

Exposure to Cigarette Advertising and Adolescents' Intentions to Smoke: The Moderating Role of the Developing Self-Concept

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Objective Increased exposure to cigarette advertisements is associated with increases in adolescent smoking but the reasons for this association are not known. This study evaluated whether the developmental maturity of the self-concept, operationalized as self-conflict, moderated smoking intentions following exposure to cigarette advertisements among adolescents who have never smoked. **Methods** Eighty-seven adolescents (ages 11–17): (a) completed measures of self-conflict; (b) were exposed to 30 contemporary cigarette advertisements; and (c) rated their intentions to smoke following exposure to each ad. **Results** Younger adolescents with higher numbers of self-conflicts who also said that cigarette advertising was relevant to them had stronger smoking intentions compared to younger adolescents with lower numbers of self-conflicts after exposure to cigarette advertising. Self-conflict did not play as strong a role with older adolescents. **Conclusions** Younger adolescents (i.e., middle school aged) who are having the most difficulty figuring out “who they are” are most susceptible to the effects of cigarette advertising.

Key words advertising; marketing; smoking; tobacco.

Increased exposure to cigarette advertising and marketing is associated with increased levels of adolescent smoking (see narrative reviews by DiFranza et al., 2006; Wakefield, Flay, Nichter, & Giovino, 2003, see meta-analysis by Wellman, Sugarman, DiFranza, & Winkoff, 2006). The Master Settlement Agreement (MSA), reached in 1998, essentially banned youth-focused tobacco advertising and significantly restricted how the tobacco industry can advertise and market cigarettes. As a seeming consequence of the MSA, the relative proportion of advertising and marketing dollars has moved away from youth-focused outlets (e.g., magazine and billboard advertisements to point of sale promotions; Federal Trade Commission, [FTC], 2007). However, tobacco industry advertising budgets have nearly doubled since 1998 (FTC, 2007) and a substantial majority of adolescents continue to be exposed to cigarette advertising and marketing (King & Siegel, 2001; Lancaster & Lancaster, 2003; Lee, Taylor, & McGetrick, 2004; Pollack & Jacobson, 2003). For example, the ~\$32 million decrease in tobacco industry advertising in newspapers and magazines from 2002 to 2004 (FTC, 2007) corresponded only to an 11% drop in the percentage

of adolescents who report being exposed [see the 2002 and 2004 National Youth Tobacco Survey (http://www.cdc.gov/tobacco/data_statistics/surveys/NYTS/index.htm)].

Cigarette advertising may be particularly influential for adolescents who have never smoked or who have minimal levels of experience with smoking. The development of dependent smoking among youth has been characterized as stage-based (Leventhal & Cleary, 1980; Mayhew, Flay, & Mott, 2000). Adolescents are theorized to move from (a) never smoking or having no desire or intention to smoke; to (b) preparing to smoke; to (c) engaging in initial smoking trials (i.e., the first puffs of a cigarette on one or in a few very circumscribed occasions); to (d) experimenting with smoking (i.e., more frequent, but still irregular smoking in particular contexts); to (e) engaging in regular smoking (i.e., smoking on a regular basis in specific contexts); and then finally to (f) engaging in dependent smoking (i.e., smoking that occurs regularly and is driven by processes that define the nicotine dependence syndrome, e.g., craving, withdrawal, see Shadel, Shiffman, Niaura, Nichter, & Abrams, 2000). In general, transitions to smoking among the earlier stages (e.g., never smoking

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to preparing to smoke to engaging in initial trials) are theorized to be governed more by factors such as tobacco-related media, improving the self-image, peer norms, and mood, whereas later transitions (e.g., experimental to regular to dependent use) are theorized to be governed more by physiological cues and reactions to smoking, and to processes relating to nicotine dependence (e.g., craving, withdrawal) (Flay & Petraitis, 1994; Leventhal & Cleary, 1980; USDHHS, 1994). Consistent with this theoretical position, data from a recently published meta-analysis indicate that exposure to cigarette advertisements increases the odds of moving from never smoking to initiation by 79–91%; exposure increases the odds of progressing from experimental smoking to more regular smoking around 12%. The effects of exposure on initiation were significantly larger than the effects of exposure on progression to regular smoking (Wellman et al., 2006).

Clearly, then, exposure to cigarette advertising still appears to represent a potentially significant influence on adolescent smoking, particularly in never smoking adolescents. However, the field still struggles to understand *who* is most vulnerable to the effects of cigarette advertising. A better understanding of moderators of cigarette advertising efficacy could lead to improved smoking prevention and media literacy programs that target particularly vulnerable individuals with more aggressive interventions (Kazdin & Nock, 2003).

The research reported in this article builds on recent work (Shadel, Niaura, & Abrams, 2001, 2004b) that has examined how individual differences in the developmental maturity of the self-concept may be associated with adolescents' responses to cigarette advertising. This work has capitalized on findings suggesting that the images in cigarette advertisements are critical to understanding their persuasive efficacy among adolescents (Covell, 1992; Covell, Dion, & Dion, 1994; Romer & Jamieson, 2001; Shadel, Niaura, & Abrams, 2002; Slovic, 2001). It also builds on less formal speculation that the adolescents' developing self-concept is a psychological mechanism through which cigarette advertising may exert an effect on adolescent smoking (Chapman & Fitzgerald, 1982; Krugman, Quinn, Sung, & Morrison, 2005; Pierce, DiStafan, Jackson, & White, 2002; Pollay et al., 1996; USDHHS, 1994).

Individuals' self-concept undergoes significant change during adolescence (Arnett, 1999; Erikson, 1968; Harter, 1999a, b; Marcia, 1999). Social-cognitive perspectives on self-concept development operationalize these changes in self-concept as *conflicts* among the various descriptive self-attributes that an individual adolescent uses to define him

or her self (i.e., "How can I be both independent and dependent?"). In general, these conflicts are relatively fewer in number during early adolescence (e.g., ages 11–13), increase during middle adolescence (ages 14–17) and decline in late adolescence (ages 18–22) and beyond (Harter, 1999a, b; Harter & Monsour, 1992). Conflicts among self-attributes arise due to adolescents' increasing awareness that new and different self-attributes can be used to describe them, and a lack of the cognitive facilities necessary to resolve the contradictions that may arise between opposing self-attributes. The cognitive capacity to resolve self-conflicts develops during middle and late adolescence. Adolescents who possess a high number of self-conflicts and are not capable of resolving those conflicts (i.e., young adolescents due to their relative lack of cognitive maturity) look to external contexts to help them decide, which attributes are most important and which one(s) they should adopt as part of their self-concept (Harter, 1999a).

Shadel and colleagues (2001) proposed that the powerful images displayed by cigarette advertisements represent one such external context that adolescents who have higher levels of unresolvable self-conflict may look to for help in defining themselves. In a sample of never smokers, a previous study (Shadel et al., 2004b) found that young adolescents with a greater number of self-conflicts reported that cigarette advertising imagery was more relevant to them compared to young adolescents with lower numbers of self-conflicts and middle adolescents (regardless of self-conflict). Self-relevance of the advertisements was a key outcome in this study, given that communications that are more relevant to the self are generally more persuasive than those for which that is not the case (Petty & Wegener, 1999).

Significant questions about the role of self-conflict in moderating adolescents' reactions to cigarette advertising remain, however. Most critically, it is unclear as to whether self-conflict has any bearing on adolescents' smoking cognitions and smoking behavior after they have been exposed to cigarette advertising. The purpose of the current study was to expand upon the findings of Shadel et al. (2004b) by evaluating how the number of self-conflicts interacts with age and self-relevance of cigarette advertising to predict adolescent never smokers' intentions to smoke following exposure to cigarette advertising. Intentions are a key predictor of progression to regular smoking in adolescence (Choi, Gilpin, Farkas, & Pierce, 2001; Wakefield et al., 2004) and as such, are a logical outcome for laboratory-based work with adolescent never smokers. Based upon theory (Shadel et al., 2001) and prior work (Shadel et al., 2004b), it was hypothesized that young

adolescents who have higher numbers of self-conflicts and who evaluate cigarette advertisements as more self-relevant would have the strongest intentions to smoke following exposure to cigarette advertising compared to young adolescents with lower numbers of self-conflicts. Self-conflict was not expected to play as strong a role with middle adolescents.

Methods

Participants

This study was approved by the Institutional Review Boards at the RAND Corporation and University of Pittsburgh. Adolescents were recruited using a variety of print media advertising that contained no information about cigarettes or cigarette advertising. The study parameters and requirements were explained to potential participants during brief phone screenings (i.e., that it was a study of advertising, and that potential participants would be exposed to several kinds of advertising that included cigarettes). Inclusion criteria were: ages between 11 and 17; no physical or psychiatric problem that would interfere with completing the study (based on parent report); living in a nonsmoking household; and self-report of never smoking a cigarette, even a puff. A total of 123 adolescents were screened for the study of which 91 were eligible to participate. Of the 32 adolescents who were ineligible, 21 (65%) were ineligible due to their smoking status or the smoking status of a member of their household. From the eligible sample of phone-screened adolescents, four were eliminated during the study sessions because they admitted to some experience with smoking. The final sample was composed of 87 adolescents (54% females; 81% Caucasians; 10% African-Americans; 5% Hispanic; 2% Asians; and 2% American Indian) with a mean age of 13.7 ($SD = 2.0$; M grade in school = 8.2, $SD = 2.0$). Participants were required to attend the study sessions with a parent; written informed consent was obtained from the parent and written informed assent was obtained from the adolescent.

Procedures

Participants completed two sessions in a small group setting (2–10 per group); each session was separated by about 1 week. Group sessions were held in conference rooms that were arranged like a classroom with participants facing a projection screen and they were shown cigarette print advertisements as PowerPoint slides. Thirty print cigarette advertisements, in rotation in popular magazines (e.g., *Glamour*, *People*, and *Sports Illustrated*)

from 1999 to 2003, were shown to participants (in random orders) in this study: Camel (six ads), Marlboro (three ads), Newport (six ads), Salem (five ads), Virginia Slims (six ads), and Winston (four ads). After exposure to each advertisement, participants rated the self-relevance of the ad and how much each ad made them want to smoke (see Measures section). At the end of Session 1, they completed a series of questionnaires that assessed demographics, psychosocial characteristics, smoking attitudes and experiences, and exposure to tobacco media (see below). At the end of Session 2, participants were debriefed, compensated with a \$40 gift certificate to a local shopping mall, and provided with written smoking prevention materials (National Institute on Drug Abuse, 2000).

Covariate Measures

The following measures were included in the analyses as covariates.

Gender

Adolescent males and females differ in their responses to cigarette advertising (Shadel, Niaura, & Abrams, 2004a), so it was important to include gender as a covariate.

Percent of Smoking Friends

Percent of smoking friends was assessed by dividing the number of friends who participants believed smoked by their number of reported friends ($M = 0.10$; $SD = 0.21$; $Median = 0.0$; range = 0–1.0). Peer smoking is a strong predictor of adolescent smoking initiation (Kobus, 2003) and the presence of smoking peers may enhance the effects of cigarette advertising on smoking intentions (Pechmann & Knight, 2002); thus, it was included as a covariate.

Baseline Mood

Baseline mood was assessed with an 8-item (Melchoir, Huba, Brown, & Reback, 1993) version of the Center for Epidemiological Studies Depression Scale (CESD; Radloff, 1977). The CESD items were scaled and scored so that higher scores reflected greater levels of depressed mood. The possible range of scores was 8–32. The α -coefficient for this scale in this sample was .89 and the M scale score was 11.6 ($SD = 4.8$). Depressed mood has been linked to increased responsiveness to cigarette advertisements (Tercyak, Goldman, Smith, & Audrain, 2002), for that reason, it was included as a covariate in this study.

Previous Exposure to Smoking Media

Participants were provided with a list of six venues (magazines, billboards, Internet, movies, convenience

stores, and supermarkets) and asked to indicate whether or not (“yes” or “no”) they had seen a cigarette advertisement in or via each outlet in the last 12 months. Total exposure to cigarette advertisements was calculated by summing the “yes” responses. The *M* amount of previous exposure to smoking media was 4.5 (*SD* = 1.3). Increased exposure to cigarette advertisements has been linked to increases in adolescent smoking (Wellman et al., 2006). Thus, it was important to include as a covariate in these analyses.

Baseline Smoking Attitudes

Participants responded to the stem, “Smoking is . . .” using the following bipolar items: very beautiful–very ugly; very good–very bad; very clean–very dirty; very safe–very dangerous; very nice–very awful; very pleasurable–very unpleasant. The anchors were numbered 1 (negative) to 10 (positive); responses were added so that a higher score reflects a more positive attitude toward smoking (possible range of 6–60). The α -coefficient for this scale in this sample was .85 and the *M* scale score was 28.9 (*SD* = 2.3). This scale was included as a covariate because it has been shown to predict adolescent smoking behavior (Stacy, Bentler, & Flay, 1994) and because smoking attitudes predict smoking intentions (O’Callaghan, Callan, & Baglioni, 1999).

Baseline Smoking Intentions

Smoking intentions at baseline were assessed using a 3-item scale adapted from items used by Choi et al. (2001), and shown to predict smoking initiation: “Do you think you will try a cigarette anytime soon?”; “Do you think you will smoke a cigarette anytime in the next year?”; and “If one of your best friends offered you a cigarette, would you smoke it?”. Responses were made on a 1 (Definitely Not) to 10 (Definitely Yes) scale and summed to produce a baseline smoking intention scale score (possible range of 3–30); higher scores indicated stronger intentions to smoke. The α -coefficient was .91 and the *M* score was 4.0 (*SD* = 2.5). Intentions were included as a covariate to gauge the degree to which smoking intentions post ad exposure are independent of pre-existing smoking intentions.

Independent Variables

The following variables were the central independent variables. In the analyses, the variables were centered (Aiken & West, 1991) and the 2- and 3-way multiplicative interaction of each (centered) variable with the other was included.

Age

Participant’s age was treated as a continuous variable.

Self-conflict

Number of self-conflicts experienced by the adolescents in this sample was derived from the “What I am Like with Other People” task (Fig. 1A), a researcher-administered assessment developed by Harter and colleagues (for a review, see Harter, 1999a). Figure 1 (panels B–D) provides an illustration of how these data are generated using hypothetical participant data. First (Fig. 1B), adolescents generated, in a free response manner, all of the attributes that described them in each of six domains of life, all relevant for adolescents (i.e., self with friends, with mother, with father, with best friend, with romantic interest, and in the classroom). Second (Fig. 1C), participants identified those attributes (that they had just generated) which were opposites of one another; the research assistant then drew a line between pairs of words identified as opposites. Finally (Fig. 1D), participants identified which opposing word pairs (that they had just identified) were in conflict, in disagreement, fighting, or are clashing with one another. These multiple synonyms of conflict are used in order to accurately convey to adolescents what is meant by conflict (Harter & Monsour, 1992). Opposite word pairs identified as in conflict with one another were then identified by drawing arrows on either side of the line connecting them. Total numbers of conflicts that the adolescent identified were counted for a total self-conflict score. Increasing numbers of self-conflicts are associated with increasingly negative self-evaluations and lower levels of self-worth (self-esteem), both of which, in turn, are associated with negative affective reactions (as discussed in Harter, 1999b). Previous work has shown that number of self-conflicts moderated young adolescents’ responses to cigarette advertisements (Shadel et al., 2004b). This sample reported an *M* of 4.2 conflicts (*SD* = 4.2; median = 3.0; range = 0.0–18.0).

Ad self-relevance

The degree to which each advertisement was relevant to their sense of self was assessed using the following question, “How important is this ad to how you see yourself?” (1 = *not at all*; 10 = *a lot*; Shadel et al., 2004b). Self-relevance scores for each ad were averaged within brand and these scores were summed across brand to produce a total ad self-relevance score. The possible range of scores was 6–60 and the *M* self-relevance score was 13.3 (*SD* = 9.2). The α -reliability was .96.

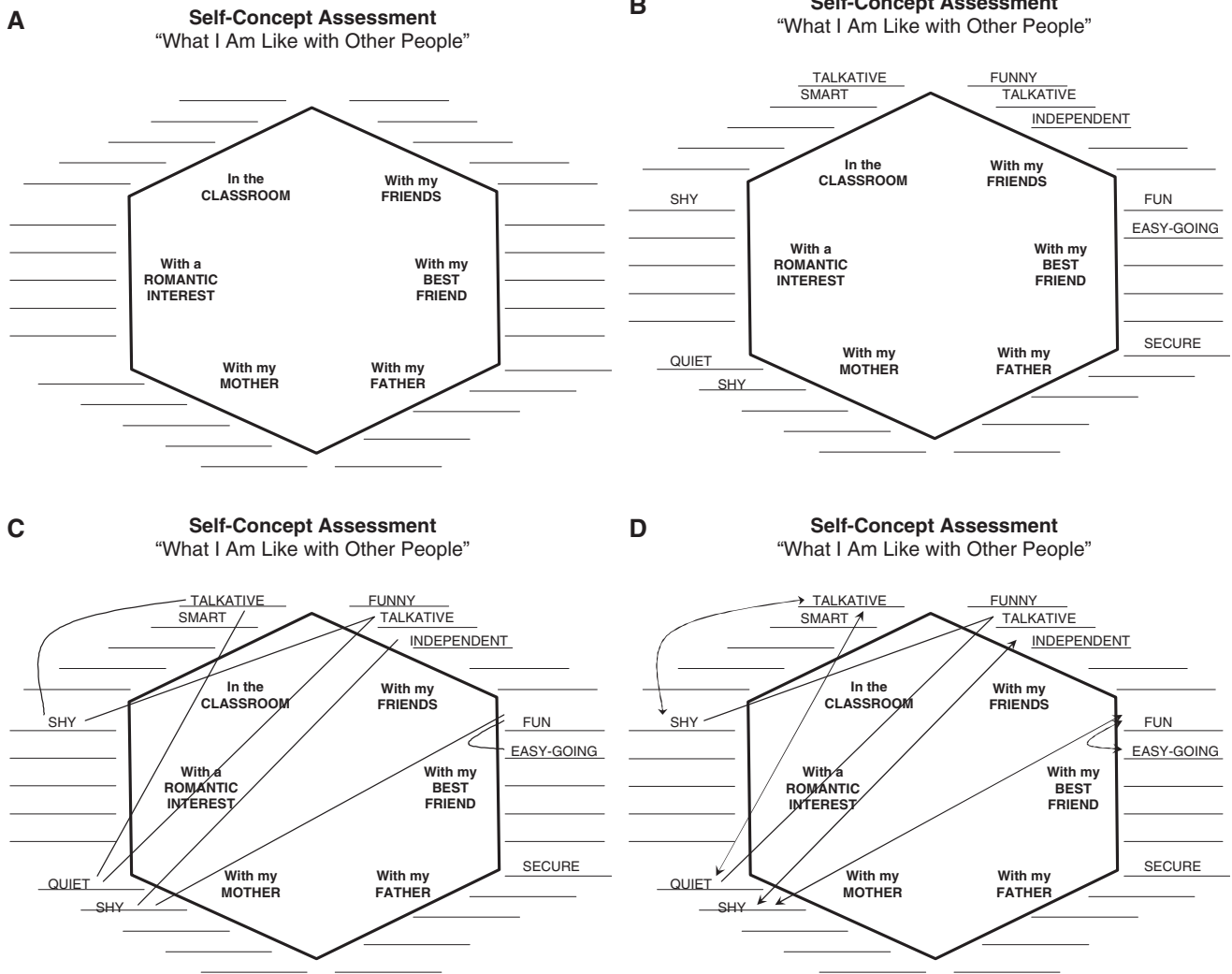


Figure 1. Hypothetical example of data generated from the "What I am like with other people task" (Harter, 1999a).

Dependent Measure

Post ad Exposure Smoking Intentions

Smoking intentions were assessed after exposure to each ad with the following question, "How much does this ad make you want to smoke?" (1 = *not at all*; 10 = *a lot*). Smoking intention scores for each ad were averaged within brand and these average scores were summed across brand to produce a total smoking intention score. The possible range of scores was 6–60 and the mean smoking intentions score was 8.0 (SD = 5.1). The α -reliability was .97.

Results

Table I presents zero order correlations among all covariates and individual independent variables (i.e., not interactions) used in the analyses reported below. Age was

significantly correlated with baseline smoking attitudes, baseline smoking intentions, and also, CESD scores: being older was associated with holding more positive baseline attitudes toward smoking, having stronger baseline intentions to smoke, and reporting greater levels of baseline depressive symptoms. Greater numbers of self-conflicts were correlated significantly with greater levels of depressive symptoms. Greater previous exposure to smoking media was correlated significantly with more positive baseline smoking attitudes, greater levels of baseline depressive symptoms, and having a greater percentage of friends who smoke. Holding more baseline positive attitudes toward smoking was associated with stronger baseline intentions to smoke and having a greater percentage of smoking friends. Finally, stronger baseline smoking intentions were significantly associated with greater levels of baseline depressive symptoms.

Table 1. Correlations Among the Covariates, Independent Variables, and the Dependent Variables

	2. Percent smoking friends	3. Baseline mood	4. Previous smoking media exposure	5. Baseline smoking attitudes	6. Baseline smoking intentions	7. Age	8. Self-conflict	9. Ad Self-relevance	10. Post ad exposure smoking intentions
1.									
2.	-.149								
3.	-.059	.303**							
4.	-.138	.245*	.294**						
5.	-.067	.522***	.047	.149					
6.	-.074	.446***	.011	.261*	.571***				
7.	.085	.427***	.297**	.119	.259*	.320**			
8.	-.070	.188	.256**	.163	.004	.163	.201		
9.	-.069	.124	.010	-.057	.210	.216*	.151	.083	
10.	-.009	.225*	.092	.209	.318**	.378**	.252*	-.031	.490**

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

The zero order correlations between all covariates and independent variables and the dependent measure, post ad exposure smoking intentions, are presented in the final row of Table I. More positive baseline attitudes toward smoking and stronger baseline smoking intentions were significantly associated with stronger post ad exposure smoking intentions. A stronger level of self-relevance of the cigarette advertisements was also significantly associated with stronger post ad exposure smoking intentions. Finally, being older and having a greater percentage of smoking friends were also associated significantly with post ad exposure smoking intentions.

A linear regression analysis with hierarchical entry was used to predict post ad exposure smoking intentions. The effective sample size for these analyses was $n = 84$ (i.e., three participants failed to respond to all of the items for the CESD so a scale scores could not be computed for these participants). All variables were centered prior to entering them into the regression equation. We present effect sizes (f^2) using Cohen's (1988) guidelines (i.e., 0.02 is a small effect size, 0.15 is a medium effect size, and 0.35 is a large effect size). Step 1 entered all of the covariates (gender, percent smoking friends, previous smoking media exposure, baseline smoking attitudes, baseline smoking intentions, and baseline mood) and significantly improved the fit of the model, F change (6, 77) = 2.723, $p = .019$ (R^2 change = .175; $f^2 = .212$). Step 2 entered all of the independent variables as main effects (age, self-conflict, ad self-relevance) and significantly improved the fit of the previous model, F change (3, 74) = 12.256, $p < .0001$ (R^2 change = .274; $f^2 = .479$). Step 3 entered all of the 2-way interaction terms (age \times self-conflict; age \times ad self-relevance; self-conflict \times ad self-relevance) and significantly improved the fit of the previous model, F change

(3, 71) = 15.634, $p < .0001$ (R^2 change = .219; $f^2 = 0.660$). Step 4 entered the 3-way interaction (age \times self-conflict \times ad self-relevance) and significantly improved the fit of the previous model, F change (1, 70) = 8.202, $p = .006$ (R^2 change = .035; $f^2 = .118$). As hypothesized, the 3-way interaction between age, self-conflict, and ad self-relevance predicted post ad exposure smoking intentions over and above the effects of the individual covariates, individual main effects of each of the independent variables, and the 2-way interactions between the independent measures. The final model F (13, 70) was equal to 12.741 ($p < .0001$) and accounted for 70.3% of the variance in post ad exposure smoking intentions (final model $f^2 = 2.367$). Table II presents the final model results.

In order to determine the direction of this significant three way interaction, a simple slopes analysis was conducted (Aiken & West, 1991; Holmbeck, 2002; Preacher, Curran, & Bauer, 2006) for younger and older adolescents at different levels of self-conflict and ad self-relevance (i.e., at ± 1 SD beyond the M s of each variable). These results are presented in Fig. 2; panel A of Fig. 2 plots the values for younger adolescents and panel B plots the values for older adolescents. As can be seen from the figure, for younger adolescents, higher levels of self-conflict were significantly associated with stronger post ad exposure smoking intentions as the self-relevance of the cigarette ads increased [smoking intentions (y) = 7.74 + .275 x ; slope $t = 2.145$, $p = .035$]; lower levels of self-conflict were associated with similar levels of smoking intentions, regardless of level of ad self-relevance [smoking intentions (y) = 6.96 - .075 x ; slope $t = .703$, $p = .485$]. For older adolescents, increasing levels of ad self-relevance were associated with stronger smoking intentions across both low (slope $t = 5.158$, $p < .01$) and high

Table II. Final Model Results Predicting Post Ad Exposure Smoking Intentions

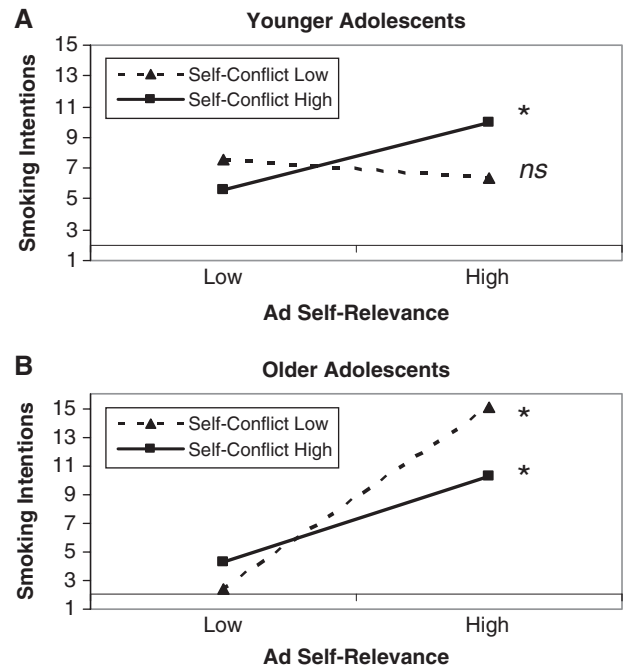
Variable	Unstandardized coefficient	t	p
Constant	7.672	6.528	<.0001
Gender	.180	.246	.807
Percent smoking friends	-2.245	-.987	.327
Mood	.067	.782	.437
Prior smoking media exposure	.680	2.319	.023
Baseline smoking attitudes	.179	.875	.384
Baseline smoking intentions	.222	1.219	.227
Age	.161	.723	.472
Self-conflict	-.036	-.442	.660
Ad self-relevance	.340	6.369	<.0001
Age × self-conflict	-.057	-1.102	.274
Age × Ad self-relevance	.120	5.121	<.0001
Self-conflict × Ad self-relevance	-.003	-.272	.787
Self-conflict × age × Ad self-relevance	-.019	-2.864	.006

(slope $t = 2.233$, $p = .029$) levels of ad self-relevance, though the effects were stronger for lower [smoking intentions $(y) = 8.744 + .785x$] versus higher [smoking intentions $(y) = 7.244 + .375x$] levels of self-conflict.

Discussion

Advertising by the tobacco industry is a major contributing factor to adolescent smoking initiation (DiFranza et al., 2006; Wakefield et al., 2003). The imagery in the advertisements are among their most active ingredients (Covell, 1992) and the field has informally suggested for years that the developing self-concept of the adolescent is key to understanding how this imagery affects their smoking (Krugman et al., 2005). What has been missing from prior studies, and what is presented in this study (see also Shadel et al., 2004b), was an evaluation of the degree to which a developmentally-relevant individual difference (i.e., number of self-conflicts experienced by adolescents; Harter, 1999a) moderates adolescents' intentions to smoke following exposure to cigarette advertising.

Younger (i.e., early) adolescents who exhibited a high number of self-conflicts and who also said that cigarette advertisements were more relevant to their self-concept had stronger intentions to smoke following exposure to cigarette advertisements compared to all other groups of younger adolescents (Fig. 2A). This finding is consistent with results of a prior study (Shadel et al., 2004b), which showed that young adolescents with higher numbers of self-conflicts found cigarette advertisement imagery to be more relevant to them compared to young adolescents

**Figure 2.** Simple slopes analysis for younger (A) and older (B) adolescents.

with low numbers of self-conflicts. It extends these previous findings by linking self-conflict to post advertising exposure smoking intentions, which are a central predictor of smoking initiation in adolescents (Choi et al., 2001; Wakefield et al., 2004). Taken together, these findings point to the developing self-concept as critical to understanding how cigarette advertising affects adolescents (Shadel et al., 2001). The role that the developing adolescent self-concept plays in responding to cigarette advertisements was seen as especially strong in the current study given that other important factors related to adolescent smoking and responses to cigarette advertising were controlled in these analyses (i.e., prior exposure to smoking media, presence of smoking friends, baseline smoking attitudes, baseline smoking intentions, gender, and mood). The developing self-concept has long been informally thought by the field to play a role in how cigarette advertising exerts its effects on adolescents (Pollay et al., 1996). The current study and previous work (Shadel et al., 2004b) provides support for these informal assertions.

Self-conflict did not play as prominent a role in moderating older (i.e., middle) adolescents' smoking intentions following exposure to cigarette advertising (Fig. 2B). Older adolescents smoking intentions increased significantly as the self-relevance of cigarette advertisements increased, regardless of level of self-conflict. This finding is consistent with a large body of work, which has indicated

that the self-relevance of communications improves their persuasive efficacy (Petty & Wegener, 1999). Thus, although the developmental maturity of the self-concept may not be as important a mechanism in moderating middle adolescents' responses to cigarette advertising, the degree to which they see those advertisements as important to how they view themselves clearly is important and worthy of further investigation.

It is instructive to briefly speculate on the potential individual-level and policy-level interventions that might follow from these results. At the individual-level, younger adolescents who are highly susceptible to the effects of cigarette advertising due to higher self-conflict levels could be helped with resolving those conflicts or targeted by smoking prevention and/or media literacy programs. For example, many media literacy programs for smoking prevention (e.g., developed by the Centers for Disease Control and American Legacy Foundation) feature modules that teach adolescents about how the images in cigarette advertising are used to make smoking seem more attractive, glamorous, and appealing, and how to separate those positive images from the negative (i.e., unhealthful) product that is being marketed by those advertisements. As such, these modules might be especially important for younger adolescents with higher levels of self-conflict and also might benefit older adolescents who view cigarette advertising as highly self-relevant. At the policy-level, these results could indicate a need to more aggressively limit cigarette advertising in outlets where adolescents, particularly younger adolescents, are most likely to view it.

Limitations should be kept in mind when interpreting these results. First, although potentially confounding factors were controlled in the analyses, this study used essentially a correlational design. Thus, strong causal inferences cannot be drawn. Indeed, the baseline smoking intentions control variable and the dependent measure were not exactly the same. As such, we cannot speak of change in smoking intentions as a function of ad exposure. More fully controlled, randomized experimental studies would help to advance an understanding of how change in smoking intentions is affected by exposure to cigarette advertising. Second, actual smoking behavior was not an outcome in this study; rather, this study used as the dependent variable intentions to smoke, a strong predictor of actual smoking behavior in adolescents (Wakefield et al., 2004). Third, despite having adolescents respond to a diverse array of 30 cigarette advertisements for multiple brands, this sample of advertisements was, by necessity, selective and restricted. Therefore, these results may not generalize to other cigarette brands or even to other

advertisements within these brands; these results also do not speak to how self-conflict may or may not moderate adolescents' responses to exposure to other forms of cigarette advertising and marketing (e.g., in the movies; Sargent, 2005). Fourth, the sample employed was a low risk group of reactively recruited, adolescents who have never smoked. Therefore, our findings may not generalize to adolescents in the population at large, to those who have had some experimental exposure to cigarettes or to smoking, or to adolescents who are more regular smokers. Finally, prospective studies that have tracked smoking initiation from childhood through adulthood have indicated that risk of smoking initiation tends to rise and peak between the ages of 13–15 (Chassin, Presson, Rose, & Sherman, 1996; Edelen, Tucker, & Ellickson, 2007). Thus, older adolescents (ages 15–17) employed in this study may have been at even “less than low risk” because they transitioned from early to middle adolescence without trying smoking; their self-conflict portraits may look different than higher risk adolescents. Future research that employs prospective designs would help to shed light on these issues to more fully appreciate how the developmental maturity of the self-concept influences adolescents' responses to tobacco marketing and cigarette advertising.

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