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The Effects of Eliciting Implicit versus Explicit Social Support among Youths Susceptible for Late-Onset Smoking

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Abstract

Purpose—Adolescents susceptible to late-onset smoking (becoming regular smokers at age 18 or later) are an understudied population. Social support is a promising target for intervention, but it is important to distinguish between implicit social support (reminders that one belongs to a network of valued others) and explicit social support (seeking and receiving advice and emotional solace). This study aimed to test the potential protective influence of implicit and explicit social support on reducing the risk of late-onset smoking.

Methods—Fifty-eight smoking-susceptible youths (aged 16–18, 45% African American, 55% non-Hispanic White) completed an experimental session that included a video-recording task designed to elicit thoughts about implicit, explicit, or no social support. Youths reported their behavioral willingness and intentions (BW and BI) to smoke immediately following the social support manipulation; a random sample of 39 youths reported again at a 3-week follow-up.

Results—Following the manipulation, BW and BI for cigarette smoking were significantly higher among youths assigned to the explicit-support condition, compared to those in the implicit-support or control conditions. At follow-up, BW and BI were highest in the explicit-support condition and lowest in the implicit-support condition, but the differences were not significant.

Conclusions—Overall, findings indicated that for teens susceptible for late-onset smoking, eliciting thoughts about implicit social support produces lower risk for cigarette initiation than does eliciting thoughts about explicit social support. The present results and the video task that

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yielded them are important to researchers and practitioners interested in reducing the likelihood of late-onset smoking.

Keywords

smoking; social support; stress; youth tobacco use

Although the average age of smoking initiation in the U.S. is around 15 years (USDHHS, 2014), a substantial proportion of smokers begin later than that. Late-onset smokers (i.e., those who become regular smokers at age 18 or later) comprise nearly one-third of all ever-regular smokers (USDHHS, 2014). However, the majority of smoking-prevention research focuses on early adolescence, with consequently little research examining factors associated with risk for late-onset smoking. It is important for research on smoking prevention to extend the “at risk” window beyond early adolescence, and identify the factors that may help reduce the likelihood of smoking initiation during late adolescence and early adulthood.

Transitions, Stress, and Social Support

During adolescence, supportive relationships with parents and other adults are important protective factors against risk behavior—including smoking (Hershberger, Zapolski, & Aalsma, n.d.; Hurd & Zimmerman, 2010; Wills, Gibbons, Gerrard, & Brody, 2000). An important component of these relationships is social support. Social support consists of various distinct dimensions, including tangible assistance versus emotional support, and quality versus size of a social network (Cobb, S., 1978; Cohen & Wills, 1985). One distinction that has not been examined in smoking research is the difference between implicit and explicit social support. The focus of cross-cultural research (Kim, Sherman, & Taylor, 2008; Taylor, Welch, Kim, & Sherman, 2007), implicit social support refers to reminders that one belongs to a network of valued others (regardless of whether one could draw on those others for help). In contrast, explicit social support refers to seeking and receiving advice and emotional solace.

Developmental and environmental changes appear to instigate a reduction in perceived parental support during the transition from adolescence to adulthood (Bokhorst, Sumter, & Westenberg, 2010; Helsen, Vollebergh, & Meeus, 2000). This reduction is particularly unfortunate given that stressors frequently shift and increase during this same developmental period (e.g., unemployment, discrimination), and that social support can buffer the effects of stress (Cohen & Wills, 1985; Taylor, SE, 2011). Given the protective influence that supportive relationships have on adolescent risk behavior (Farrell, Bolland, & Cockerham, 2015; Hurd & Zimmerman, 2010; Miller, Esposito-Smythers, & Leichtweis, 2015; Roberts et al., 2012; Wills et al., 2000), targeting social support may be a means to reduce risk for late-onset smoking.

A Social Support Intervention

Taylor and colleagues (Taylor et al., 2007) tested the stress-buffering effects of eliciting implicit and explicit social support among White and Asian or Asian American undergraduates in California by employing a simple writing task. All participants were

anticipating a stressful event later in the laboratory session (a math task and a speech, both performed to an audience). In the first condition, intended to activate thoughts about implicit support, participants were asked to write about the aspects of close individuals that were important to them. In the second condition, intended to activate thoughts about explicit support, participants were asked to write a letter to close individuals and ask for direct advice and support for the upcoming (stressful) event. A third, control, condition had participants describe campus landmarks and the places they would recommend for a campus tour. Findings indicated that the social support manipulation attenuated both the psychological and physiological responses to the stressful laboratory event, but in different ways depending on participants' cultural backgrounds: White participants had reduced stress in the explicit-support conditions (compared to both the implicit-support and the control condition), whereas Asian and Asian American participants had reduced stress in the implicit-support condition (compared with those in the explicit-support condition). Of note, there was no significant difference between Asian and Asian American participants in the implicit-support vs. control conditions. The authors interpreted their results as being due to cross-cultural differences in comfort with self-expression and verbal disclosure (higher in Western cultures) relative to the importance of maintaining harmonious relationships (higher in East Asian cultures).

Taylor's writing task seems as if it could lend itself well to a smoking intervention for older adolescents. Yet despite being validated among undergraduates facing a laboratory stressor, it is unknown whether the task could be protective for adolescents susceptible to late-onset smoking. Another outstanding question concerns the comparative benefits of implicit versus explicit support in the context of continuous stressors. The previous research focused on implicit and explicit support in the face of a specific stressor (e.g., giving a public speech). Yet what happens when the stressors are ubiquitous and enduring (e.g., starting college, transitioning adulthood)? Likewise, the value of eliciting implicit vs. explicit social support among adolescents is unknown. Theory concerning the importance of person-environment fit for social support (Shinn, Lehmann, & Wong, 1984) suggests that in order for social support to be effective, what the supporter provides must match what the individual needs. Adolescence is characterized by needs for both individuation and separation—having a social identity, but also being independent (Mattanah, Hancock, & Brand, 2004; Meeus, Iedema, Maassen, & Engels, 2005). It is possible that in the context of personal, long-term stressors during late adolescence, social support that involves reminders that one belongs to a valued social group (i.e., implicit support) may be beneficial. Conversely, requiring youth in late adolescence to ask for help and advice (i.e., explicit support) may itself be a stressful task.

The Current Study

The purpose of the present study was to evaluate the potential protective influence of implicit and explicit social support on reducing the risk of late-onset smoking. The study consisted of a baseline experiment in which participants were randomly assigned to one of three conditions (implicit support, explicit support, or control) and a three-week follow-up survey.

The experimental paradigm was based on Taylor's task (Taylor et al., 2007); however, we modified the manipulation from a writing task to a video-recording task in order to (1) be more accessible to individuals with lower literacy levels and (2) be more enjoyable and relevant for the young generation being sampled (i.e., more consistent with how they are accustomed to communicating with their social network (Amanda Lenhart, 2015). We assessed mood following the experimental procedure to gauge acceptability of the video-based task.

Our primary aim was to test whether implicit or explicit social support would result in lower risk for late-onset smoking, measured as willingness and intentions to use cigarettes. We tested this question on a sample of smoking-susceptible youths aged 16–18 years to capture the period directly prior to late-onset. Given the particularly high rates of late-onset smoking among African Americans (Roberts, Colby, Lu, & Ferketich, 2016) we recruited White and African American youths to make racial comparisons and identify whether there are effects unique for African Americans. Previous research found cultural differences (Kim et al., 2008; Taylor et al., 2007) such that Whites did not benefit as much as Asian and Asian Americans from implicit support; therefore, our exploratory hypothesis was that Whites would benefit less than African Americans from the implicit support condition.

METHODS

Participants and Recruitment

All procedures were approved by the Brown University IRB. This study was advertised as concerning “the attitudes, social environments, emotions, and health behaviors of older teens and young adults.” Recruitment occurred through a variety of means (flyers, listserves, announcements at afterschool programs, etc.). Advertisements provided a phone number and website link, so that youths interested in participating could take a brief screener (over the phone or online). To be eligible for participation, youths needed to be non-Hispanic White or non-Hispanic African American, between the ages of 16–18, born in the U.S., and smoking susceptible. Youths were considered *smoking susceptible* if they were either: experimenters (those who had ever puffed or smoked cigarettes but had not smoked >100 cigarettes in their lifetime) or vulnerable never-smokers (those who responded with anything except “definitely not” to the screener item “Do you think that in the future you might experiment with cigarettes?”). Fifty-nine eligible youths participated in the baseline session. One participant exceeded the threshold of smoking >100 cigarettes between the time of screening and baseline. Data from this participant were excluded from the analyses, yielding a baseline sample of 58 (32 White and 26 African American). A random subset of 39 participants completed a three-week follow-up (detailed in the procedures section).*

Procedures

Baseline—Baseline sessions took place at schools, community locations, or our University testing space, based on the participant's preference. Upon providing written consent/assent (and written consent from parents for those under the age of 18), youths

*Due to budget limitations, we were only able to have 66% of our sample participate in the follow-up.

completed an online baseline survey. Participants were next given instructions for the video-making task, according to their experimental condition (described in the following paragraph) and recorded their videos. Following the experimental manipulation, youths reported on their mood and behavioral willingness and intentions (BW and BI) to smoke. Before departing the session, youths had the option of providing contact information to be reached for follow-ups. Youths received \$40 for participation at baseline, and an additional \$10 “no-rescheduling bonus” if they attended the first session for which they signed up.

Video-making task—Participants were randomly assigned to one of three video-making tasks. For both social support conditions, instructions began by asking youth to think about the family and friends to whom they were the closest. In the implicit-support condition, youths were asked to record a video describing the aspects of those people that were most important to them. In the explicit-support condition, youths were asked to record a video as if they were directly talking to them, and asking them for support over the next few years. In the control (no support) condition, youths were asked to think about local points of interest in Rhode Island and describe the places they would recommend for a tourist to visit. Youths were given a few sample sentences that they could use for guidance (e.g., in the implicit condition: “what I value most about my relationship with ___ is that ...”). All youths were told their video should be between 5–7 minutes, and that it will only be viewed by research staff. Prior to recording the video for the experimental condition, all youths were asked to record a warm-up video to become comfortable with the procedure. An experimenter was present during the warm-up video, but then left the youth alone to record the experimental video.

Follow-up—To assess the longevity of the cognitive effects from the experimental manipulation, we contacted a random sample of participants three weeks after baseline. Of the 44 youths contacted, 39 (89%) completed the brief, online follow-up survey. These surveys prompted youths to report about their recent mood, their current BW and BI to smoke cigarettes, and their smoking behavior since baseline. Youths were compensated \$25 (in the form of gift cards) for participation, and an additional \$10 bonus for completing the survey within three days of receiving the invitation.

Measures

Tobacco use—Cigarette smoking assessment used measures from the Smoking Uptake Continuum Scale (Choi, Gilpin, Farkas, & Pierce, 2001). For puff behavior, we asked: “Have you ever tried or experimented with cigarette smoking, even a few puffs?” (*Yes, No*). For cigarette behavior, we asked: “Have you ever smoked a whole cigarette?” (*Yes, No*). Participants who reported cigarette use were asked the number of cigarettes they had smoked in their life (*open-ended*). We also assessed past 12-month use of cigars, hookahs, chewing tobacco, pipes, snus, waterpipes, electronic cigarettes, and dissolvable tobacco products (1=*never*, 5=*more than 10 times*).

Alcohol use—Youth reported how frequently in the past 12-months they “had any alcohol, even a sip” and “had a full drink of alcohol” (1=*never*, 5=*more than 10 times*).

Demographic factors—Youth reported whether they had parents or siblings who smoke (*Yes, No*), how many of their peers smoke (1=*none*, 5=*almost all*), their month and year of birth (used to calculate age), and gender. There were two questions about race/ethnicity: “Are you Hispanic or Latino?” (*Yes, No*) and “What is your race?” (*American Indian or Alaskan Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, or Other*). Based on these responses, participants were coded as non-Hispanic White (White) and non-Hispanic Black or African American (African American). Socioeconomic status was assessed with the Family Affluence Scale (Currie et al., 2008), a validated measure that allows children to report on material conditions in the household (e.g., how many cars their family has).

Outcome measures—To assess mood following the experimental task, we selected the five positive (e.g., joyful) and five negative (e.g., upset) traits with the highest factor loadings in the Positive and Negative Affect Schedule for Children (PANAS-C; Laurent et al., 1999). To this, we added three additional items used in the original Taylor’s paradigm to assess psychological stress/anxiety (e.g., nervous). At baseline (following the experimental task), participants were asked “how are you feeling right now” and at follow-up, youths were asked how often in the past week they felt each emotion (1=*very slightly or not at all*, 5=*extremely*). Reliability was good at both time points ($\alpha s > .77$).

Following the experimental task, BI to smoke cigarettes was assessed with two items: “Do you intend to smoke cigarettes sometime in the next few months [sometime in the next year] (1=*definitely no*, 7=*definitely yes*). For both time points, responses to these two items were averaged to create our measure of BI.

BW was assessed in accordance with previous smoking research (Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004; Wills et al., 2000), whereby a vignette described hanging out with a group of friends, and one friend offering a lit cigarette. Youths were asked: “How willing would you be to try a puff...smoke the whole cigarette” (1=*not at all willing*, 7=*very willing*). At both time points, these two items were averaged to create our measure of BW. For actual smoking behavior, the Smoking Uptake Continuum (Choi et al., 2001) was used at follow-up to assess ever, established, and current smoking.

Analyses

Analyses began with descriptive statistics. Next, analysis of variance (ANOVA) was used to test for post-video difference in mood, BW, and BI across the social support conditions (implicit, explicit, and control) at baseline. ANOVAs were then run to test for differences in mood, BW, and BI across the social support conditions at the three-week follow-up. In instances of significant main effects, multiple comparisons with Bonferroni corrections were used to determine which social support conditions were significantly different from each other. Exploratory analyses also added interaction terms to the ANOVAs, to determine whether smoking history, race, gender, or age moderated the effect of social support condition on BW and BI.

RESULTS

Sample Characteristics

The sample was 56.9% female, with a mean age of 17.4 ($SD = .79$). Table 1 provides further information on participant characteristics and substance-use history. Substances with high past-year prevalence were alcohol (77.6%) hookah (51%), cigars (32.8%) and e-cigarettes (27.6%). For this smoking-susceptible sample, 43.1% had ever puffed a cigarette, and 25.9% had smoked a whole cigarette. Smoking behavior did not differ by race (Pearson's $\chi^2_{s} < 1.73$, $p > .19$).

Social Support Manipulation

Video Content—Videos were viewed to ensure youth followed the instructions. Stressors discussed included getting in trouble with the police, conflicts with the support network, and trying to do well in school. In the implicit-support condition, youth often talked about their supporters “being there” and the importance of acceptance and lack of judgment. In the explicit-support condition, advice topics included help with relationships, becoming an adult, and the college transition.

Post-video Mood, BW, and BI—A one-way ANOVA on mood indicated a significant difference by condition, $F(2, 55) = 4.56$, $p = .015$, $\eta^2 = .14$. Bonferroni post-hoc comparisons indicated that mood in the explicit-support condition ($M = 3.43$) was worse following the video task than the implicit-support condition ($M = 3.83$, $p = .02$) and marginally worse than the control condition ($M = 3.76$, $p = .07$); mood in the implicit-support and control conditions did significantly not differ.

Sample means were generally low for BW ($M = 2.2$, $SD = 1.5$, range: 1–7) and BI ($M = 1.8$, $SD = 1.3$, range: 1–5.5). Following a similar pattern as for mood, a one-way ANOVA on BW indicated a significant difference by condition, $F(2, 55) = 4.89$, $p = .011$, $\eta^2 = .15$. Bonferroni post-hoc comparisons indicated that BW in the explicit-support condition was higher than in the implicit-support and control conditions ($ps = .035$); BW did not significantly differ between the implicit-support and control conditions (see Figure 1). Likewise, a one-way ANOVA on BI indicated a significant difference by condition, $F(2, 55) = 5.28$, $p = .008$, $\eta^2 = .16$. Bonferroni post-hoc comparisons indicated that BI in the explicit-support condition was higher than in the implicit-support and control conditions ($ps = .035$); BI did not significantly differ between the implicit-support and control conditions.

Subsequent analyses tested for whether the effect of social support condition on BW and BI was moderated by race, but interaction effects were not significant ($ps = .15$). Interaction terms were likewise not significant when testing for moderation by ever-puff behavior, gender, and age. BW and BI did not correlate significantly with mood (rs from $-.13$ to $-.20$, $ps = .13$), which suggests that mood did not mediate the effect of experimental condition on BW and BI.

Follow-up Mood, BW, and BI—Responses at follow-up showed a significant difference in mood by condition, $F(2, 36) = 6.14$, $p = .005$, such that mood was significantly better among those who had been in the implicit-support condition ($M = 3.81$), compared to

the control condition ($M = 3.07$, $p = .006$). Differences across condition in BW and BI at follow-up trended in the expected directions: BW and BI were highest in the explicit-support condition ($M_s = 2.38$ and 2.50 , respectively) and lowest in the implicit-support condition ($M_s = 1.67$ and 1.50 , respectively); however, these differences were not statistically significant. Only six youths reported smoking between baseline and follow-up; smoking behavior did not significantly vary across conditions.

DISCUSSION

This study was aimed at addressing the distressingly large gap in research concerning late-onset smoking. In this study with smoking-susceptible older adolescents, we found that BW and BI for cigarette smoking were higher among individuals randomly assigned to an explicit-support condition, compared to those in an implicit-support or control condition. At follow-up, BW and BI were highest in the explicit-support condition and lowest in the implicit-support condition, but the differences were not statistically significant. Mood paralleled these results, with youths in the explicit-support condition reporting the worse moods following the task. Overall, these findings suggest that in the context of general, continuous stressors, thoughts about implicit social support (i.e., reminders that one belongs to a valued social group) produces lower risk for cigarette initiation than do thoughts about explicit social support.

The present findings differ from the original Taylor study (Taylor et al., 2007) on which our paradigm was based, where it was found that Whites had better outcomes with explicit support. In fact, our effects were similar to those found for Asians and Americans in previous work (Taylor et al., 2007; Yang et al., 2015). Yet this study cannot be considered a replication of Taylor's research because of the differences in paradigms. For example, we had participants record webcam videos rather than write letters. A more central difference was the nature of the stressors: whereas previous work focused on a clear, discrete stressor in the laboratory, the present study focused on general, continuous, and personal stressors faced by participants in the real world. Thus, although explicit support may be beneficial in instances of discrete stressors, it may be harmful in instances of continuous stressors. This level of specificity is consistent with theorizing (Shinn et al., 1984) that the effectiveness of social support depends on the fit between a person and the circumstances of the support.

There are several reasons why requiring youth to ask for help and advice (i.e., explicit support) may have produced worse outcomes in this study. To begin, the condition itself may have been stressful: youths may have felt unclear about what they should talk about or felt uncomfortable with the required self-expression; the explicit task may also have differentially drawn attention to and emphasized the stressors in their lives. The stress could then have triggered a thought process that made them more open to trying substances. It is also possible that the thought of confronting loved ones with problems was difficult. Future research should explore these potential mediators to determine why explicit support was not effective in this context.

Limitations and Future Directions

The video task used in this study was an adaptation of an empirically-supported writing-task manipulation (Taylor et al., 2007). Our results support the feasibility and acceptability of the video-making tasks. However, although we increased thoughts about implicit/explicit social support, we did not actually manipulate the amount of social support the youths experienced. Findings from our experiment will need to be complemented by prospective studies that assess the long-term, real-world influences of implicit and explicit social support on risk behavior.

This was the first study to compare the influence of implicit and explicit support on African Americans, and we found that they performed similar to Whites in this context. However, our sample size was low and this study was likely underpowered to detect moderation effects. Future studies should replicate our work with larger samples. Comparing the protective influence of implicit and explicit support for African Americans is particularly important given the high prevalence of late-onset smoking among this group (Roberts et al., 2016; Trinidad, Gilpin, Lee, & Pierce, 2004). For example, research with one national sample indicated that among current smokers, 58% of all non-Hispanic Whites were late-onset, whereas 75% of all African Americans were late-onset (Roberts et al., 2016).

The present results are important to researchers and practitioners interested in reducing the likelihood of late-onset smoking. Specifically, findings suggest that social support occurring free of disclosures of stressful events could be protective. Further, video-making tasks similar to what was used in the present study could be easily and widely disseminated if included as part of a prevention program. Future work will need to refine these tasks, and prospectively test (using larger samples) how heightened implicit social support reduces smoking initiation during late adolescence and early adulthood.

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Highlights

- This experiment examined smoking-susceptible older adolescents
- A video-making task elicited thoughts about implicit, explicit or no social support
- The implicit (vs. explicit) support task produced lower risk for smoking initiation

Figure 1. Baseline behavioral willingness (BW) and intentions (BI) for smoking, as a function of social support condition. Error bars indicate ± 1 S.E.

Table 1

Participant characteristics and substance-use history at baseline (N = 58).

Characteristics	M(SD) or %
Age	17.4 (0.79)
Gender (% Female)	56.9%
Race/Ethnicity	
% Non-Hispanic Black	44.8%
% Non-Hispanic White	55.2%
Family Affluence Scale ^a	6.4 (2.2)
Current Smoking in the Environment	
Any parent smokes	17.2%
Any sibling smokes	17.2%
About half or more of peers smoke	12.0%
Ever-Use of Cigarettes	
Puffed a Cigarette (% Yes)	43.1%
Smoked a Whole Cigarette (% Yes)	25.9%
Past-year-use of Other Substances	
Full drink of alcohol	77.6%
Cigars	32.8%
Hookahs	51.7%
Chewing Tobacco	5.2%
Pipes	10.3%
Snus/Swedish Snuff	1.7%
Waterpipes	8.6%
Electronic Cigarettes	27.6%
Dissolvable Tobacco Products	0.0%

^aFour-item Family Affluence Scale (scale range: 0–9), which served as our measure of socioeconomic status.