., 1998; Sargent et al., 2006). Consequently, these messages may socialize adolescents to believe that substance use is more prevalent among their peers than it is in actuality (Will, Sargent, Stoolmiller, Gibbons, & Gerrard, 2008; Wills, Sargent, Gibbons, Gerrard, & Stoolmiller, 2009). Most concerning is evidence that media depictions of substance use may influence adolescents to initiate and continue substance use and abuse (Anderson et al., 2009; Kelly et al., 2002; Sargent et al., 2009).

Considering the negative consequences of adolescents' exposure to media portrayals of substance use, one could argue that some types of parental intervention may mitigate the negative effects of media consumption (Fujioka & Austin, 2002). For instance, both positive

mediation (endorsement of television message) and negative mediation (counter-reinforcement of television messages) can positively affect children's media usage and their risky behaviors. Mediation ranging from passive strategies such as watching TV with children (covieing; Buerkel-Rothfuss & Buerkel, 2001) to more actively discussing media content (active mediation) and restricting media access (restrictive mediation; Fisher, Hill, Grube, Bersamin, Walker, & Gruber, 2009; Nathanson, 1999) tends to ameliorate the effects of media on adolescents' risky behaviors such as smoking, aggression, and sexual behavior. Family scholars contend that parents would have protective effects on adolescents' substance use behavior. For example, parental rules and monitoring of children's movie watching reduced adolescents' initiation of alcohol and tobacco use (Dalton et al., 2006). Similar results were found that parental restrictions for R-rated movies predicted a lower likelihood of adolescents' alcohol use in the future (Tanski, Cin, Stoolmiller, & Sargent, 2010).

Although previous research addresses media portrayals of substance use as heightening youth risk and parental monitoring of media (e.g., monitoring what youth are exposed to in the media) as protecting youth from these risks, less is known about the effects of parental prevention messages to counter media depictions of substances and substance use, and the effects of those messages on adolescents' substance use norms or behaviors. One can hope that the mediating effects reported for other behaviors generalize to substance use, but this is not necessarily true. Thus, it was hypothesized that:

RH2: Parent-adolescent prevention communication about substance use in the media indirectly predicts early adolescents' substance use behaviors through personal anti-substance-use norms.

Parent-Child Communication and Family Communication Environments

While parent-child communication occurs within the climate of a media environment, it also occurs within the family environment. Family scholars have argued that frequent parent-child communication is consequential for children's developmental functioning (Ackard, Neumark-Sztainer, Story, & Perry, 2006). In addition to the frequency of talks, researchers turn their attention to the quality of family communication as an important factor in protecting adolescents from engaging in risky behaviors like substance use (Miller-Day, 2008; Miller-Day & Dodd, 2004; Miller-Day & Kam, 2010). One of the key family communication theories addressing the quality of family communication is the general theory of family communication (Koerner, & Fitzpatrick, 2002a). The general theory of family communication emerged from a blending of two lines of research—family communication orientations (conformity and conversational) (Koerner & Fitzpatrick, 2002b; Richie, 1991) and characteristics of marital couple types (ideology, interdependence, and conflict) (Fitzpatrick, 2004), resulting in a validated scale assessing three related dimensions of a family communication environment (FCE): expressiveness, structural traditionalism, and conflict avoidance (Baxter, Bylund, Imes, & Scheive, 2005; Fitzpatrick & Ritchie, 1994; Koesten, Schrodtt, & Ford, 2009).

According to Koerner and Fitzpatrick (2002a), family communication environments vary in the ways family members create, shape and maintain the family through their responses to one another's actions. The expressiveness dimension of a family communication environment represents a conversation-oriented family where all members, including children, are openly expressive of their ideas and feelings. Children in families high in expressive communication are taught to value individual decision-making. The second dimension is structural traditionalism. Those families high in this dimension are characterized by parents exercising power over their children, emphasizing deference to parental power and obedience, and privileging parental

messages. Conflict avoidance is the final dimension that is characterized by a suppression of unpleasant topics and conflict (Burns & Pearson, 2011; Fitzpatrick & Ritchie, 1994).

Empirical findings reveal that expressiveness, structural traditionalism, and conflict avoidance dimensions predict different outcomes of family functioning and children's well-being (Baxter et al., 2005; Koesten et al., 2009). For instance, families high in expressiveness showed positive relationships with family cohesion and flexibility (Schrodt, 2005), family strengths and satisfaction (Burns & Pearson, 2011; Schrodt, 2009), and children's cognitive flexibility (Koesten et al., 2009). In contrast, families high in structural traditionalism and conflict avoidance had inverse associations with family functioning (Schrodt, 2005, 2009) and children's psychological functioning (Koesten et al., 2009). These communication environments cut across different parenting types such as Baumrind's (1991) parenting prototype classifications of authoritarian, authoritative, and permissive parenting, which are based on dimensions of warmth and responsiveness.

Studies on family communication environments are communication specific and suggest that the effects of communication environments on family outcomes vary in accordance with expressiveness, structural traditionalism, and conflict avoidance. Although it seems likely that variance in these dimensions would impact parental approaches to prevention, most studies to-date have neither looked closely at family communication environments to examine how these environments are related to discourse about substance use, nor have they examined the impact of this discourse on adolescents. An exception is the work of Miller-Day and colleagues (Miller-Day, 2008; Choi et al., 2017) whose research suggests that parents in families exhibiting different family communication environments will differ in how they address substances and substance use with their adolescents. Their work demonstrates that parents in different family

communication environments used different prevention messages to discourage adolescent substance use. Specifically, those highly expressive families tended to provide information and rewards to adolescents, structural traditional families had no tolerance rules, and conflict avoidant families articulated a message for the adolescents to use his or her own judgment or avoid the topic of substances or substance use altogether. The findings support the claim that general family communication environments influence how parents talk with their adolescent children about substances (Choi et al., 2017; Pettigrew, Shin, Stein, & Raalte, 2017).

Research on parental prevention communication about substance use in the media is limited to a few small studies. For example, Miller-Day and Kam (2010) reported a moderately strong association between a family's general openness and the tendency for a parent to comment on a character's use of a substance if observed in a television program. Therefore, we decided to examine family communication environments and parental prevention communication about substance use in the media more fully and over time. Given this lack of specific theory and research to make predictions, we pose the following research questions (See Figure 1 for the conceptual model):

RQ1: To what extent do dimensions of expressiveness, structural traditionalism, and conflict avoidance in families directly predict parental anti-substance-use injunctive norms as well as parent-adolescent prevention communication about substance use in the media?

RQ2: To what extent do dimensions of expressiveness, structural traditionalism, and conflict avoidance in families indirectly predict early adolescents' substance use behaviors through parental anti-substance-use injunctive norms as well as parental prevention communication about substance use in the media?

Method

Participants and Procedures

Self-reported survey data were collected as a part of the randomized clinical trial evaluating a school based substance use prevention program. Thirty-six public middle schools located in rural areas in two mid-western states were randomly assigned to three conditions (control and two program conditions; classic version of the curriculum and rural version of the curriculum) (See Graham et al., 2014 for review). The present study used the longitudinal data from 14 schools in the control condition so as not to confound findings with intervention effects. The longitudinal data were collected at different time points in fall 2009 (Wave 1 or the beginning of 7th grade), spring 2010 (Wave 2 or the end of 7th grade), and spring 2011 (Wave 3 or the end of 8th grade).

One thousand fifty-nine students from 14 public schools in the control condition completed three waves of paper-pencil surveys from 7th through 8th grades. Based on Wave 1 data, 53% were male and 47% were female. The mean age was 12.3 years ($SD = .50$). A majority of the early adolescents self-identified as European American (96%). Prior to the data collection, approval was obtained from the Institutional Review Board. Parents provided active informed consent and students provided informed assent.

Measures

All of the constructs were modified to make them age appropriate for 7th to 8th grade students. Table 1 shows the descriptive statistics, bivariate correlations, and reliability for these constructs.

Parental anti-substance-use injunctive norms (W1). Three items from Hansen and Graham (1991) assessed adolescents' perceptions of parents' injunctive norms. The students

were asked, “How wrong do your parents feel it would be for you to drink alcohol regularly (beer, wine, or hard liquor)?”, “...smoke cigarettes?”, and “...smoke marijuana?” (1 = Not wrong at all to 4 Very wrong). Higher scores indicated stronger parental anti-substance-use injunctive norms.

Parent-adolescent prevention communication about substance use in the media (W1). Two items were modified from the Targeted Parent-Child Communication about Alcohol Scale (Miller-Day & Kam, 2010). Students were asked, “Does at least one of your parents ever make comments about ...” and read two items, “how drinking alcohol is bad if a character on TV is drinking or drunk?” and “how chewing or smoking is bad if a character on TV is chewing/smoking tobacco?” (1 = No, never to 4 = Yes, all the time). Higher scores indicated frequency of communication.

Family communication environments (W1). Twelve items were modified from Fitzpatrick and Ritchie’s FCE instrument (1994) to measure three dimensions of family communication environments, consisting of expressiveness, structural traditionalism, and conflict avoidance. For example, modified items asked “My parents encourage me to express my feelings,” “In our home, my parents usually have the last word,” and “My parents say things like ‘There are some things that just shouldn’t be talked about’” (1 = Never to 5 = Very often). Higher scores indicated stronger association with that particular environment.

Adolescents’ personal anti-substance-use norms (W2). Based on Hansen and Graham (1991), students answered the items asking “Do you think it is wrong for someone your age to drink alcohol regularly (beer, wine, or hard liquor)/to smoke cigarettes/ to smoke marijuana?” (1 = not at all to 4 = yes, it is very wrong). Higher scores represented lower acceptability of substance use (i.e., stronger anti-substance-use norms).

Past 30-days substance use (W3). Based on Hansen and Graham's scale (1991), students reported their alcohol use ["How many drinks of alcohol have you had in the past 30 days?" (1 = None to 9 = More than 30 drinks)], cigarette use ["How many cigarettes have you smoked in the past 30 days?" (1 = None to 8 = More than 2 packs of cigarettes)], and marijuana use ["How many times have you used marijuana in the past 30 days?" (1 = None to 8 = More than 40 times)]. Higher scores indicated more use of substance in terms of amount.

Control variables (W1). When running the analyses, adolescents' lifetime substance use, gender, and age were taken into account. Three items asking amount of alcohol, cigarette, and marijuana in lifetime use were included to control for adolescents' lifetime substance use from the baseline data (Hansen & Graham, 1991). For the analysis, adolescents' lifetime substance use was recorded as one item (0 = never used; 1 = used one type; 2 = used two types; 3 = used all). Gender (0 = male; 1 = female) and age are also included as control variables.

Analysis Summary

To assess the dimensionality of the items, analyses of descriptive statistics and a measurement model were conducted. The full maximum likelihood method (i.e., FMLM) was employed to handle the missingness of data (Graham, 2012). Using MPlus (Muthén & Muthén, 2015), a measurement model was run to confirm the model fit and factor loadings. Table 2 shows factor loading from the measurement model. Because χ^2 is influenced by sample size, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR) were used as the primary fit indices to evaluate the practical model fit of the SEM model (Kline, 2005; Hu & Bentler, 1999). RMSEA < .05 is considered most desirable (Boomsma, 2000; Kline, 2005). A value of CFI > .90 is acceptable (Hu & Bentler, 1999). A value of SRMR < .08 explains a good fit (Hu & Bentler, 1999). Based

on the fitness of the measurement model ($\chi^2 [174] = 431.33$; RMSEA = .04; CFI = .96; SRMR = 0.05), structural equation modeling (SEM) was utilized to test the mediation model. Lifetime substance use, gender, and age from the baseline data (W1) were included as covariates in the model. To test the indirect effects of research hypotheses and research question, bootstrapping was used to obtain the 95% bias-corrected confidence intervals in the proposed model (Preacher & Hayes, 2008). Given the non-normality nature of data reporting adolescents' substance use (skewness of alcohol use = 2.65, cigarette use = 3.03, marijuana use = 3.30), a bootstrap estimate of indirect effect testing was chosen to deal with the non-normality of the substance use responses (Preacher & Hayes, 2008). Preacher and Hayes (2008) recommend bootstrapping as the preferred method to deal with the non-normal distribution of indirect effects.

This study tested the indirect paths from family communication environment to past 30-days alcohol, cigarette, and marijuana use through parental anti-substance-use injunctive norms, parent-adolescent prevention communication about substance use in the media, personal anti-substance-use norms along with the direct paths to past 30-day substance use (FCE→parental norms→personal norms→substance use; FCE→communication about media portrayals→personal norms→substance use). All variables, except the past 30-days substance use, were treated as latent variables in the analyses.

Results

The SEM model fit the data well: ($\chi^2 [300] = 840.65$; RMSEA = .04; CFI = .93; SRMR = 0.07). Figure 2 shows the results for the mediation model, which explained 8 – 19% of the variance in the endogenous variables. As recommended, unstandardized path coefficients are reported in the mediation model (Slater, Hayes, & Ford, 2007). The first hypothesis posed that parental anti-substance-use injunctive norms would indirectly predict early adolescents'

substance use behaviors through personal anti-substance-use norms. The second hypothesis posited that parent-adolescent prevention communication about substance use in the media would indirectly predict early adolescents' substance use behaviors through personal anti-substance-use norms. Both H1 and H2 received full support. Table 3 shows the indirect effects from the full structural model.

The two research questions posed in this study asked how dimensions of family expressiveness, structural traditionalism, and conflict avoidance directly (RQ1) or indirectly (RQ2) predicted parental prevention communication about substance use in the media. When considering the direct significant associations between family communication environments and parental prevention efforts (RQ1), expressiveness was positively related to parental anti-substance-use injunctive norms and parent-adolescent prevention communication about substance use in the media. Structural traditionalism was only positively related to parent-adolescent prevention communication about substance use in the media. Conflict avoidance was only positively related to parental anti-substance-use injunctive norms. No significant direct associations were found between structural traditionalism and parental anti-substance-use injunctive norms, or between conflict avoidance and parent-adolescent prevention communication about substance use in the media. Table 3 shows the direct effects from the full structural model.

When considering the indirect effects of family communication environments on youth substance use behaviors (RQ2), expressiveness was positively related to parental anti-substance-use injunctive norms and parent-adolescent prevention communication about substance use in the media, which, in turn, were positively related to early adolescents' anti-substance-use personal norms. Consequently, personal norms were negatively related to early adolescents'

recent substance use. Structural traditionalism was positively related to parent-adolescent prevention communication about substance use in the media, which, in turn, were positively related to early adolescents' anti-substance-use personal norms. Consequently, personal norms were negatively related to early adolescents' recent substance use. Besides the aforementioned results, however, none of the indirect effects were found significant. Table 3 shows the indirect effects from the full structural model.

Discussion

Based on the longitudinal data analyses, the present study investigated the effects of parental prevention efforts on early adolescents' recent substance use behaviors over time. This is one of a few studies testing parental anti-substance-use prevention efforts for adolescents over three different time points and these findings speak to the larger question about the effects of mediated and face-to-face communication on risky behaviors. This study revealed that parental injunctive norms and parent-adolescent prevention communication about substance use in the media influenced early adolescents' substance use behaviors. Over time, as early adolescents perceived their parents' disapproval of substances, they tended to report strong personal anti-substance-use norms, which, in turn, were linked to decreases in recent use of alcohol, cigarette, and marijuana. In a similar vein, as parents talked about media depicting substance use with early adolescents, adolescents were inclined to hold strong personal anti-substance-use norms, which then reduced recent alcohol, cigarette, and marijuana use. These findings suggest a protective effect of parents' anti-substance-use socialization efforts. That is, early adolescents' perceptions of parents' disapproval of substance use and parent-adolescent prevention communication about substance use in the media both appeared to protect early adolescents through positively influencing early adolescents' personal anti-substance-use norms.

These findings render support to primary socialization theory (Oetting & Donnermeyer, 1998), noting the potential of parents as influential socialization agents. Parents can encourage adolescents to develop personal anti-substance-use norms by articulating their disapproval of substance use in general and commenting about substance use as portrayed in the media. These findings indicate that not only do perceptions of parental disapproval of substance use matter, but parental messages commenting on substance use in the media also shape the personal anti-substance-use norms of early adolescents. These personal anti-substance-use norms then function as key determinants for early adolescents' actual substance use behavior. These results are consistent with previous literature on the protective effects of parent-child communication about substance use (Henriksen & Jackson 1998; Miller-Day & Kam, 2010; Reimuller et al., 2011), as well as positive influences of parental anti-substance-use injunctive norms on adolescents' substance use (Elek, Miller-Day, & Hecht, 2006; Kam et al., 2009; Van der Vorst, Engels, Meeus, & Dekovic, 2006).

This study also examined the direct effects of family communication environments on the parental anti-substance use injunctive norms and parent-adolescent prevention communication about substance use in the media. The findings suggested that the three dimensions of family communication environments predicted different relationships among the study variables. Expressiveness and conflict avoidance were significantly related to parental injunctive norms, whereas structural traditionalism was not. Those adolescents who reported high levels of expressiveness in family communication also believed their parents would disapprove if they used substances. These findings are consistent with the general theory of family communication (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a) explicating expressiveness as encouraging openness and covering various topics in family communication, including

expressing standards and expectations for behavior. For those more expressive families, parents likely directly or indirectly conveyed their disapproval of adolescent substance use. Conflict avoidance in families was also positively associated with parental injunctive norms, meaning that adolescents whose family members tended to avoid conflict in family interactions were more likely to perceive their parents' disapproval on substance use. One possible explanation for this finding is that families high in conflict avoidance tend to avoid outright discussion of unpleasant topics, but rely on nonverbal expressions of disapproval. Perhaps parental anxieties and feelings of disapproval about the topic of substances and substance use seep out through non-verbal communication channels and offspring intuitively responding to these messages, perceiving the disapproval without having to explicitly discuss the topic.

We also found that expressiveness and structural traditionalism in families were significantly related to parent-adolescent prevention communication about substance use in the media, whereas conflict avoidance was not. This suggests that early adolescents who reported expressiveness in family communication were more inclined to have communication with a parent about media depictions of substance use. Considering the characteristics of the expressiveness construct as encouraging open communication and free exchanges of opinions in a variety of topics, it is not surprising that parents in expressive family communication environments actively discuss media content with adolescents to mitigate the negative effects of media consumption. In addition, a possible explanation for the positive relationship between structural traditionalism and parent-adolescent prevention communication about substance use in the media might be that parents who hold values of structural traditionalism tend to stress children's conformity to authority structure in family and thus socialize children to comply with parental rules. As part of this socialization process, parents may perceive that it is their

responsibility as a parent to convey anti-substance-use messages when watching media depictions of substance use with early adolescent children. Consequently, it is more likely that parents in families high in this dimension to engage in communication with early adolescents about substance use in the media.

The findings of the current study revealed that expressiveness and conflict avoidance dimensions each had a significant indirect effect on early adolescents' recent substance use behaviors via parental injunctive norms and the adolescent's personal norms. That is, expressive family communication environments were positively related to early adolescents' perceptions of parental disapproval on substance use, which, in turn, predicted stronger personal anti-substance-use norms and consequently, reduced recent substance use. Similarly, early adolescents in conflict avoidant families were likely to perceive parental disapproval on substance use, which then led to stronger personal anti-substance-use norms and consequently, reduced recent substance use. We also discovered that expressiveness and structural traditionalism each had significant indirect effects on early adolescents' recent substance use behaviors via parent-adolescent prevention communication about substance use in the media and personal norms. That is, parents in families high in expression and structural traditionalism were more likely to talk about media depictions of substance use with their adolescent children, which then predicted stronger adolescents' personal anti-substance-use norms and subsequently, decreased in early adolescents' recent substance use.

Theoretical and Practical Contributions

Guided by the general theory of family communication (Fitzpatrick & Ritchie, 1994; Koerner & Fitzpatrick, 2002a) and primary socialization theory (Oetting & Donnermeyer, 1998), the current study sheds light on some of the underlying mechanisms of parental socialization on

early adolescents' substance use behaviors. Considering that family communication environments have been widely tested in marital relationships, family communication, and functioning (Baxter et al., 2005; Koesten et al., 2009; Schrodtt, 2005, 2009), our investigation is one of the first studies to examine the direct and indirect effects of family communication environments on early adolescents' substance use behaviors via parental prevention communication. Furthermore, although primary socialization theory has been predominantly employed to guide substance-use prevention research (Kam & Middleton, 2013), this study extends primary socialization theory by integrating family communication environments to address different environments of family communication and the effects on parental anti-substance-use socialization processes.

Our findings also provide an explanation of parent-adolescent communication about substance use in relation to media and its effects on early adolescents' substance use behaviors. Whereas previous research has focused on other strategies such as setting rules and providing warnings about the dangers of substance use (Kam & Middleton, 2013; Reimuller et al., 2011), the current research extends knowledge of parental prevention communication by addressing the effects of parent-adolescent communication about media content on adolescents' personal substance use norms and their substance use behavior.

This investigation holds important practical implications. Consistent with expectations (Elek et al., 2006; Kam et al., 2009; Miller-Day & Kam, 2010), parental injunctive norms and parent-adolescent prevention communication about substance use in the media each had indirect effects on adolescents' substance use behavior through early adolescents' personal norms. Based on such findings, health researchers and practitioners are encouraged to integrate parental involvement in substance use prevention efforts. These prevention efforts, however, should take

into consideration variations in the ways families communicate. This current research contributes to the prevention conversation by highlighting the role of family communication in adolescent health and substance use prevention. Furthermore, variation in family expressiveness, structural traditionalism, and conflict avoidance may impact parental messages and the efficacy of those messages. These findings are consistent with the previous literature documenting that three dimensions of family communication environments predict different aspects of family functioning and children's well-being (Burns & Pearson, 2011; Koesten et al., 2009; Schrod, 2009). As Baxter and colleagues (2005) mentioned “‘*one size fits all*’ recommendations about how parents should communicate with their offspring is too simplistic in light of different family communication environments” (p. 225). Future researchers need to consider different constructs of family communication environments when designing family based prevention intervention for early adolescent parents. Finally, the findings speak to the general importance of considering face-to-face and mediating communication when trying to assess the effects of messages about significant social behaviors. While limited to family environments and parent-child prevention communication about substance use in the media, the results suggest complex relationships between these channels and family cultures. Theoretical advances implicated by the findings might inform a more general model of socially significant communication processes.

Future research directions include the need to examine moderating influences such as substance use-specific parental monitoring. In other studies such as Komro, Maldonado-Molina, Tobler, Bonds, and Muller (2007), parental approval of adolescents' alcohol consumption at home and the availability of alcohol at home were found to be the most robust predictors of increases in adolescents' alcohol use. In this respect, early adolescents' access to substances and offers of substances within the home are considered additional risk factors for early adolescents'

substance use behaviors. Additionally, investigating parents' own recent substance use and parental awareness of adolescents' substance use at home could enhance researchers' knowledge of parental socialization processes. More importantly, the effects of parent-adolescent communication about substance use may differ depending on whether a parent him or herself consumes substances. It cannot be assumed that parents universally disapprove of early adolescents' substances. Finally, future research might examine how the degrees of expressiveness, structural traditionalism, and conflict avoidance influence the mediated relationship between parental socialization processes and youth outcomes.

Although the current study's findings advance research on early adolescents' substance use prevention, it is not without limitations. First, the present study intended to test the longitudinal effects of family communication environments and parental efforts to prevent early adolescents from substance use. To do this, we used data from the FCE measures and parental norms and communication measures at Wave 1, whereas the measures for early adolescents' personal norms and substance use were used at Wave 2 and Wave 3. The reasons for this analytic choice were based on a number of assumptions. First, prevention science research reveals that behavioral outcomes such as drug use are difficult to determine in younger populations (Hopfer, Davis, Kam, Shin, Elek, & Hecht, 2010) and so we were intent on looking at the impact of parental prevention efforts over time and the behavior outcomes in the last wave of data. We additionally assumed that parental prevention efforts would function over time and it would take time for parental messages to impact adolescents' personal norms. These assumptions may not have been correct, however, and researchers might want to examine all variables at all time points across the waves of data. Moreover, it is unclear from the published family

communication environment research if these environments are stable over time. Therefore, future research might focus on examining the stability of these environments over time.

Second, the majority of the responses came from European American adolescents. A lack of ethnic diversity may limit our findings to the population of adolescents whose families are European American. Due to the lack of generalizability, research should further investigate whether the effects of family communication environments and parental prevention communication differ depending on ethnicity. Lastly, there was an issue with the measurement of conflict avoidance. Although the SEM analysis fit well with the measurement model and mediation model, the Cronbach's alpha for conflict avoidance was lower than other measures. The lower reliability measure of conflict avoidance may cause concerns for researchers whether the items accurately accessed the construct of conflict avoidance. Because it is the first time the modified version of family communication environments has been validated in the context of early adolescents' substance use research, future research needs to re-validate the modified version of family communication environments in the context of adolescent substance use research.

This study contributes to the growing body of research investigating parents as agents of adolescent substance use prevention by contributing novel information about family communication environments and the impact of parental anti-substance use injunctive norms and parental messages about media portrayals of substance use on adolescents' substance use norms and behaviors. This study suggests that even in different kinds of families, *parents do matter* in preventing adolescent substance use.

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Table 1 Means, Standard Deviations, Bivariate Correlations, and Reliability

Variable	M	SD	Reliability	1	2	3	4	5	6	7	8	9
1. PARENTNORMS	3.87	0.40	0.85	—								
2. PACOMM	1.98	0.88	0.82	.14**	—							
3. PERSONNORMS	3.48	0.83	0.92	.13**	.21**	—						
4. EXPRESS	2.95	1.06	0.87	.21**	.40**	.29**	—					
5. TRADITION	3.67	1.00	0.74	.10*	.26**	.16**	.30**	—				
6. CONFLICT	2.22	1.09	0.62	.05	.31**	.09*	.18**	.36**	—			
7. ALCOHOL	1.87	1.83	N/A	-.14**	-.14**	-.33**	-.17**	-.04	-.07	—		
8. CIGARETTE	1.47	1.46	N/A	-.17**	-.12**	-.28**	-.14**	.00	-.02	.51**	—	
9. MARIJUANA	1.21	0.97	N/A	-.07	-.10	-.25**	-.12**	.02	-.01	.55**	.60**	—

Note. *PARENTNORMS* parental anti-substance-use injunctive norms, *PACOMM* parent-adolescent prevention communication about substance use in the media, *PERSONNORMS* early adolescents' anti-substance-use personal norms, *EXPRESS* expressiveness, *TRADITION* structural traditionalism, *CONFLICT* conflict avoidance, *ALCOHOL* past-30 days alcohol use, *CIGARETTE* past-30 days cigarette use, *MARIJUANA* past 30-days marijuana use

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 2 Factor Loadings from the Measurement Model

Items	Standardized Factor Loadings	Items	Standardized Factor Loadings
Expressiveness		Parental Anti-Substance-Use Injunctive Norms	
EX1	0.63	PN1	0.71
EX2	0.74	PN2	0.92
EX3	0.69	PN3	0.82
EX4	0.75		
EX5	0.75		
EX6	0.77	Parent-Adolescent Prevention Communication about Substance Use in the Media	
Structural Traditionalism		PC1	0.89
ST1	0.69	PC2	0.92
ST2	0.64		
ST3	0.54	Personal Anti-Substance-Use Norms	
Conflict Avoidance		PN1	0.88
CA1	0.63	PN2	0.96
CA2	0.50	PN3	0.83
CA3	0.67		

Table 3 Direct and indirect Effects from the Full Structural Model

Parameter	Unstd. (SE)	Parameter	Unstd. (SE)
EX → PN	0.13*** (0.04)	PN → YN	0.31** (0.11)
ST → PN	-0.02 (0.04)	PC → YN	0.21*** (0.04)
CA → PN	0.11* (0.06)	YN → AL	-0.25*** (0.05)
EX → PC	0.40*** (0.06)	YN → CI	-0.27*** (0.05)
ST → PC	0.16* (0.07)	YN → MA	-0.14*** (0.04)
CA → PC	0.10 (0.08)		
PN → YN → AL	-0.08* (0.03)	PC → YN → AL	-0.05*** (0.01)
PN → YN → CI	-0.09* (0.04)	PC → YN → CI	-0.06*** (0.02)
PN → YN → MA	-0.04* (0.02)	PC → YN → MA	-0.03** (0.01)
EX → PN → YN → AL	-0.01* (0.01)	EX → PC → YN → AL	-0.02** (0.01)
EX → PN → YN → CI	-0.01* (0.01)	EX → PC → YN → CI	-0.02** (0.01)
EX → PN → YN → MA	-0.01* (0.00)	EX → PC → YN → MA	-0.01** (0.00)
ST → PN → YN → AL	0.00 (0.00)	ST → PC → YN → AL	-0.01* (0.00)
ST → PN → YN → CI	0.00 (0.00)	ST → PC → YN → CI	-0.01* (0.00)
ST → PN → YN → MA	0.00 (0.00)	ST → PC → YN → MA	-0.01* (0.00)
CA → PN → YN → AL	-0.01 (0.01)	CA → PC → YN → AL	-0.01 (0.01)
CA → PN → YN → CI	-0.01 (0.01)	CA → PC → YN → CI	-0.01 (0.01)
CA → PN → YN → MA	-0.01 (0.00)	CA → PC → YN → MA	0.00 (0.00)

Note. EX expressiveness, ST structural traditionalism, CA conflict avoidance, PN parental anti-substance-use injunctive norms, PC parent-adolescent prevention communication about substance use in the media, YN early adolescents' anti-substance-use personal norms, AL past-30 days alcohol use, CI past-30 days cigarette use, MA past 30-days marijuana use, *Unstd.* = unstandardized estimate, *SE* = standard error

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1 Conceptual Model of Family Communication Environments, Parental Socialization Processes for Early Adolescents' Substance Use

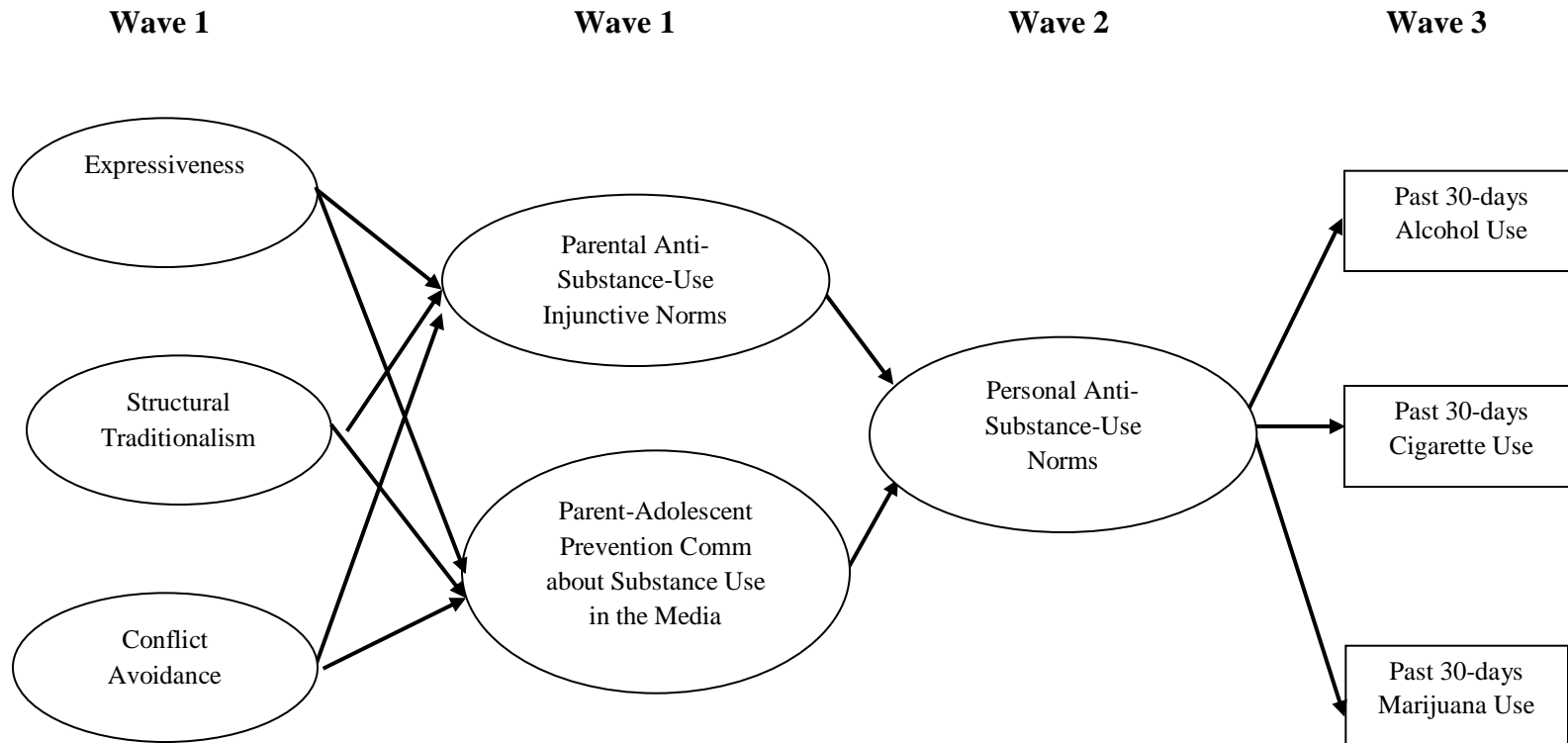
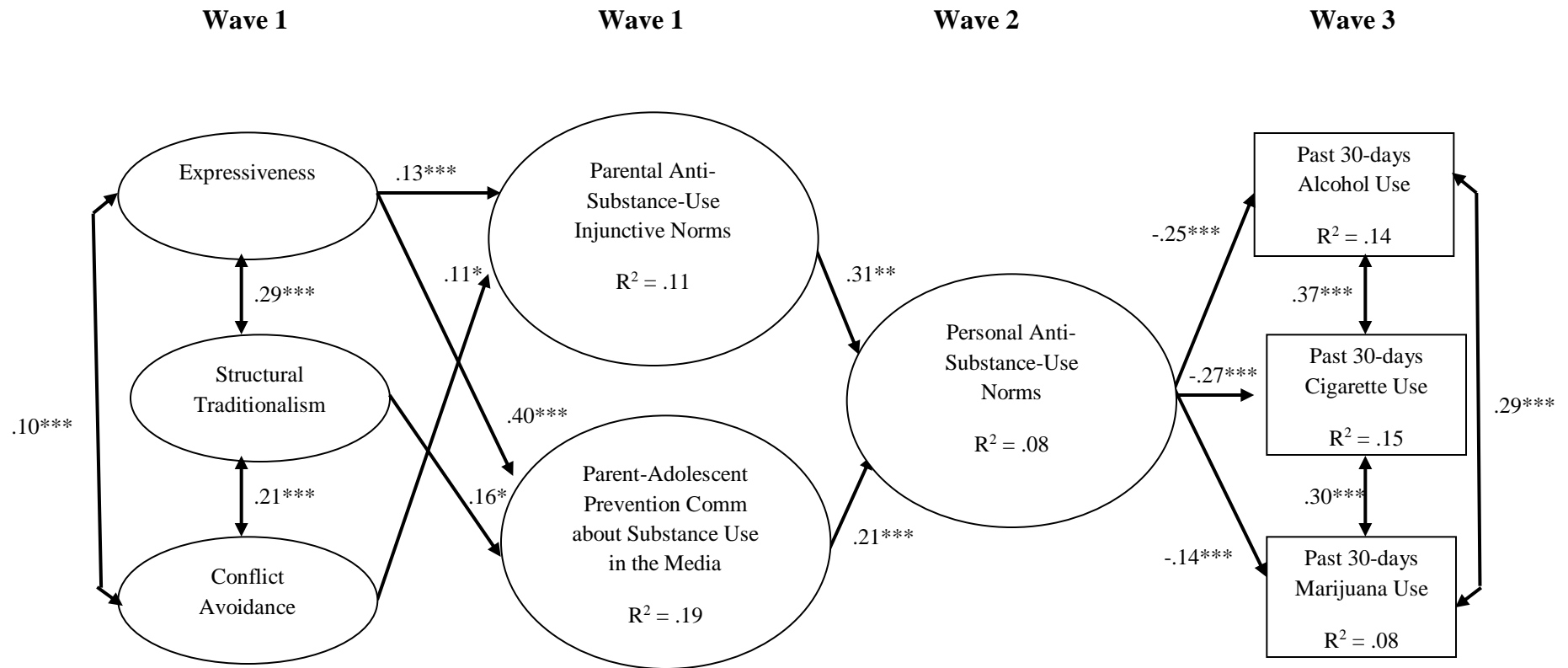


Figure 2 A Fitted Model of Family Communication Environments, Parental Socialization Processes for Early Adolescents' Substance Use



Note. Path coefficients in the figure are unstandardized and only significant pathways and correlations are highlighted by boldface ($\chi^2 [300] = 840.65$; RMSEA = .04; CFI = .93; SRMR = 0.07). Effects of gender, age, and prior use of substances were controlled but the pathways are not shown in the figure for reasons of clarity. * $p < .05$; ** $p < .01$; *** $p < .001$