



The role of participants' self-selected future smoking goals in adolescent smoking cessation interventions



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ABSTRACT

Background: There is an implicit assumption that abstinence is the treatment goal of young smokers that deliberately participate in cessation interventions, but this may not always be the case. To gain information on subgroups of adolescent intervention participants, we compare participants who want to achieve smoking abstinence (Abst) with those stating a non-abstinence future smoking goal (NAbst), with regard to baseline characteristics, reasons for participation, quit motivation, retention, goal attainment, and smoking abstinence.

Methods: The sample consisted of 202 adolescent smokers (49.5% female). At baseline, 118 (58.4%) indicated abstinence as future smoking goal and 84 (41.6%) indicated non-abstinence. All participants received a behavioral smoking cessation intervention. Assessments took place before, during, and after treatment, and at 6-month follow-up. Regression analyses were conducted.

Results: Abst and NAbst participants reported similar baseline characteristics. Abst participants, however, were more likely to report a previous quit attempt and indicated a higher quit motivation before and during treatment. Abst participants were more likely to participate based on own initiative and NAbst participants because of participating friends. Both groups attended a similar number of intervention sessions and were equally likely to attain their self-selected smoking goal. However, more Abst participants reported a successful quit attempt during treatment and abstinence at post-treatment and follow-up.

Conclusions: NAbst participants may represent a substantial subgroup in smoking cessation interventions for adolescents. Results indicate that future smoking goals can influence treatment outcomes. NAbst participants in treatment may benefit from additional information on the negative health consequences of light smoking.

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1. Introduction

Despite decreasing trends of adolescent smoking in Germany over time, still 12.0% of adolescents between 12 and 17 years old are current smokers (Federal Centre for Health Education (BZgA), 2013). Since regular smoking in adolescence substantially increases the risk for smoking in adulthood (Chassin et al., 1990), effective smoking cessation interventions for adolescents are needed.

The treatment goals of participants may be an important moderator of treatment effectiveness. However, the role of

self-selected substance use goals in treatment so far has mainly been studied in the field of alcohol research (Al-Otaiba et al., 2008; Hodgins et al., 1997). Despite participating in abstinence oriented smoking cessation interventions, young smokers selecting a non-abstinence goal for themselves may work toward a different outcome. Therefore analyzing abstinence as the only treatment outcome may underestimate success rates, given that participants enter treatment with different goals (Al-Otaiba et al., 2008).

In the field of tobacco research, previous studies examining the influence of goals and intentions in the quit process have mainly focused on quit intentions. These intentions can impact on smoking cessation success by influencing if a young smoker will undertake a quit attempt (Kleinjan et al., 2009). Lower intentions to smoke in the future have been identified as a key predictor of self-initiated quitting (for a review see Sussman, 2002). Furthermore, firm

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intentions not to smoke predicted future non-smoking until 6 years later over and above baseline smoking behavior for several groups of smokers ranging from never smokers to established smokers (Wakefield et al., 2004).

Those studies that do account for self-selected goals in smoking cessation treatment have only focused on adult samples. In a naturalistic study with adult smokers, self-selected goals (e.g., quit abruptly, quit gradually, reduce but not quit, not change) predicted quit motivation and the likelihood of making a quit attempt over the course of 28 days (Peters et al., 2007). Especially smokers with the goal of quitting abruptly reported a significantly higher likelihood of making a quit attempt than the other groups. Compared to the groups with quit intentions, the group with the goal of reducing reported a lower quit motivation and less quit attempts, even though these differences were not tested for statistical significance.

Smoking reduction, however, may be a problematic goal and can, in absence of evidence for its health-benefits, not be recommended to adolescent smokers (Moolchan et al., 2003). A Cochrane review on harm reduction from tobacco use concluded that reductions in cigarettes per day do not result in an equivalent reduction of body levels of carbon monoxide or cotinine and that only a small number of people are able to successfully sustain a smoking reduction of 50% or more (Stead and Lancaster, 2007). However, a review of studies for adult smokers came to the conclusion that smoking reduction increases the chances of future smoking cessation (Hughes and Carpenter, 2006). For adolescents, a 3-year longitudinal study with 16–17 year-old smokers from Switzerland reported that a smoking reduction of 5 cigarettes per day during adolescence may reduce the risk for smoking in adulthood by more than 200% (Schmid, 2001). Taken together, these findings suggest that treatment studies in the area of adolescent smoking cessation should examine additional treatment outcomes besides the attainment of complete smoking abstinence.

In this study we compare two groups of young smokers voluntarily participating in a behavioral, youth specific smoking cessation intervention in Germany that aims at smoking abstinence. Participants stating at baseline that they want to achieve smoking abstinence in the future (Abst participants) and those expressing a non-abstinence future smoking goal (NAbst participants) are compared with regard to baseline characteristics, reasons for participation, course of treatment, goal attainment after treatment and at follow-up, and the more common outcome of smoking abstinence.

To our knowledge, no previous study has examined adolescent smokers participating in a smoking cessation intervention with regard to their future smoking goals. With our approach it is possible to calculate rates of goal attainment in addition to the traditional approach of using smoking abstinence as the primary outcome. In addition, this study will cast light on a subgroup of young smokers in smoking cessation interventions that has not been examined in previous studies.

Firstly, we assume that quit motivation at baseline and during treatment will be higher in Abst compared to NAbst participants and that reasons for participating in the intervention at baseline differ between Abst and NAbst participants. Secondly, we hypothesize that Abst participants will participate in more sessions of the intervention. With regard to treatment outcomes we expect that there will be no differences between Abst and NAbst participants in attaining their self-selected future smoking goal at post-treatment and follow-up. We finally examine participants' performance on more traditional smoking abstinence outcomes: We expect that more Abst than NAbst participants will accomplish a successful quit attempt during the intervention and will accomplish smoking abstinence at post-treatment and follow-up.

2. Methods

2.1. Procedure

Data for this study was drawn from a controlled trial of a smoking cessation intervention for adolescents. In 2010, 41 professionals (e.g., social workers) from 13 German states received a 2 day training session in a behavioral smoking cessation manual for adolescents and implemented 47 behavioral group based smoking cessation intervention at 42 basic and intermediate secondary schools (Haupt- und Realschulen). Participating students completed a baseline questionnaire before the beginning of the first session. Participants completed additional questionnaires after each of the 6 intervention sessions, at the end of the aftercare interval of 4 weeks (post-treatment) and a follow-up questionnaire 6 months after the end of the aftercare. All study procedures were approved by the ethics commission of the German Psychological Society. Parental consent of participation in the study was requested beforehand by letters sent to the schools and distributed by teachers.

2.2. Intervention and recruitment

The intervention was based on cognitive-behavioral methods and motivational enhancement and was especially developed for adolescent smokers (Bühler et al., 2012; Wegmann et al., 2012). It consisted of 6 sessions within 3 weeks (5 group sessions lasting 90 min, 1 individual session lasting 15 min), and an aftercare interval of 4 weeks including follow-up calls and text messages. Sessions were scheduled twice weekly with a standard quit day between sessions 3 and 4. In-class information sessions, individual referral by teachers and school social workers, and incentives for regular participation (3 media vouchers, 10€ each) were used to improve recruitment and participation was voluntary.

2.3. Participants

A total of 272 students participated in the intervention. Of those, 1 participant was excluded from the analyses of this study because all session questionnaires were missing and 69 participants were excluded from the analyses because they did not report a valid future smoking goal ($n = 31$ missing; $n = 33$ "don't know"; $n = 5$ "daily"), leaving an analytical sample of $n = 202$ students (age $M = 14.88$, $SD = 1.07$; 49.5% female).

Excluded participants were not significantly different from included participants on most variables, but reported less smoking friends ($\chi^2(2) = 7.8$, $p < .05$), were less likely to have tried quitting within the last 6 months ($\chi^2(1) = 4.5$, $p < .05$) and reported a lower quit motivation (included: $M = 3.24$, $SD = .71$; excluded: $M = 2.88$, $SD = .67$; $t(259) = 3.2$; $p < .01$).

2.4. Measures

2.4.1. Baseline measures. Demographics. Participants were asked to indicate their age and gender. **Perceived smoking of others.** Perceived smoking of mother and father was assessed with two items ("Does your mother/father smoke?") and responses were recorded dichotomously (yes–no). Perceived smoking of siblings was assessed with one item ("How many of your siblings smoke?") and responses were recorded in an open format. For further analyses the variable was dichotomized to no vs. any smoking siblings. Perceived smoking of friends was assessed with one item ("How many of your friends smoke?"). Responses were recorded on a 4-point scale (*all to no one*). **Nicotine dependence.** Strength of nicotine dependence was assessed using the German version of the Hooked on Nicotine Checklist (HONC; DiFranza et al., 2002). The HONC consists of 10 items focusing on loss of control over smoking (i.e., "Have you ever tried to quit smoking but were not able to?") and responses were recorded dichotomously (yes–no). A sum score was calculated over all items. The scale had good internal consistency (Cronbach's Alpha = .87). **Smoking behavior.** Smoking behavior at baseline was assessed with 2 questions. Smoking frequency ("On how many of the last 30 days have you smoked cigarettes?") and quantity ("How many cigarettes do you usually smoke on a smoking day?"). An index of cigarettes per day (CPD) was calculated ((quantity × frequency)/30) (Kraus et al., 2013). **Previous quit attempt.** A previous quit attempt in the past 6 months before the start of the intervention was assessed with one question ("Have you made a serious quit attempt in the last 6 months?") and responses were recorded dichotomously (yes–no). **Quit motivation.** Quit motivation at baseline was assessed with one item ("How motivated are you to quit smoking?"). Responses were recorded on a 4-point scale (*very to not at all*). **Future smoking goals.** Futures smoking goals were assessed with the question "How often do you want to smoke in the future?" Responses were recorded on a 6-point scale (1 I don't want to smoke at all anymore; 2 less than once a month; 3 once a month or more; 4 once a week or more; 5 daily; 6 don't know). For the purpose of the current study, future smoking goals at baseline were dichotomized into abstinence and non-abstinence goals.

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