

Differential effects of parenting strategies on child smoking trajectories: A longitudinal assessment over twelve years

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Abstract:

Past studies exhibit mixed findings regarding the effect of parenting strategies on children's behavior. We propose that it is due to behavioral heterogeneity among children – they differ in sensitivity to parental influence – and simultaneously examine the effects of parenting strategies on a child's: (1) probability to follow a specific trajectory for smoking growth; (2) growth pattern within a particular smoking trajectory; and (3) tobacco dependence at adulthood. Using nationally representative longitudinal data gathered over twelve years, we reveal five distinct smoking trajectories, namely stable nonsmokers (62.5%), gradual escalators (17.5%), rapid escalators (9.4%), stable light smokers (9.3%), and quitters (1.2%). Parenting strategies have differential effects on these segments. The shapes of these trajectories, in turn, affect children's tobacco dependence at adulthood. This research provides a novel profiling approach to depict the “typical” child in each segment, and offers social workers and policy makers new avenues to design targeted tobacco prevention/cessation programs.

Keywords: parenting strategies | smoking trajectories | tobacco dependence | differential effects | latent class modeling | profiling

Article:

1. Introduction.

Cigarette smoking is a leading cause of preventable death in the U.S. Despite the well-known negative health consequences of cigarette smoking, recent evidence suggests that 1 in 4 American high school students is a current smoker, and 88% of daily adult smokers tried smoking before the age of 18 (U.S. Department of Health & Human Services, 2012). Smoking, drinking, and drug use tend to be clustered, and smoking is likely a first step on the path to other maladaptive behaviors (Yang & Schaninger, 2010). Further, since nearly 90% of adult smokers tried smoking before the age of 18 and smokers tend to increase this behavior after high school (U.S. Department of Health and Human Services, 2012), designing effective adolescent smoking prevention programs has become a major public health priority (Andrews, Netemeyer, Kees & Burton, 2014).

Corresponding to this trend, child health psychologists have conducted an extensive body of research to understand the risk factors leading to tobacco dependence. Of the array of predictors, friends' smoking, parental smoking, and family structure have been found to affect children's smoking (De Leeuw, Scholte, Sargent, Vermulst & Engels, 2010). Child smoking has also caught the attention of marketing and business scholars. In 2008 tobacco companies spent over \$9.4 billion on cigarette marketing, and the three most heavily advertised brands – Marlboro, Newport, and Camel – are also the brands most preferred by the 12 to 17 and 18 to 25 year old age groups (U.S. Department of Health and Human Services, 2012). This has led to numerous studies published in business journals addressing media and socialization influences affecting adolescent smoking (e.g., Andrews et al., 2014, Pechmann and Wang, 2010, Yang and Schaninger, 2010, Zhao and Pechmann, 2007). In fact, such research is now a mainstay of a body of literature known as transformative consumer research (TCR), as it has become increasingly apparent that businesses must be made aware of, some say held accountable for, the unintended consequences of the products they market used by vulnerable populations, e.g., teens and tobacco (Martin et al., 2013). Further, given marketing's role in designing anti-tobacco campaigns, the role of business scholars in such designs has become important to both practitioners and the academic business press (Pechmann and Wang, 2010, Wakefield et al., 2010).

Based on studies from child health psychology and business academics, a variety of new intervention and communication programs have been advanced to curtail teen smoking. However, these approaches are mainly children-oriented. Recent research in psychology (Foster et al., 2007, Wakefield et al., 2006) and marketing (Mason et al., 2013, Yang et al., 2013) has examined the effect of parental styles/parenting strategies on children's smoking patterns. This research stream echoes a large body of marketing literature on the topic of consumer socialization, in which parental strategies are used as predictors of numerous children socialization outcomes, including consumption independence, television viewing, advertisement puffery filtering, susceptibility to peer influence, and early drinking (e.g., Bao et al., 2007, Evans et al., 2013, Rose, 1999, Yang et al., 2014). Recognizing the importance of parental style/strategies in affecting child smoking, social workers have started to develop parent-oriented programs to curtail teen smoking. Tobacco Free Kids, for example, has targeted parents with advertising and web sites focusing on how to modify parental behaviors as a way to reduce children's cigarette use.

Although previous research provides intriguing findings that lead to actionable prevention strategies, existing parent- and child-oriented programs have several drawbacks. First, these programs are all developed based on the *general* pattern of the whole teen population (Colder et al., 2001, Maggi et al., 2007). The effectiveness of such “a one size fits all” approach is questionable. Current prevention and intervention programs seem to work for some people, but not for others, especially not for those who have already started smoking before the intervention (Maggi, Hartzman & Vaillancourt, 2007). Even worse, delivering anti-smoking messages to the wrong audience may boost rather than curtail their tobacco use—“boomerang effects” (Wakefield et al., 2006). Because of these issues, Costello, Dierker, Jones and Rose (2008) call for research that can better customize teen smoking prevention/intervention programs. A promising avenue is to assess the potential differences in teen smoking growth rates (trajectories), and identify key variables that affect these trajectories. More recently, Yang and

Schaninger (2010) call for studies that provide profiles of different groups of teen smokers. Effective profiling allows public policy officials and marketers to better identify target audiences and refine anti-smoking strategies according to their unique attributes.

Second, existing literature is somewhat equivocal regarding parenting strategies' effects on children's behavior after they grow up. Some research shows parenting strategies exerting significant impact on children's behavior even after they become independent (Shim, 1996, Mahabee-Gittens et al., 2012); other research suggests that parental influence diminishes in late adolescence and early adulthood (McNeal, 1991, Youniss and Smollar, 1985). Such mixed findings may be due to behavioral heterogeneity among children: different children have different levels of sensitivity to parental influence. Parenting strategies may have positive, negative, or null effects on children's smoking progression, depending upon the characteristics of these children, and as such, may require differing smoking intervention attempts. Intervention strategies that ignore this heterogeneity, ask wrong questions, or those that take too harsh of an approach may actually exacerbate the maladaptive adolescent behaviors that they are designed to minimize.

This paper attempts to disentangle the heterogeneity in child smoking patterns and propose public policies and intervention programs that are tailored to specific smoking segments. We study the same child's smoking behavior from childhood (ages 10–11) to early adulthood (ages 22–23), and examine the effects of parenting strategies on a child's: 1) probability to follow a particular smoking growth trajectory from childhood to late adolescence; 2) growth pattern within a particular smoking trajectory; and 3) tobacco dependence at adulthood. Looking into the same individuals' smoking growth provides an ideal platform to study the differential effects of parenting strategies over time, and allows us to gain valuable insights about the mixed findings in the literature.

2. Theoretical development

A necessary premise for our research framework is that multiple smoking trajectories exist within the youth population. As such, we first offer rationale for why we expect such trajectories and then use these trajectories as a baseline for the hypotheses that follow.

2.1. Heterogeneity in smoking growth

In understanding human behavior, it is natural to attempt to describe the “average” person engaging in a behavior. However, a simple average may not capture the complexity of the behavior, particularly when the behavior is smoking over time. For example, one group of adolescents may have a low start and a gradual raise; whereas another group may start high and remain high throughout all years of observation; while others may start slow and increase rapidly in smoking frequency. Prevention/cessation programs neglecting this heterogeneity in smoking growth are unlikely to be successful (Costello, Dierker, Jones & Rose, 2008).

Previous research has identified such heterogeneity. For example, one study reports five segments: early rapid escalators (increasing smoking after age 13); late moderate escalators (light smokers until age 14 with moderate escalation); late slow escalators; stable light smokers; and

stable puffers (Colder et al., 2001). More recent studies (Costello et al., 2008, Maggi et al., 2007) identify five and six trajectories consistent with previous classifications (e.g., non-smokers, experimenters, stable light smokers, stable high, late escalators, and quitters). All-in-all, the trajectories (heterogeneity) found in these studies are remarkably consistent with one another, and show compelling evidence that there is between-group heterogeneity in smoking growth over time. Thus, we anticipate several distinct smoking segments, including stable non-smokers, stable light smokers, gradual escalators, rapid escalators, and quitters.

2.2. Parenting strategies and adolescent smoking

To our knowledge, no study has examined the effects of parenting strategies on different smoking trajectories over an extended period of time. We expect that parenting strategies in childhood are important predictors of the probability that a child will follow a specific smoking trajectory later in adolescence. In fact, recent evidence suggests that parenting strategies in a child's developmental years can affect adolescent and young adult behavior (Hoeve, Dubas, Gerris, van der Laan & Smeenk, 2011). Within each trajectory then, parenting strategies also simultaneously exert substantial influence on its characteristics.

Parenting strategies refer to parent-child interactions in daily life. Three parenting strategies have been widely used to explain teen substance use: parental responsiveness; psychological control; and behavioral control (Barber, 1996). *Parental responsiveness* is the extent to which parents are supportive, warm, and attentive to their child. *Psychological control* is the degree to which parents use negative psychological manipulation, verbal abuse, guilt tripping, neglect/disengagement, and withdrawal of love. *Behavioral control* involves the extent to which parents monitor, set clear rules, and conduct consistent discipline on their child's behavior (Chassin et al., 2005).

Recent studies show that deficits in authoritative parenting (low parental warmth or control) are associated with higher rates of smoking onset, and adolescents with authoritative and warm parents are less likely to increase their smoking as compared to adolescents with disengaged parents (Barber, 1996). Others have also shown that parents showing warmth have adolescents less likely to have tried cigarettes (Yang, Schaninger & Laroche, 2013). These findings suggest that higher levels of parental responsiveness or behavioral control decrease the likelihood of initiating smoking and reduce the increase (or affect a decrease) in smoking over time. Higher levels of psychological control suggest the opposite effects (Yang & Schaninger, 2010).

2.3. Differential effects of parenting strategies on smoking trajectories

We expect a more complicated picture regarding the effect of parenting strategies on child smoking. We anticipate that parenting strategies not just distinguish multiple developmental curves with unique etiologies of cigarette use (i.e., stable non-smokers, stable light smokers, gradual escalators, rapid escalators, and quitters), but the effect of parenting strategies also differs across these groups; thus it is important to develop distinct parent-oriented strategies for each group.

Next, we develop hypotheses regarding how parenting strategies exert long-time impact on smoking trajectories for intercept (onset), slope (rate of increase), and quadratic term (acceleration) for the following segments: gradual escalators; rapid escalators; stable light smokers; and quitters. Since stable non-smokers are made up of those who are either not smoking or only very rarely over time, the within-group variance tends to be small (Colder et al., 2001, Maggi et al., 2007). We do not expect parenting strategies to affect smoking trajectory factors within this group, after explaining the between-group variances.

2.3.1. Gradual and rapid escalators

Classification segments consistent with gradual and rapid escalators have low levels of onset, but positive rates of increase (slope) (e.g., Colder et al., 2001). Thus, we expect minimal effects of parenting strategies on their smoking intercept—when children start smoking. However, we posit that for these two segments, parental responsiveness and behavioral control will have negative effects on the smoking slope—high parental responsiveness or behavioral control reduces the rate of increase in smoking. The opposite is predicted for psychological control—it will have a positive effect, increasing the rate of smoking over time. The reason is shown below.

Responsive behaviors express confidence, love, acceptance, and the feeling of being valued (Yang & Laroche, 2011). In many cases, smoking is viewed by children as “functional,” in order to fulfill some developmental need, especially with respect to the sense of belonging to a peer group, and to the process of identity formation. When children experiment with cigarettes, responsive parenting opens a door for children to communicate with their parents about the negative consequences of smoking and the positive consequences of not smoking, while parental behavioral control allows parent to monitor behaviors and set clear rules as to what is acceptable (De Leeuw et al., 2010). Thus, both of these parenting strategies should slow down the rate of smoking.

H1a. Parental responsiveness is negatively associated with the smoking slope for gradual escalators.

H1b. Parental responsiveness is negatively associated with the smoking slope for rapid escalators.

H1c. Behavioral control is negatively associated with the smoking slope for gradual escalators.

H1d. Behavioral control is negatively associated with the smoking slope for rapid escalators.

Parental psychological control is associated with a high level of expectation of conformity and children obedience, as well as excessive, arbitrary, and coercive parental behaviors to reach this goal (Barber, 1996). Such control attempts fail to communicate clear expectations and do not provide a benchmark for children to evaluate themselves. As they often communicate rejection and a lack of respect to their children, psychologically controlling parents frequently result in negative affect toward the family—a negative affect that can persist into adolescence and early

adulthood (Hoeve, Eichelsheim, van der Laan, Smeenk & Gerris, 2009). In homes that rely heavily upon punitive behaviors, children fail to develop a healthy autonomy-connectedness balance with parents and manifest defiance-related and negative health behaviors (Peterson and Hann, 1999). As children start to experiment with tobacco, psychologically controlling parenting drives children to resist parental influence and be more susceptible to the influence of peers engaging in negative behaviors (Yang, Schaninger & Laroche, 2013). As a result, smoking slope increases.

H1e. Psychological control is positively associated with the smoking slope for gradual escalators.

H1f. Psychological control is positively associated with the smoking slope for rapid escalators.

We further predict that parental responsiveness and behavioral control should positively affect the quadratic term for gradual and rapid escalators—the smoking rate slows down at a faster pace when parental responsiveness or behavioral control is high (De Leeuw et al., 2010). Psychological control will negatively affect the quadratic term—the rate of decrease becomes slower over time when psychological control is high.

Responsive parenting creates positive parent-child relationships and supportive home environments (Peterson and Hann, 1999). Such a home atmosphere enhances children's sharing of problems and events, allowing the parents to offer timely help (Yang, Kim, Laroche & Lee, 2014). When parents openly communicate harmful effects of smoking, children identify with their parents' attitudes and values toward smoking (Yang & Laroche, 2011). This can reduce the rate of increase in child tobacco use later in their teen years, slowing down the smoking rate at a faster pace. Similarly, parental behavioral control can reduce smoking rate and slow down the rate at a faster pace as well. Parenting behavioral control consists of clearly communicated rules and consistent discipline during the monitoring of child activities (Peterson and Hann, 1999). Behavioral control tends to foster high self-efficacy among children, whereas low behavioral control leads to delinquent behavior and substance abuse (Baumrind, 1991).

H2a. Parental responsiveness is positively related to the smoking quadratic term for gradual escalators.

H2b. Parental responsiveness is positively related to the smoking quadratic term for rapid escalators.

H2c. Behavioral control is positively related to the smoking quadratic term for gradual escalators.

H2d. Behavioral control is positively related to the smoking quadratic term for rapid escalators.

By contrast, psychological control tends to increase the rate of increase in smoking among gradual and rapid escalators. Psychological control is associated with low child self-esteem,

anxiety, and distress (Barber, 1996). Children who perceive their parents as psychologically controlling are more likely to resist parental influence and be more oriented toward the opinions of their peers (Yang, Schaninger & Laroche, 2013). Psychological control may lead to the temporary external compliance of children to their parents, but will fail to help them internalize their parents' attitudes toward smoking into their own value system as time progresses (Yang & Laroche, 2011).

H2e. Psychological control is negatively related to the smoking quadratic term for gradual escalators.

H2f. Psychological control is negatively related to the smoking quadratic term for rapid escalators.

2.3.2. *Stable light smokers*

Stable light smokers have early onset, as manifested by a higher smoking intercept and an increasing initial growth in smoking—the smoking slope (Chassin et al., 2000, Colder et al., 2001). We expect that smoking onset, slope, and quadratic term for this segment can be partially explained by parenting strategies.

Parents offering behavioral control or parental warmth/responsiveness have children at lower risk for early onset of maladaptive behaviors (Yang & Laroche, 2011). In these families, parents provide structure, encourage child self-regulation, and/or impose well-explained rules to child behavior (Baumrind, 1991). As such, we expect responsive parenting and parental behavioral control to be negatively associated with the smoking intercept and slope for stable light smokers.

H3a. Parental responsiveness is negatively associated with smoking intercept for stable light smokers.

H3b. Parental responsiveness is negatively associated with smoking slope for stable light smokers.

H3c. Behavioral control is negatively associated with smoking intercept for stable light smokers.

H3d. Behavioral control is negatively associated with smoking slope for stable light smokers.

As per psychological control, early smokers are often from families with neglectful parents and/or parents that use a punishment style of parenting (Yang & Schaninger, 2010). They see children as having few rights or responsibilities that require genuine attention, and may use coercion to enforce family rules (Carlson & Grossbart, 1988). Thus, parenting psychological control is likely to increase smoking onset and the growth in smoking, suggesting a positive relation with the smoking intercept and slope.

H3e. Parental psychological control is positively associated with smoking intercept for stable light smokers.

H3f. Parental psychological control is positively associated with smoking slope for stable light smokers.

We also expect responsive and behavioral control parenting to be positively related to a downward sloping curve in smoking over time—the quadratic effect. Children from backgrounds of parental control and/or warmth tend to have better impulse control as they advance through their teen years, and as such, show a decrease in engaging in risky behaviors. And, this decrease is shown to be stable or the decrease accelerates over time (Hoeve, Dubas, Gerris, van der Laan & Smeenk, 2011).

H3g. Parental responsiveness is positively related to the quadratic term for stable light smokers.

H3h. Behavioral control is positively related to the quadratic term for stable light smokers.

2.3.3. *Quitters*

Quitters have early onset, yet show a pronounced curvilinear smoking pattern over time: an increased frequency of smoking from mid-teens to a leveling-off at the ages of 20–21; a rapid decrease until 25; and then smoking cessation after 25 (Costello, Dierker, Jones & Rose, 2008). In sum, they are actively trying to quit as they advance into adulthood.

Psychologically controlling or punishment-oriented parenting strategies have been associated with early onset of delinquent behaviors and an inability to curtail such behaviors in early adulthood (Foster et al., 2007). Parenting associated with responsiveness and behavioral control has been associated with a slower start and quicker cessation of maladaptive behaviors into early adulthood (Hoeve, Dubas, Gerris, van der Laan & Smeenk, 2011). For quitters, then, we expect that parental responsiveness and behavioral control will be negatively related to smoking onset (intercept); the opposite is expected for psychological control.

H4a. Parental responsiveness is negatively associated with the smoking intercept for quitters.

H4b. Behavioral control is negatively associated with the smoking intercept for quitters.

H4c. Psychological control is positively associated with the smoking intercept for quitters.

As for the slope and quadratic term for quitters, given they are actively trying to quit, we predict that parental responsiveness and behavioral control will increase the rate of decline, resulting in a positive effect on the smoking slope toward quitting. For the quadratic term, we expect a negative effect—parental responsiveness and behavioral control result in quitting at a faster

acceleration. Again, these predictions are consistent with the findings that positive parenting strategies have far reaching effects well into adolescence (Yang, Schaninger & Laroche, 2013).

H5a. Parental responsiveness is positively associated with the smoking slope for quitters.

H5b. Parental responsiveness is negatively associated with the smoking quadratic term for quitters.

H5c. Behavioral control is positively associated with the smoking slope for quitters.

H5d. Behavioral control is negatively associated with the smoking quadratic term for quitters.

Given that psychological control is characterized by negative and abusive parent-child interactions, we expect it to exert a negative impact on the slope, but a positive effect on the quadratic term—a lower rate of quitting and at a slower acceleration (Hoeve, Dubas, Gerris, van der Laan & Smeenk, 2011).

H5e. Psychological control is negatively associated with the smoking slope for quitters.

H5f. Psychological control is positively associated with the smoking quadratic term for quitters.

2.4. Growth curve shapes as predictors of distal outcomes

Finally, we expect that growth curves can predict the binary outcome of tobacco dependence four years later at ages 22–23, and use a latent trajectory class variable approach to do so (Muthén, 2001). The key issue is that the growth factor values determine the growth shape, and it is the shape of the trajectory that is predictive (Muthén, 2001). Though we offer no formal predictions, prior research (e.g., Costello, Dierker, Jones & Rose, 2008) suggests that stable nonsmokers have the lowest probability to be tobacco dependent, whereas the rapid and gradual escalators have the highest probability.

3. Method

3.1. Sample

The data came from six cycles of the National Longitudinal Survey of Children and Youth (NLSCY) provided by Statistics Canada. The NLSCY began surveying over 15,000 families with children aged 1 to 11 in 1994/95, followed-up at two-year intervals. Of the initial sample, 3434 had at least one 10- and 11-year old child at Cycle 1. This served as the baseline sample. Due to attrition, there remained 2249 12 to 13 year olds at Cycle 2; 2086 14 to 15 year olds at Cycle 3; 1814 16–17 year olds at Cycle 4; 1590 18–19 year olds at Cycle 5; and 1220 22–23 year olds at Cycle 7. The complete 1590 Cycle 5 participants formed our study sample, capturing transitions from late childhood to early adulthood. MANOVA analyses showed that respondents

and non-respondents in both Cycles 2 and 3 had the same level of parenting strategies measured in Cycle 1. Therefore, we believe that mortality is not a concern in our hypothesis testing.

3.2. Measures

3.2.1. *Smoking behavior*

Two items measured smoking frequency in the first five cycles: 1) Have you ever tried cigarette smoking, even just a few puffs? (yes = 1; no = 0); and 2) If you do smoke, how often do you smoke cigarettes? (0 = I don't smoke anymore; 1 = a few times a year; 2 = about once or twice a month; 3 = about once or twice a week; 4 = about 3 to 5 times a week; 5 = every day). Tobacco dependence was measured by daily smoker status (0 = non-daily smoker; 1 = daily smoker) in Cycle 7.

3.2.2. *Parenting strategies*

Parenting strategies were assessed in Cycle 1 using the Lempers, Clark-Lempers and Simons (1989) Parent Practices Scale (1 = never; 4 = very often). Parental responsiveness was assessed with five items ($\alpha = .77$): Children were asked to rate how often their parents smiled at them, praised them, made sure that they knew they were appreciated, spoke of the good things they did, and seemed proud of the things they did. Psychological control was measured with six items ($\alpha = .65$): Children were asked to rate how often their parents soon forgot a rule they had made, nagged them about little things, only kept rules when it suited them, threatened punishment more often than they used it, enforced a rule or not enforced a rule depending on their mood, and hit them or threatened to do so. Behavioral control was measured by five items ($\alpha = .55$): Children were asked to rate how often their parents wanted to know exactly where they were and what they were doing, told them what time to be home when they went out, told them what they could watch on TV, made sure they did their homework, and found out about their misbehaviors.

3.2.3. *Covariates*

Gender, onset of puberty, children living in single-parent families, parental smoking, and friends' smoking were included as covariates in the analyses. Parental smoking was based on parent responses to two questions in Cycle 1: 1) Have you ever tried cigarette smoking, even just a few puffs? (yes/no), and 2) If you do smoke, how often do you smoke cigarettes? (1 = a few times a year; 2 = about once or twice a month; 3 = about once or twice a week; 4 = about 3 to 5 times a week; 5 = every day). If one parent smoked "about 3 to 5 times a week" or more, parent smoking was coded as 1, with non- and very light smokers treated as the reference group. Friends' smoking was a dummy variable based on child responses to "have many of your friends have tried smoking?" (1 = yes; 0 = no).

4. Analyses and results

4.1. Overview and initial data checks

As shown in Fig. 1, our integrative smoking model simultaneously estimates both within- and between-group variations. Between-group variances are captured using latent trajectory classes (i.e., categorical latent variables). Within-group variances are expressed through the variances surrounding the growth factors in each class. The explanatory factors for both between- and within-group variances include three types of parenting strategies and the covariates. Latent class modeling (LCM) was used to extract different smoking trajectories (segments), and test the degree to which parenting strategies affected trajectory factors within each segment after controlling for effects of covariates.

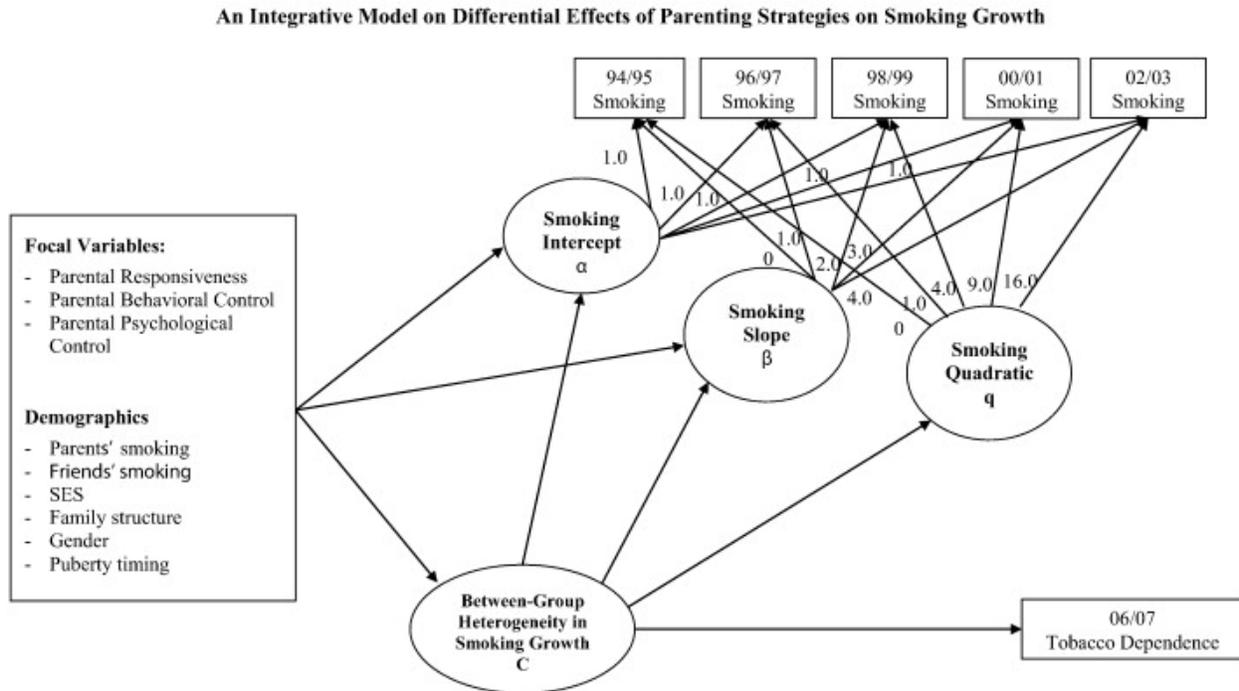


Fig. 1. An integrative model on differential effects of parenting strategies on smoking growth.

Before testing our hypotheses, we first established if smoking over time followed a non-linear function. MPlus (Muthén & Muthén, 2007) was used and we fitted the five cycles of smoking frequency with a linear function for smoking growth. We then relaxed the assumption of linearity, and in fact, the smoking growth curve was nonlinear—increasing from Cycle 1 to Cycle 4 (ages 16–17), but slightly decreasing from Cycle 4 to Cycle 5 (ages 18–19). Similar to other studies (De Leeuw et al., 2010), follow-up contrasts showed that a quadratic function best captured this non-linear pattern (CFI = 1.00, RMSEA = .019). Therefore, we used the quadratic function in the LCM analysis.

Second, we used LCM to extract the potential unobserved heterogeneity in the sample, based on the inferred relationships among predictors (parenting strategies), covariates (demographics, parents' and friends' smoking), smoking trajectory factors (intercept, slope, and quadratic), and actual smoking behavior at different time points. LCM deals with unobserved heterogeneity in the parameters of a certain model across the population by imposing a “mixing distribution” on the parameters of that model, which is different from conventional clustering methods that segment individuals based on observed attributes. The observations in a sample are assumed to

arise from two or more groups that are mixed in unknown proportions. The LCM analysis revealed that a five-segment solution ($BIC_{adjusted} = 16,626.3$) fit the data better than all other solutions (1, 2, 3, 4, and 6 group; $p < .01$), accounting for 9.3%, 17.5%, 1.2%, 9.4%, and 62.5% of the entire sample, respectively. Fig. 2 shows that these five segments represent stable light smokers, gradual escalators, quitters, rapid escalators, and stable nonsmokers similar to those found in prior studies (Colder et al., 2001).

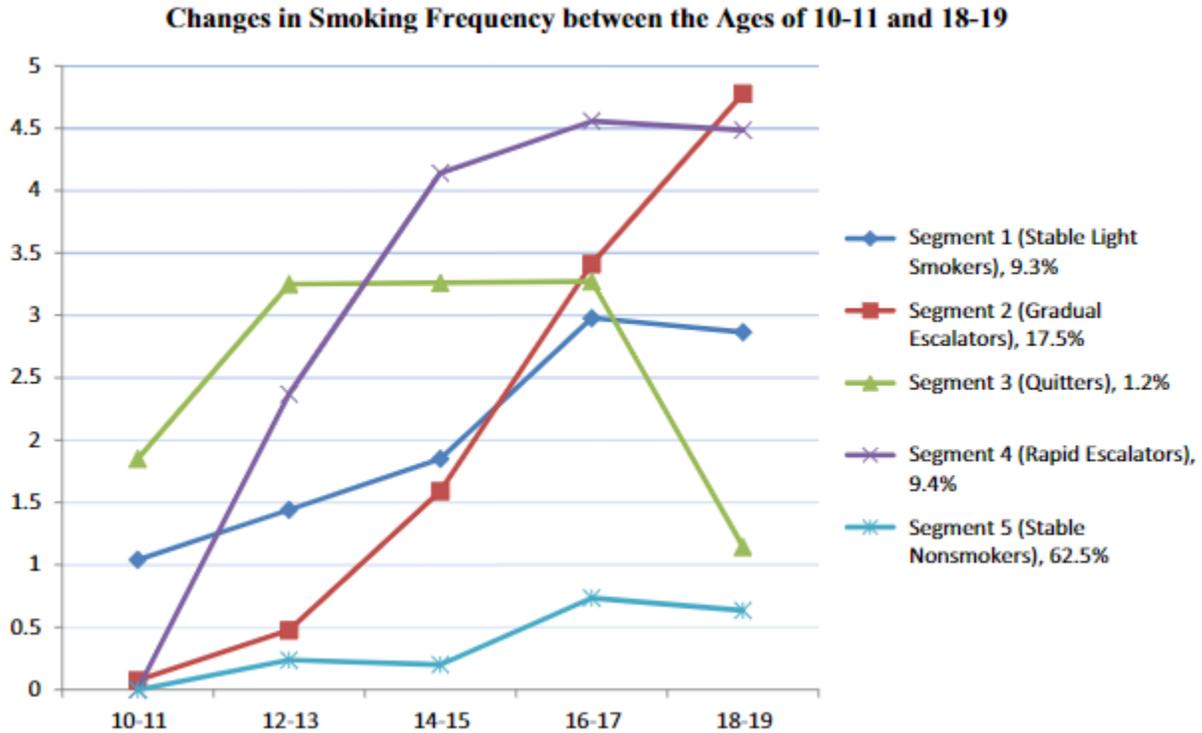


Fig. 2. Changes in smoking frequency between the ages of 10–11 and 18–19.
NOTE: The vertical axis represents smoking frequency; while the horizontal axis represents age cycles.

Third, we examined if between-group heterogeneity shown in Fig. 2 could be explained by parenting strategies, on top of the effects of covariates. We found that higher parental responsiveness reduces the likelihood of becoming a stable light smoker, relative to gradual ($b = -.097, p < .05$) or rapid escalators ($b = -.098, p < .05$). A higher level of psychological control, however, increases the probability to become a stable light smoker when compared with rapid escalators ($b = .170, p < .01$) or stable nonsmokers ($b = .081, p < .05$). It also increases the chance of becoming a gradual escalator, relative to rapid escalators ($b = .150, p < .01$) or stable nonsmokers ($b = .080, p < .05$). Behavioral control reduces the chance of falling into gradual escalators, relative to stable nonsmokers ($b = -.094, p < .01$).

Finally, to obtain the characteristics that best describe a segment (profiling), a membership probability was calculated for each individual. Following Ramaswamy, DeSarbo, Reibstein and Robinson (1993) approach, standardized posterior probability scores of each segment were used as the dependent variable, while parenting strategies and all covariates were used as independent variables for profiling. The descriptors across the top of Table 1 offer profiles for each segment. For example, stable light smokers (segment 1) are more likely to have low parental

responsiveness ($b = -.374, p < .01$), high psychological control ($b = .427, p < .01$), coming from single-parent households ($b = .509, p < .05$), and having both smoking parents ($b = .642, p < .001$) and smoking friends ($b = .661, p < .001$). Likewise, gradual escalators (segment 2) contains males ($b = -.499, p < .01$) experiencing high parental responsiveness ($b = .290, p < .05$), low behavioral control ($b = -.374, p < .01$), low SES ($b = -.365, p < .01$), having daily smoking parents ($b = .534, p < .05$), but non-smoking friends ($b = -1.011, p < .01$). Quitters (segment 3) have low parental responsiveness ($b = -.240, p < .05$), low behavior control ($b = -.200, p < .05$), high psychological control ($b = .231, p < .05$), from single-parent households ($b = .286, p < .05$), and having non-smoking parents ($b = -.210, p < .05$), but smoking friends ($b = .366, p < .01$).

Table 1. Profiling analysis of posterior probabilities^a.

Profiling variables at ages of 10–11	Low parental responsiveness, high psychological control, from single-parent households, and having both smoking parents and smoking friends	Male, high parental responsiveness, low behavioral control, low SES, having daily smoking parents, but non-smoking friends	Low parental responsiveness, low behavioral control, high psychological control, from single-parent households, with non-smoking parents, but smoking friends	Female early maturers, high parental responsiveness, low psychological control, high behavioral control, from single-parent households, with both smoking parents and smoking friends	Late maturers, high SES, from intact families, having non-smoking parents and friends
	(Segment 1: stable light smokers)	(Segment 2: gradual escalators)	(Segment 3: quitters)	(Segment 4: rapid escalators)	(Segment 5: stable nonsmokers)
Parental responsiveness	-.374**	.290*	-.240*	.363*	-.014
Psychological control	.427***	.034	.231*	-.489***	-.004
Behavioral control	.003	-.439**	-.200*	.409**	-.072
Gender	-.279	-.499**	.023	.867***	-.112
Puberty timing	-.049	.166	-.101	-.610***	.594*
Family SES	-.046	-.365**	-.047	-.004	.962***
Family structure	.519*	-.391	.286*	.507*	-.921**
Parental smoking	.642***	.534*	-.210*	.959***	-1.925***
Friends' smoking	.661***	-1.011***	.366**	.772***	-.496***
R ²	26.6%	19.9%	17.1%	25.4%	12.8%

^a Significance levels are based on two-tailed tests.

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

4.2. Tests of hypotheses

The initial analyses establish different smoking segments and highlight some within-segment differences based on parenting strategies. Table 2 now shows the results of our hypotheses pertaining to smoking trajectories while controlling for all covariates. The results of interest are highlighted in **BOLD**.

Table 2. Differential effects of parenting strategies.

	Column 1	Column 2	Column 3	Column 4	Column 5
	Segment 1 (9.3%) stable light smokers	Segment 2 (17.5%) gradual escalators	Segment 3 (1.2%) quitters	Segment 4 (9.4%) rapid escalators	Segment 5 (62.5%) stable nonsmokers
<i>Intercept factor regression</i>					
Responsiveness	.178	-.013	.184	.007	.000
Behavioral control	-.239*	.012	-.266***	.006	.000
Psychological control	.061	-.002	.312***	-.004	.000
Puberty timing	-.057	.022	.187	.001	.001
SES	.136	.033	-.244**	.001	.000
Parent smoking	.097	.027	-.052	.003	.001
Friend smoking	-.166	.947***	.776***	-.001	.000
<i>Slope factor regression</i>					
Responsiveness	-.470*	-.508**	-.096	-.297*	-.017
Behavioral control	.305	.127	.432*	-.321*	.044
Psychological control	-.095	.287*	-.419*	.583**	-.018
Puberty timing	-.264	-.106	.227	-.127	-.158**
SES	-.139	-.049	-.091	-.059	.024
Parent smoking	.222	.055	.569*	-.153	.085
Friend smoking	.493**	-.433*	-.922***	-.648***	.252**
<i>Quadratic factor regression</i>					
Responsiveness	.575**	.580**	.057	.355*	.049
Behavioral control	-.311	-.119	-.444*	.279*	-.063
Psychological control	.120	-.321*	.583*	-.612**	.065
Puberty timing	.114	.075	-.249	.124	.126
SES	.007	-.022	.176	.053	.036
Parent smoking	-.167	-.068	-.729**	.191	-.095
Friend smoking	-.518***	.268	.916***	.627***	-.219*
<i>Variance explained</i>					
Smoking intercept	16.5%	89.9%	99.2%	.50%	.23%
Smoking slope	68.9%	61.4%	97.4%	89.3%	19.6%
Quadratic term	73.6%	62.2%	98.2%	93.4%	12.1%

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

4.2.1. Gradual and rapid escalators

Columns 2 and 4 of Table 2 present the results for the gradual and rapid escalator segments. Parental responsiveness is negatively related to the smoking slope for gradual escalators ($b = -.508, p < .01$), supporting **H1a**; parental responsiveness is also negatively related to the smoking slope for rapid escalators ($b = -.297, p < .05$), supporting **H1b**. The hypothesized negative behavioral control \rightarrow smoking slope effects for gradual escalators was not supported (**H1c**); behavioral control is negatively related to the smoking slope of rapid escalators ($b = -.321, p < .05$), supporting **H1d**. In contrast, psychological control positively affects the smoking slope for both gradual ($b = .287, p < .05$) and rapid escalators ($b = .583, p < .01$), supporting **H1e** and **H1f**. In sum, 5 of 6 predictions associated with **H1a** through **H1f** are supported.

H2a and **H2b** are both supported, as parental responsiveness positively affects the quadratic term for gradual escalators ($b = .580, p < .01$) and rapid escalators ($b = .355, p < .05$). The behavioral control → quadratic effect for gradual escalators is not observed (**H2c** not supported), but behavioral control does exert the hypothesized quadratic effect for rapid escalators ($b = .279, p < .05$), supporting **H2d**. Substantiating **H2e** and **H2f**, psychological control negatively affects the quadratic term for gradual escalators ($b = -.321, p < .05$) and rapid escalators ($b = -.612, p < .01$). Therefore, 5 of 6 of these results support **H2a** through **H2f**. The two non-supported hypotheses (**H1c** and **H2c**) are both related to the effect of behavioral control among gradual escalators. Since gradual escalators have low level of behavioral control, these results suggest that parental responsiveness and psychological control play more important roles in affecting this group's smoking behavior.

4.2.2. *Stable light smokers*

Column 1 of Table 2 shows the results for the stable light smoker segment. **H3a** predicts that parental responsiveness is negatively related to the smoking intercept for stable light smokers. This hypothesis is not supported. **H3b** predicts that parental responsiveness is negatively related to the smoking slope for stable light smokers. This hypothesis is supported ($b = -.470, p < .05$). **H3c** is also supported—behavioral control is negatively related to the smoking intercept for stable light smokers ($b = -.239, p < .05$). **H3d** is not supported as behavioral control is not negatively related to the smoking slope for stable light smokers. It was predicted that psychological control would be positively related to the smoking intercept (**H3e**) and slope for stable light smokers (**H3f**). As Table 2 shows, neither **H3e** nor **H3f** is supported. Finally, we predicted that parental responsiveness (**H3g**) and behavioral control (**H3h**) would be positively related to the smoking quadratic term for stable light smokers. This effect occurs only for parental responsiveness ($b = .575, p < .001$), supporting **H3g**; **H3h** is not supported. In sum, of the eight hypotheses for stable light smokers, three are supported.

The non-supported hypotheses suggest that psychological control has a minimal impact on stable light smokers' cigarette use. Given that parenting of this group is characterized by high psychological control, moderate behavioral control, and low parental responsiveness, it seems that psychological control reaches “ceiling” effect after being combined by behavioral control. As reported by Galambos, Barker, & Almeida (2003), when behavioral control is added to high psychological control, it augments the damaging effects of the latter on the child, and becomes overly intrusive, leading to an increase in rebellion, having more friends who are rebellious, and being more susceptible to the negative influence of misbehaving peers.

4.2.3. *Quitters*

Column 3 of Table 2 shows the results for the quitters segment. The hypothesized effect of parental responsiveness on the smoking intercept was not found (**H4a** not supported), but behavioral control is negatively related to the smoking intercept ($b = -.266, p < .001$) as hypothesized (**H4b**). Psychological control is positively related to the smoking intercept ($b = .312, p < .001$), supporting **H4c**. **H5a** and **H5b** are not supported—parental responsiveness is neither related to the smoking slope nor quadratic term for quitters. Behavioral control is positively related to the smoking slope ($b = .432, p < .05$) and negatively related to quadratic

term ($b = -.444, p < .05$), supporting **H5c** and **H5d**. Consistent with **H5e** and **H5f**, psychological control is negatively related to the smoking slope ($b = -.419, p < .05$), and positively related to the quadratic effect ($b = .583, p < .05$). Therefore, for the nine hypotheses pertaining to quitters, six are supported. Over all smoking segments collectively, 29 hypotheses are advanced and 19 are supported.

4.3. Tobacco dependence distal outcomes

Finally, do smoking growth shapes affect the distal outcome of tobacco dependence four years later at ages 22–23? We found that stable nonsmokers (odds = .076; odds ratio = 1.00) have the lowest probability to develop tobacco dependence, followed by stable light smokers (odds = .699; odds ratio = 9.20), gradual escalators (odds = 1.124; odds ratio = 14.79), and rapid escalators (odds = 1.342; odds ratio = 17.65). Surprisingly, quitters (odds = 2.173; odds ratio = 28.59) have the highest probability to become tobacco dependent at ages 22–23. A plausible explanation is that the adverse psychological consequence of nicotine dependence is so large for quitters that they could not sustain the quit. As evident, Kanner, Connett, Williams, & Buist (1999) found that only 14.7–17.5% quitters sustained their quitting behavior over the five-year study period. In other words, more than 80% of quitters were not successful in quitting their tobacco use.

5. General discussion

5.1. Implications

The present research contributes to the literature by identifying sources (parenting strategies) of unobserved heterogeneity at both between-group and within-group levels in the same model. Our findings suggest that parenting strategies show differing effects on how much and how long a child might smoke. Thus, prevention and intervention programs need to be tailored to specific smoking segments.

For gradual escalators, parental responsiveness and psychological control play important roles in influencing the rate of change (slope) and escalation of the trajectory (quadratic). Therefore, parent-focused programs need to focus on teaching them about how to rebuild trust and relationships with their children through being more responsive and avoid using psychologically controlling methods (e.g., punishment, guilt induction). Since parents of gradual escalators are also smokers themselves, parent-oriented campaigns should also emphasize the importance for the parents to curtail their smoking. In this way, parents can re-establish a role model for their children and make their responsive parenting more effective.

Parents of children in this group must be convinced to avoid increasing psychological control as reactions to children's misbehavior, as they are likely to lead to further susceptibility to negative peer influence and escalating rebellious behavior. Since rapid escalators are mainly from broken households, parents in these families are less likely to go to anti-smoking websites or proactively pursue ways to curtail their teenage child's smoking (Yang & Schaninger, 2010). As such, traditional marketing strategies, such as community based parent-targeted intervention/education programs, may be more effective for this group. Door-to-door delivery of parent-oriented

pamphlets may be a good communication channel for this group. In addition, given that rapid escalators usually have smoking friends, counseling programs should be made available to the parents, help them break their children's association with smoking peers.

For stable light smokers, behavioral control reduces the initial level of smoking, whereas parental responsiveness reduces the rate of increase and escalation. Therefore, parent-focused prevention programs that focus on educating parents to properly monitor and supervise their children may be helpful for this group. Such monitoring and supervision should start at childhood to prevent early adoption of cigarettes. As children get older, the parents of the children in this group need to focus more on parental responsiveness to establish good parent-child relationships as an approach to slow down the smoking progression. These parent-oriented approaches are likely to be more effective in converting children from light to nonsmokers, if combined with the child-focused programs that help children effectively deal with peer pressure.

For quitters, psychological control and behavioral control affect all the elements of their smoking growth. As a result, prevention and intervention programs need to focus on how to balance the use of psychological control and behavioral control to avoid boomerang effects, i.e., pushing teenagers to the directions that parents do not want them to. Previous research shows that a higher level of psychological control and a higher level of behavioral control may create an 'augmentation' effect, leading to further yet rebellious behaviors (Galambos et al., 2003). Therefore, for quitters, it may not be a good idea to develop parent-oriented ads that teach parents on how to monitor their children's tobacco use; rather, parent-targeted campaigns should center on helping parents to avoid using psychological control, especially when the monitoring system is in place.

Since quitters tend to show early onset, parent-oriented campaigns need also to target parents early, before it is too late to reverse the pattern (Yang & Schaninger, 2010). Though quitters curtail smoking in later adolescence, the likelihood of becoming tobacco dependence in young adulthood in our sample is still quite high. Therefore, parent-targeted campaigns should have a component to teach parents about how to socialize their children to develop self-regulation and self-control efficacies. These efficacies may exert long-lasting effects on the children's cessation behavior after they go to college. Because quitters usually have smoking friends, it is also important to teach parents about the skills to disconnect their children from associating with smoking friends.

5.2. Limitations and future research

Our study has some key limitations. The first limitation is that the NLSCY data does not measure the mechanisms of children's smoking behavior, such as smoking attitudes. Future studies should develop customized long-term longitudinal datasets, measuring such mechanisms. For example, we know little about the role that susceptibility to negative and positive influence plays in this process. Susceptibility to advertising themes beyond peer influence, or "being cool," such as self-esteem, as used in recent anti-drug ads, should also be examined, as should information on teen media usage and on how media consumption affects children's lifestyle and multiple behavior patterns.

A second limitation pertains to the parental behavioral control scale. Its internal consistency estimate was low ($\alpha = .55$). This is a common shortcoming of parental behavioral control scales (Rohner & Khaleque, 2003). As noted by Rohner and Khaleque (2003), behavioral control covers a wide domain of perceived parental behaviors, and the five aspects assessed by the items we used (e.g., parents making sure that homework is done on time; parents telling their children the time they need to be home at night) tap different dimensions of parental behavioral control. That said, the scale we use, and the only one provided by our Statistics Canada data source, does have content validity (Lempers, Clark-Lempers & Simons, 1989). What this measure lacks in internal consistency compensates for its content validity (Netemeyer, Bearden & Sharma, 2003).

A third limitation is that our study does not examine interactive/moderating effects between parenting strategies and other covariates. For example, the effect of friends' smoking may be stronger when psychological control is higher, but weaker when behavioral control is higher. Future research should investigate such interactive effects among risk factors. Future research may also examine other moderator effects. For example, research suggests that adolescents learn of the negative effects of smoking from parents and peers, but these effects are strengthened (moderated) via exposure to anti-tobacco ad messages (Pechmann & Knight, 2002). Another avenue is the relative effects of parental influence vis-à-vis the influence of family, peers, and ad campaigns. Which are greater—the effects of ad campaigns or social influence on teen smoking? Thus, studies examine moderating effects of parents with other sources of influence are needed, as well as studies that partial-out the effects of parental influences from other sources (Pechmann & Knight, 2002).

Even more promising may be the potential for parental influence to affect tobacco usage at the point of purchase. Graphic visual warning labels are now placed on cigarette packages in 43 countries worldwide. These packages visually display the negative effects of adult and adolescent smoking on themselves (e.g., lung cancer, addiction) and others (e.g., secondhand smoke harming children and friends) with implicit and explicit messages that responsible parenting dissuades such behaviors in children (Andrews, Netemeyer, Kees & Burton, 2014). Other recent research also suggests a potential interaction between ad campaigns displaying graphic images and parental influence on preventing adolescent smoking or encouraging cessation (Fitzsimons & Moore, 2008). Theory from this research suggests that the emotions of fear, guilt, and remorse elicited from graphic ad messages may interact with positive parenting to affect adolescent beliefs, attitudes, and behaviors toward smoking.

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References

Andrews, J.C., Netemeyer, R.G., Kees, J., & Burton, S. (2014). How graphic visual health warnings affect young smoker's thoughts of quitting. *Journal of Marketing Research*, 51(2), 165–183.

- Bao, Y., Fern, E.F., & Sheng, S. (2007). Parental style and adolescent influence in family consumption decisions: An integrative approach. *Journal of Business Research*, 60, 672–680.
- Barber, B.K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, 67(6), 3296–3319.
- Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance abuse. *Journal of Early Adolescence*, 11, 56–95.
- Carlson, L., & Grossbart, S. (1988). Parental style and consumer socialization of children. *The Journal of Consumer Research*, 15, 77–94.
- Chassin, L., Presson, C.C., Pitts, S.C., & Sherman, S.J. (2000). The natural history of cigarette smoking from adolescence to adulthood in a Midwestern community sample: Multiple trajectories and their psychosocial correlates. *Health Psychology*, 19, 223–231.
- Chassin, L., Presson, C.C., Rose, J., Sherman, S.J., Davis, M.J., & Gonzalez, J.L. (2005). Parental style and smoking-specific parenting practices as predictors of adolescent smoking onset. *Journal of Pediatric Psychology*, 30(4), 333–345.
- Colder, C.R., Mehta, P., Balanda, K., Campbell, R.T., Mayhew, K.P., Stanton, W.R., et al. (2001). Identifying trajectories of adolescent smoking: An application of latent growth mixture modeling. *Health Psychology*, 20(2), 127–135.
- Costello, D.M., Dierker, L.C., Jones, B.L., & Rose, J.S. (2008). Trajectories of smoking from adolescence to early adulthood and their psychosocial risk factors. *Health Psychology*, 27(6), 811–818.
- De Leeuw, R.N.H., Scholte, R.H.J., Sargent, J.D., Vermulst, A.A., & Engels, R.C.M.E. (2010). Do interactions between personality and social–environmental factors explain smoking development in adolescence? *Journal of Family Psychology*, 24(1), 68–77.
- Evans, N.J., Carlson, L., & Hoy, M.G. (2013). Coddling our kids: Can parenting style affect attitudes toward advergames? *Journal of Advertising*, 42(2/3), 228–240.
- Fitzsimons, G.J., & Moore, S.G. (2008). Should we ask our children about sex, drugs, and rock & roll?: Potentially harmful effects of asking questions about risky behaviors. *Journal of Consumer Psychology*, 18, 82–95.
- Foster, S.E., Jones, D.J., Olsen, A.L., Forehand, R., Gafney, C., Zens, M., et al. (2007). Family socialization of adolescent's self-reported cigarette use: The role of parents' history of regular smoking and parenting style. *Journal of Pediatric Psychology*, 32(4), 481–493.
- Galambos, N. L., Barker, E. T., & Almeida, D. M. (2003). Parents Do Matter: Trajectories of Change in Externalizing and Internalizing Problems in Early Adolescence. *Child Development*, 72, 578–594.
- Hoeve, M., Dubas, J.S., Gerris, J.R.M., van der Laan, P.H., & Smeenk, W. (2011). Maternal and paternal parenting styles: Unique and combined links to adolescent and early adulthood delinquency. *Journal of Adolescence*, 34, 813–827.

- Hoeve, M., Eichelsheim, J.S., van der Laan, P.H., Smeenk, W., & Gerris, J.R.M. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, 37(6), 749–775.
- Kanner, R. E., Connett, J. E., Williams, D. E., & Buist, A. S. (1999). Effects of Randomized Assignment To A Smoking Cessation Intervention And Changes In Smoking Habits On Respiratory Symptoms In Smokers With Early Chronic Obstructive Pulmonary Disease: The Lung Health Study. *The American Journal of Medicine*, 106(4), 410–416.
- Lempers, J.D., Clark-Lempers, D., & Simons, R.L. (1989). Economic hardship, distress, and parenting in adolescence. *Child Development*, 60, 25–39.
- Maggi, S., Hartzman, C., & Vaillancourt, T. (2007). Changes in smoking behaviors from late childhood to adolescence: Insights from the Canadian National Longitudinal Survey of children and youth. *Health Psychology*, 26(2), 232–240.
- Mahabee-Gittens, E. M., Xiao, Y., Gordon, J. S., & Khoury, J. C. (2012). Continued Importance of Family Factors in Youth Smoking Behavior. *Nicotine & Tobacco Research*, 14(12), 1458–1466.
- Mason, M. J., Tanner, J. T., Piacentini, M., Freeman, D., Anastasia, T., Batat, W., et al. (2013). Advancing a participatory approach for youth risk behavior: Foundations, distinctions, and research directions. *Journal of Business Research*, 66, 1235–1241.
- Martin, I. M., Kamins, M. A., Pirouz, D. M., Davis, S. W., Haws, K. L., Mirabito, A. M., et al. (2013). On the road to addiction: The facilitative and preventive roles of marketing cues. *Journal of Business Research*, 66, 1219–1226.
- McNeal, J.U. (1991). *A bibliography of research and writing on marketing and advertising to children*. New York: Lexington Books.
- Muthén, B. (2001). Second-generation structural equation modeling with a combination of categorical and continuous latent variables: New opportunities for latent class/latent growth modeling. In L.M. Collins, & A. Sayer (Eds.), *New methods for the analysis of change* (pp. 291–322). Washington, D.C.: APA.
- Muthén, L.K., & Muthén, B.O. (2007). *Mplus user's guide* (5th ed.). Los Angeles: CA Muthén & Muthén.
- Netemeyer, R.G., Bearden, W.O., & Sharma (2003). *Scaling procedures: Issues and applications*. Thousand Oaks, CA: Sage Publications.
- Pechmann, C., & Knight, S. (2002). An experimental investigation of the joint effect of advertising and peers on adolescents' beliefs and intentions about cigarette consumption. *The Journal of Consumer Research*, 29, 5–19.
- Pechmann, C., & Wang, L. (2010). Effects of indirectly and directly competing reference group messages and persuasion knowledge: Implications for educational placements. *Journal of Marketing Research*, 47(1), 135–145.

- Peterson, G. W., & Hann, D. (1999). Socializing Parents and Children in Families. In M. Sussman, S. Steinmetz, & G. W. Peterson (Eds.), *Handbook of Marriage and the Family* (pp. 327–370). New York: Plenum.
- Ramaswamy, V., DeSarbo, W.S., Reibstein, D.J., & Robinson, W.T. (1993). An empirical pooling approach for estimating marketing mix elasticities with PIMS data. *Marketing Science*, 12, 103–124.
- Rohner, R.P., & Khaleque (2003). Reliability and validity of the parental control scale: A meta-analysis of cross-cultural and intra-cultural studies. *Journal of Cross-Cultural Psychology*, 34(6), 634–649.
- Rose, G.M. (1999). Consumer socialization, parental style, and development timetables in the United States and Japan. *The Journal of Marketing*, 63, 105–119.
- Shim, S. (1996). Adolescent consumer decision-making styles: The consumer socialization perspective. *Psychology and Marketing*, 13, 547–569 (September).
- U.S. Department of Health and Human Services (2012). Preventing tobacco use among youth and young adults: A report of the surgeon general. U.S. Department of Health and Human Services (<http://www.surgeongeneral.gov>).
- Wakefield, M.A., Loken, B., & Hornik, R.C. (2010). Use of mass media campaigns to change health behaviour. *Lancet*, 376, 1261–1271 (October 9).
- Wakefield, M., Terry-McElrath, Y., Emery, S., Saffer, H., Chaloupka, F.J., Szczypka, G., et al. (2006). Effect of televised, tobacco company-funded smoking prevention advertising on youth smoking-related beliefs, intentions, and behavior. *American Journal of Public Health*, 96, 2154–2160.
- Yang, Z., Kim, C., Laroche, M., & Lee, H. (2014). Parental style and consumer socialization among adolescents: A cross-national investigation. *Journal of Business Research*, 67, 228–236.
- Yang, Z., & Laroche, M. (2011). Parental responsiveness and adolescent susceptibility to peer influence: A cross-cultural investigation. *Journal of Business Research*, 64, 979–987.
- Yang, Z., & Schaninger, C.M. (2010). The impact of parenting strategies on child smoking behavior: The role of child self-esteem trajectory. *Journal of Public Policy and Marketing*, 29(2), 232–247.
- Yang, Z., Schaninger, C.M., & Laroche, M. (2013). Demarketing teen tobacco and alcohol use: Negative peer influence and longitudinal roles of parenting and self-esteem. *Journal of Business Research*, 66(4), 559–567.
- Youniss, J.E., & Smollar, J. (1985). *Adolescent relations with mothers, fathers, and friends*. Chicago: University of Chicago Press.
- Zhao, G., & Pechmann, C. (2007). The impact of regulatory focus on adolescents' response to antismoking advertising campaigns. *Journal of Marketing Research*, 44, 671–687 (November).