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The Outcomes of an Alcohol Prevention Program on Parents' Rule Setting and Self-efficacy:
A Bi-directional Model

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A Bi-directional Model

Abstract

Most adolescents have their first encounter with alcohol in early or middle adolescence. Parents' rule setting about alcohol has been shown to be important to delay the onset and reduce the frequency of adolescents' alcohol drinking, but less is known about the potential role of parents' beliefs about their competence in and ability to influence their adolescents' drinking habits (i.e., parental self-efficacy [PSE], Bandura, 1977). In this study, we examined the direction of influence between parents' rule setting and PSE as outcomes of the program "Prevention of Alcohol use in Students" (PAS), a prevention program aiming to reduce underage drinking by targeting parents and adolescents both separately and in a combined intervention. We tested two mediation processes in which the program would (a) have a direct effect on PSE, which in turn would increase parents' rule-setting, or (b) have a direct effect on parents' rule-setting, which in turn would increase PSE. To examine these processes, we used a sample of 2,562 parent-adolescent dyads (age 12 at baseline), followed annually over three years. The results showed that the combined intervention increased PSE via an increase in parents' rule setting. No significant effect of the intervention on rules about alcohol via PSE was found. This is the first study to test the mediation processes involving PSE and parental rule setting in an experimental context where parenting practices are being actively changed. The results suggest that giving parents concrete advice on how to deal with alcohol drinking in their adolescents and at the same time helping adolescents to develop healthy attitudes about alcohol drinking have a positive influence on parents' self-efficacy.

Keywords: Alcohol-specific rules, Parental self-efficacy, Alcohol prevention, Mediation

The Outcomes of an Alcohol Prevention Program on Parents' Rule Setting and Self-efficacy: A Bi-directional Model

Most adolescents have their first encounter with alcohol in early or middle adolescence (e.g., Patrick & Schulenberg, 2010; Poelen, Scholte, Engels, Boomsma, & Willemsen, 2005; Verdurmen et al., 2012). Research has shown that parents have an important role in their adolescents' drinking habits. Specifically, adolescents from families in which parents have more strict rules about underage alcohol use drink less alcohol than adolescents who have parents with less strict rule setting regarding underage drinking (e.g., Habib et al., 2010; Koning, Engels, Verdurmen, & Vollebergh, 2010; van der Vorst, Engels, Meeus, & Deković, 2006). Hence, despite normative increases in alcohol drinking during adolescence, parents' alcohol-specific practices tend to be effective in postponing the initiation and frequency of adolescents' alcohol drinking.

Based on the results in the former paragraph, and with an interest in reducing adolescents' alcohol use, some parent-based prevention programs have been developed to encourage parents to use more effective alcohol-specific parenting practices. Many of these parent-based programs have been successful in changing parents' behaviors in the desired direction, as well as reducing adolescents' alcohol drinking (Koning et al., 2009; Koning, van den Eijnden, Verdurmen, Engels, & Vollebergh, 2013a; Koutakis, Stattin, & Kerr, 2008; Smit, Verdurmen, Monshouwer, & Smit, 2008; Spoth, Greenberg, & Turrisi, 2008). One aspect that has not been a focus of these evaluations is parents' beliefs in their competence in and ability to influence their adolescents' alcohol drinking. Given the link between a person's beliefs and behaviors (Ajzen, 1991; Bandura, 1977), parents' beliefs could have an important role in the effectiveness and the long-term outcomes of these programs. In the current study, we examine the direction of influence between parenting practices and parental self-efficacy (PSE; Bandura, 1977) specific to adolescents' alcohol drinking, both as outcomes of the

randomized clinical trial “Prevention of Alcohol use in Students” (PAS; Koning et al., 2009; 2013a) in which parents were encouraged to set strict rules about alcohol drinking.

PSE describes parents’ beliefs about their competence in and ability to influence their children in a way that fosters the child’s positive development and adjustment. Parents with higher levels of PSE are expected to use more effective parenting practices than are parents with lower levels of PSE (Ardelt & Eccles, 2001; Bandura, 1977). Consistently, in studies using community-based samples, higher levels of PSE or similar parental beliefs have been shown to be linked to higher levels of positive and lower levels of negative parenting practices (de Haan, Prinzie, & Deković, 2009; Dumka, Gonzales, Wheeler, & Millsap, 2010; Glatz & Buchanan, 2015a; Glatz & Stattin, 2013; Glatz, Stattin, & Kerr, 2011). These results suggest that helping parents to increase their PSE might result in subsequent increases in positive and effective parenting practices (i.e., increases in PSE would mediate the effect of a prevention program on increases in effective parenting practices).

The association between PSE and parenting is not one-directional, however. According to Bandura (1977, 1982), the most effective way to increase a person’s sense of self-efficacy is through mastery experiences, suggesting that PSE should increase as a result of effective parenting practices. More specifically, in situations of success, parents should feel more efficacious because this success should strengthen the development of their self-efficacy. Consistent with this idea, in one study that used a community-based sample, a reciprocal relation was found between PSE and parenting practices (Glatz & Buchanan, 2015a). Hence, in addition to the mediating process described above (e.g., increases in PSE would mediate the effect of a prevention program on increases in effective parenting practices), increases in PSE might be a result of encouraging parents to use certain parenting practices (i.e., increases in effective parenting practices might mediate the effect of a prevention program on increases in PSE).

The two mediation processes described in the former paragraphs have very seldom been examined when evaluating the outcomes of parent-based prevention programs. The only study in which these processes have been tested is a study by Deković and colleagues (Deković et al., 2010). In this study, the authors evaluated the outcomes of a 3-day voluntary parent training program that aimed at increasing PSE among parents of toddlers ($M_{\text{age}} = 32$ months at the start of the training) who experienced difficulties in childrearing. This study showed that the program reduced parents' inept discipline practices and that this effect was mediated by an increase in PSE. In contrast, the opposite process—in which the intervention would increase PSE through reductions in parents' inept discipline practices—was not significant. Hence, these results supported the idea that increasing parents' self-efficacy will, in turn, lead to an increase in effective parenting practices. However, the program evaluated in the study by Deković and colleagues (2010) focused on changing parents' beliefs. No study, to our knowledge, has examined the mediation processes as outcomes of a parent-based prevention program that aim to encourage parents to use certain parenting practices, rather than to change their PSE.

In several studies involving parent-based prevention programs targeting general parenting behaviors, changes in both parenting practices and PSE have been evaluated simultaneously, even though mediation processes have not been examined. Programs aiming to teach parents effective practices in order to increase positive child behaviors and to reduce problematic child behaviors have been shown to increase both the desired parenting practices and PSE (e.g., Cotter, Bacallao, Smokowski, & Robertson, 2013; Enebrink et al., 2014; Hanisch, Hautmann, Plück, Eichelberger, & Döpfner, 2014; Katsikitis, Bignell, Rooskov, Elms, & Davidson, 2013; Miller-Heyl, MacPhee, & Fritz, 1998; Morawska, Tometzki, & Sanders, 2014; Peterson, Tremblay, Ewigman, Saldana, 2003; Schmidt, Chomycz, Houlding, Kruse, & Franks, 2014; Spoth, Redmond, Haggerty, & Ward, 1995; Tucker, Gross, Fogg,

Delaney, & Lapporte, 1998; Ulfsdotter, Enebrink, & Lindberg, 2014). Although these studies demonstrate that parent-focused prevention programs can improve both PSE and parenting, the results do not illuminate the potential direction of influence between PSE and parenting. It is possible that the increase in PSE in these studies is a result of increases in effective parenting practices, as these programs expressly focused on changing parenting practices rather than changing PSE. However, it is also possible that solely encouraging parents to use certain parenting practices will increase their PSE, maybe as a result of social persuasion (Bandura, 1982), which in turn will contribute to successful parenting performances. To sum, it is still unknown whether parent-based prevention programs that target certain parenting practices have a positive effect on PSE via increases in such parenting practices or if the opposite is true: that such parent-based programs have an effect on parenting via an increase in PSE.

In this study, we examined the association between PSE and parenting practices as outcomes of PAS, which is a prevention program aiming to reduce underage drinking by targeting parents and adolescents both separately and in a combined intervention. The main components of the parent intervention are encouragement of parents to stay strictly opposed to underage drinking and to set rules about alcohol drinking, and the components of the student intervention are encouragement of adolescents to develop self-control and healthy attitudes about alcohol (for more in-depth information about PAS, see Koning et al., 2009; Koning, van den Eijnden, Verdurmen, Engels, Vollebergh, 2011a). The combined parent-student intervention has been shown to be effective in postponing the onset of (heavy) weekly drinking among adolescents both short-term (Koning et al., 2009) and longer-term (Koning et al., 2011a, 2013a) by increasing parents' strict rule setting and adolescents' self-control (Koning, van den Eijnden, Engels, Verdurmen, & Vollebergh, 2011b). In this study, we were interested in the direct effects of the parent intervention (separately and combined with the

student condition) on both alcohol-specific parenting practices and PSE. Additionally, we examined the two theoretically-based mediation processes that have been suggested in which the program would (a) have an effect on PSE, which in turn would increase parents' rule-setting about alcohol, or (b) have an effect on parents' rule-setting, which in turn would increase PSE. On the basis of earlier research, we expected that the program would have direct effects on both parents' rule setting and PSE. However, because PAS targets alcohol-specific parenting practices specifically rather than their PSE, we expected that the effect on parenting would be stronger than the effect on PSE, and we expected to find more support for the second mediation process than for the first mediation process. To examine the direct and indirect effects, we used a sample of 2,562 parents and adolescents (age 12 at the start of the project), followed annually over a total of three years.

Method

Design and Procedure

Nineteen secondary schools were randomly assigned by an independent statistician to one of the four conditions: (a) parent intervention, (b) student intervention, (c) combined student–parent intervention, and (d) control condition (“business as usual”). Randomization was carried out centrally, using a blocked randomization scheme (block size 5) stratified by level of education, with the schools as units of randomization. Within each participating school, all first-year students in different educational levels (vocational to pre-university) participated in the intervention.

The baseline data (T0) were collected at the beginning of the first year in high school, before any intervention was carried out, and again 10, 22, and 34 months later. In the current study, only the 22nd (T1) and 34th (T2) month follow-up data were included (the 10th month follow-up was excluded because of low variation in the parenting measures at this time point). Adolescent data were collected by means of digital questionnaires administered in the

classroom by trained research assistants. Questionnaires for parents and letters of consent were sent to their home addresses. This letter informed parents about the project, and parents were given the opportunity to refuse participation of their child (.01% refusal). Non-responding parents were reminded after three weeks by a letter and after another two weeks by phone.

Participants

The final adolescent sample ($N = 2,562$) was characterized by an average age of 12.20 ($SD = 0.49$) at baseline and consisted of 51% boys and 41% in lower education (pre-vocational and lower general secondary education). Most of the responding parents were female (81%), and the majority of the parents (61% of the mothers and 65% of the fathers) had more than secondary education. At baseline, there were significantly fewer children in the lower secondary education and fewer boys in the intervention conditions than in the control condition (see Koning et al., 2011a), but at follow-up, no significant differences between the control and intervention conditions were found on any of the demographic variables.

Interventions

The *parent-only intervention* targeted parents' rules about their adolescents' alcohol use and consisted of three elements: (a) a brief presentation (20 min), (b) consensus-building from a shared set of rules among parents of children of the same class, and (c) an information leaflet with a summary of the presentation and the outcome of the class meeting. The *student-only intervention* targeted the students' abilities to develop a healthy attitude toward alcohol use and to train their refusal skills. Each lesson (four in total) was composed of (a) an introduction movie followed by a few questions, (b) questions to assess knowledge about (drinking) alcohol, (c) questions/exercises to reflect upon their own attitude/behavior about alcohol, and (d) a closing assignment integrating the previously obtained information. A

booster session was provided one year later. The schools in the *combined intervention* carried out both the parent and student interventions. Schools in the *control condition* received no intervention but were allowed to continue their “business-as-usual” practices (for a more detailed description of the interventions, see Koning et al., 2009, 2011a).

Measures

Parental self-efficacy. We used an adapted scale to measure parents’ confidence in their ability to prevent their adolescent from drinking alcohol, which has been used and validated in earlier studies (Koning, van den Eijnden, Glatz, & Vollebergh, 2013b; Van der Vorst, Engels, Meeus, Deković, & Van Leeuwe, 2005). The items in this scale were “If you undertake actions to curb your child’s drinking, would they be effective,” “Do you think you can stop your child from becoming drunk,” and “Would your child accept your suggestions about not drinking too much?” Response options ranged from 1 (*Definitely not*) to 5 (*Definitely*). Cronbach’s alphas were .67, .69, and .69 at T0, T1, and T2, respectively.

Alcohol-specific rules. Rules about alcohol measured the degree of rule setting that parents used to prevent their child from drinking (Van der Vorst et al., 2005, 2006). Adolescents reported on ten items, and examples were “I am allowed to have one glass of alcohol when my parents are at home,” “I am allowed to drink several glasses of alcohol when my parents are not home,” and “I am allowed to drink alcohol at a party with my friends.” The response options ranged from 1 (*Never*) to 5 (*Always*). The Cronbach’s alphas were .87, .93, and .94, at T0, T1, and T2, respectively.

Statistical Analyses

Data were analyzed in Mplus 7.0 (Muthén & Muthén, 1998-2012) using the maximum likelihood estimator, which is the default in Mplus 7.0. Model fit was assessed using the Chi-square goodness of fit test, comparative fit index (CFI; Bentler, 1990), and root mean square error of approximation (RMSEA; Browne & Cudeck, 1993). Missing data on the dependent

variables were handled by using full information maximum likelihood (Muthén & Muthén, 1998-2012), which has been recommended as a state-of-the-art technique for analyzing datasets that include missing data (Schafer & Graham, 2002).

The randomization resulted in a slightly uneven distribution across the active conditions compared to the control condition in terms of adolescents' sex and educational level. All subsequent analyses were, therefore, conducted with these variables as covariates to control for any possible bias stemming from the imbalance. In addition, as the impact of the intervention on the outcome variables might differ for mothers and fathers, parents' sex was included as a control variable in all analyses.

To examine the direct effect of the interventions on rules about alcohol and PSE at T2, intervention dummies (control condition was used as a reference group) were used to predict the outcome measures in different models. Further, in one model, the mediating effects of PSE and rules about alcohol at T1 on rules about alcohol and PSE at T2 respectively were tested according to the steps suggested by MacKinnon, Taborga, and Morgan-Lopez (2002). Specifically, we first tested whether the interventions had an effect on the mediating variables. Second, we analyzed the effect of the mediating variables on the outcome while controlling for the effects of the prevention programs. Third, we used the model indirect command in Mplus to test whether the size of the mediated effects were statistically significant (MacKinnon et al., 2002). The bootstrap method with bias-corrected bootstrap confidence intervals was used, as this method has been shown to offer a valid test of statistical significance of mediation effects (MacKinnon, Fairchild, & Fritz, 2007; Mallinckrodt, Abraham, Wei, & Russell, 2006). The mediators were measured at T1 and the outcome measures at T2, which allowed for test of changes over time and that mediation could be examined. Pretreatment scores for the mediators and outcomes were included in the model as

control variables so that post-test scores would result in a residual change variable (Cole & Maxwell, 2003).

Results

Descriptive Results

Descriptive information for the intervention conditions, and means and standard deviations for all study variables are reported in Table 1. Parents' level of PSE tended to be more similar across the conditions than were parents' rules about alcohol. Both PSE and rules about alcohol were fairly stable over time (coefficients ranging from .38 to .52 between T0, T1, and T2).

Direct Effects of the Interventions on Rules about Alcohol and PSE

The effects of the intervention conditions on rules about alcohol at T2 showed that parents in the parent-only ($\beta = .08$, $SE = .02$, $p = .002$, 95% confidence interval, $[CI] = .03 - .012$) and combined ($\beta = .14$, $SE = .02$, $p < .001$, $CI = .10 - .019$) intervention increased significantly in strict rule setting compared to parents in the control condition. No significant effect of the student-only intervention on rules about alcohol at T2 was found ($\beta = .02$, $SE = .02$, $p = .439$, $CI = -.03 - .06$).

The combined intervention was the only condition that significantly predicted higher levels of PSE at T2 ($\beta = .06$, $SE = .03$, $p = .047$, $CI = .001 - .11$). That is, parents in the combined intervention reported higher levels of PSE at T2 than did parents in the control condition. The effect of the parent-only ($\beta = .04$, $SE = .03$, $p = .169$, $CI = -.02 - .09$) and the student-only ($\beta = .05$, $SE = .03$, $p = .054$, $CI = -.001 - .010$) interventions on PSE at T2 was not statistically significant.

Indirect Effects of the Interventions via PSE and Rules about Alcohol

The effect of the interventions on rules about alcohol and PSE via PSE and rules about alcohol were analyzed simultaneously in one model. The model fit was good, $\chi^2 = 74.5$ (17), $p < .001$, CFI = .98, RMSEA = .04. The results from this model are illustrated in Figure 1.

Results when using PSE as a mediator. The direct effect of the parent only ($\beta = .07$, $SE = .06$, $p = .006$, CI = .05 - .27) and combined intervention ($\beta = .14$, $SE = .03$, $p < .001$, CI = .21 - .43) on rules about alcohol at T2 was significant. That is, adolescents in the parent only and combined intervention reported more strict parental rule setting than adolescents in the control condition. No significant effect of the student-only ($\beta = .01$, $SE = .03$, $p = .654$, CI = -.07 - .13) interventions on rules about alcohol at T2 was found. The effect of the intervention conditions on the mediating variable (PSE at T1) was not statistically significant (parent-only: $\beta = .03$, $SE = .03$, $p = .249$, CI = -.02 - .13; student-only: $\beta = .01$, $SE = .03$, $p = .844$, CI = -.07 - .08; combined: $\beta = .04$, $SE = .03$, $p = .163$, CI = -.02 - .14). Thus, compared to the control condition, the intervention conditions did not significantly influence the level of PSE among parents.

PSE at T1 was not a significant predictor of changes in rules about alcohol between T1 and T2 ($\beta = .04$, $SE = .02$, $p = .059$, CI = -.00 - .12). Additionally, the indirect effect of the intervention conditions on rules about alcohol at T2 via PSE at T1 was not statistically significant (parent-only: indirect = .00, $p = .318$, CI = -.001 – 0.012; student-only: indirect = .00, $p = .877$, CI = -.003 – 0.007; combined: indirect = .00, $p = .312$, CI = -.001 – 0.014). Thus, the effect of the parent-only and combined intervention on rules about alcohol was not mediated through PSE.

Results when using rules about alcohol as a mediator. The results showed no significant effect of the intervention conditions on PSE at T2 (parent-only: $\beta = .03$, $SE = .03$, $p = .297$, CI = -.04 - .13; student-only: $\beta = .04$, $SE = .02$, $p = .056$, CI = -.01 - .14; combined: $\beta = .05$, $SE = .02$, $p = .083$, CI = -.01 - .16). The effect of the parent-only ($\beta = .06$, $SE = .03$, p

= .063, $CI = .02 - .20$) and combined intervention conditions ($\beta = .12$, $SE = .03$, $p < .001$, $CI = .14 - .32$) on the mediating variable (rules about alcohol at T1), however, was statistically significant. That is, adolescents in the parent-only and combined intervention conditions reported more parental strict rules about alcohol at T1 than adolescents in the control condition. No significant effect of the student-only ($\beta = .03$, $SE = .03$, $p = .364$, $CI = -.03 - .08$) intervention on rules about alcohol at T1 was found.

Rules about alcohol at T1 predicted changes in PSE between T1 and T2 ($\beta = .06$, $SE = .02$, $p = .004$, $CI = .02 - .09$), and the indirect effect of the combined intervention on PSE at T2 via rules about alcohol at T1 was significant (indirect = .02, $p = .017$, $CI = .004 - .025$). The effect of the parent- and student-only interventions on PSE at T2 was not significantly mediated through rules about alcohol at T1 (parent-only: indirect = .01, $p = .073$, $CI = -.001 - 0.014$; student-only: indirect = .00, $p = .302$, $CI = -.001 - 0.009$). Thus, the increase in parents' self-efficacy in the combined intervention was partly explained by an increase in strict rule setting.

Discussion

Alcohol drinking among adolescents is often worrisome for parents (Beck, Scaffa, Swift, & Ko, 1995; Koning et al., 2013b), and parents have been shown to reduce their strict attitudes to underage drinking when they find out about their adolescents' drinking (Glatz, Stattin, & Kerr, 2012), which in turn predicts less strict rules about alcohol (Koutakis et al., 2008). Therefore it is important to know how parents can be encouraged to get involved in effective parenting that ultimately might postpone the onset of and decrease the level of underage drinking in their adolescents. This is the first study, to our knowledge, to examine changes in parents' rule setting about alcohol and their alcohol-specific PSE, as well as the direction of influence between these, as outcomes of a prevention program aiming to increase parents' rule-setting about alcohol and to help adolescents to develop healthy attitudes to

alcohol drinking. The results showed that an increase in parents' rule setting about alcohol mediated the positive effect of the combined intervention on PSE. The opposite process was not supported: The combined intervention did not increase effective parenting by increasing PSE. Because this is the first study to test the mediation processes involving PSE and parental rule setting in an experimental context where parenting practices are being actively changed, the results add important knowledge to both theory and practice.

Several parent-targeted intervention programs (e.g., Cotter, et al., 2013; Enebrink et al., 2014; Hanisch et al., 2014; Katsikitis et al., 2013; Miller-Heyl et al., 1998; Morawska et al., 2014; Peterson et al., 2003; Schmidt et al., 2014; Spoth et al., 1995; Tucker et al., 1998; Ulfsdotter et al., 2014) have demonstrated that both parenting practices and PSE are positively influenced by parents' participation in such programs. The results of the current study showed that both the parent-only and the combined parent-student intervention improved parents' strict rule setting, and the combined intervention also improved PSE over time. Additionally, concerning the indirect effects, the combined intervention had an effect on PSE via an increase in strict parental rule setting, but the opposite mediation process was not supported. In fact, the direct effect of the combined intervention on PSE was no longer significant after including rules about alcohol in the model and testing for indirect effects. This suggests that results from earlier studies might have indicated a mediation process where changes in parents' behavior influence their PSE, rather than a direct effect on PSE. Therefore, in future studies both direct and indirect effects concerning parenting and PSE should be tested simultaneously as outcomes of parent-based prevention programs.

The effect of the program on PSE via rule setting is in line with the idea of mastery experiences (Bandura, 1977, 1982) in which a person's self-efficacy is boosted from the use of effective practices. When parents are given concrete advice about how to handle their child's potential drinking behavior (i.e., by being strict about underage drinking), and their

children receive training in how to think about alcohol drinking, parents might experience positive feelings and relief when parenting their children, which increases their confidence in their own practices. Additionally, the results are in line with empirical results showing that, in a natural setting, positive parenting practices predict increases in PSE during early adolescence (Glatz & Buchanan, 2015a). The results of the present study add to the knowledge about the link between PSE and parenting behaviors and suggest that PSE can be increased by actively encouraging parents' to use certain practices when parenting their adolescents.

The lack of support for the effect of the program on parenting via PSE contrasts the results in the study by Deković and colleagues (2010) in which this process was empirically supported. The difference in results between that study and the current study is likely related to the different program components: The former program targeted parents' competence and the program in the current study targeted parenting behavior. The specific aspect being targeted is likely to mediate any additional effect of the program. In addition to the different focus of the programs, however, other factors might help to explain the different results in the studies. One explanation involves the different age samples that were used in these two studies. In the study by Deković, parents of toddlers ($M_{age} = 32$ months) were targeted, whereas the current study targeted parents of adolescents aged 12 to 15. Despite empirical support that higher levels of PSE predict more effective parenting among parents of adolescents (de Haan et al., 2009; Dumka et al., 2010; Glatz & Buchanan, 2015a), it might be more difficult to improve PSE among parents of adolescents than among parents of toddlers directly in an intervention program as parents often hold stereotypes of adolescents as difficult to influence because of increased autonomy and peer pressure (Buchanan & Holmbeck, 1998; Holmbeck & Hill, 1988). Another explanation for the contrasting results might be that the program in the study by Deković and colleagues (2010) focused on general

parenting beliefs and practices (i.e., inept discipline and supportive parenting practices), whereas the program in the current study focused on specific parenting and adolescent behaviors (i.e., parents' alcohol-specific parenting and adolescents' alcohol use). It is possible that different processes take place depending on the outcome behavior that is being evaluated. Further examinations of these mediation processes are needed in which programs with different components are targeted and evaluated.

PAS consists of three different conditions: A parent-only, a student-only, and a combined condition, and the results varied between these conditions. In line with earlier evaluations of the PAS program, there was no effect of the student-only intervention condition on parents' rules about alcohol (Koning et al., 2009, 2013a). In this study, we did not find a significant effect of the student- and the parent-only conditions on PSE either. In a recent study by Koning and colleagues (Koning, Maric, MacKinnon, & Vollebergh, 2015), a sequential mediation of the combined intervention on alcohol use was performed using both rules about alcohol and adolescents' level of self-control as mediators. It was shown that the combined parent-student intervention increased parents' strict rule setting, which in turn increased adolescents' level of self-control and decreased subsequent drinking behavior. Based on these results, it is possible that the increase in PSE in the current study is a result of the actual lower drinking rates among their adolescents. When parents experience a change in the child's behavior as a result of their own parenting, this might encourage parents to gain more confidence in their ability to influence their child's behavior. To summarize, targeting only parents resulted in different outcomes than targeting both parents and adolescents, and the most beneficial outcomes were found for the combined intervention. These results, as well as similar results from other studies (Cotter et al., 2013; Smit et al., 2008), should be taken into account when developing prevention programs as the delivery format might influence the outcomes of the program.

This study has some limitations that should be mentioned. First, the findings might not be generalizable to other countries with different drinking cultures and where parents might endorse different attitudes and beliefs about underage drinking. The Netherlands is known for its lenient drinking culture and has a generally high frequency of underage drinking. In other countries with a more strict policy concerning underage drinking, other processes might be empirically supported. Second, behavioral outcomes at the adolescent level were not included, so no conclusions can be drawn about the effectiveness of the changes in parental behaviors in relation to adolescents' alcohol use. Yet, there is sufficient support that parents' strict rules about alcohol are linked to less drinking in adolescents (Habib et al., 2010; Koning et al., 2010; van der Vorst et al., 2006).

This study also had several strengths. First, we used both parent and adolescent reports, which decreased the risk for one-reporter bias. Second, in this study we used a task-specific PSE measure concerning adolescents' alcohol drinking and examined the link to a task-specific parenting measure. Despite suggestions that specific beliefs should be more strongly linked to specific parenting practices (Bandura, 2006; Coleman & Karraker, 2003), few studies have examined the association between measures of specific PSE and parenting practices. Third, in this study we used a large sample of parents and adolescents that were followed over time, which made it possible to draw conclusions about changes in both parenting practices and PSE. Additionally, with the pre- and post-design of the data and the use of a control group we were able to draw conclusions about processes as outcomes of the program.

There is a societal interest to reduce underage drinking, as it can have long-term negative consequences for the individual. As parents have an important role in their adolescents' drinking habits, prevention programs supporting parents in their alcohol-specific parenting are relevant and necessary. In fact, parents of adolescents might be an especially

important group to support and encourage, as adolescence is a developmental period in which alcohol drinking increases significantly and when parents report especially low levels of self-efficacy (Ballenski & Cook, 1982; Glatz & Buchanan, 2015b). The results of the present study add to the knowledge about the link between PSE and parenting among parents of adolescents and show that an alcohol intervention program targeting both parents and their adolescents can increase parents' self-efficacy. Concrete advice about effective alcohol-specific practices should be given to parents, as well as helping their adolescents to form healthy attitudes toward alcohol drinking. These aspects together seem to be effective in helping parents to use more effective alcohol-specific parenting practices over time, which in turn improves parents' self-efficacy.

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Table 1. *Descriptive Statistics of Demographic Characteristics, PSE and Rules about Alcohol*

	Parent-only condition (<i>n</i> = 607)	Student- only condition (<i>n</i> = 702)	Combined condition (<i>n</i> = 567)	Control condition (<i>n</i> = 686)
Parents' sex (% mothers)	85.1%	81.3%	81.6%	85.0%
Adolescents' sex (% boys)	45.8%	48.5%	58.8%	51.8%
Mothers' education (% only secondary education)	37.7%	37.9%	38.9%	41.4%
Fathers' education (%only secondary education)	31.5%	34.3%	33.4%	40.7%
PSE T1 (<i>M, SD</i>)	3.78 (0.69)	3.77 (0.65)	3.79 (0.69)	3.72 (0.66)
PSE T2 (<i>M, SD</i>)	3.64 (0.69)	3.68 (0.68)	3.68 (0.69)	3.57 (0.67)
Rules about alcohol T1 (<i>M, SD</i>)	4.33 (0.81)	4.21 (0.79)	4.42 (0.79)	4.13 (0.79)
Rules about alcohol T2 (<i>M, SD</i>)	4.03 (0.95)	3.84 (0.92)	4.18 (0.89)	3.75 (0.99)

Figure 1. Effects of the combined intervention (β , p -value) on: (a) PSE via rules about alcohol (above), and (b) rules about alcohol via PSE (below). Bold lines indicate significant mediation. All estimates represent changes over time, as rules about alcohol and parental self-efficacy at earlier time points were controlled for in all analyses.