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# Regulatory Self-efficacy as a Moderator of Peer Socialization Relating to Italian Adolescents' Alcohol Intoxication

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## Abstract

*The present study investigated regulatory self-efficacy (RSE) as a predictor of friendship and adolescent alcohol intoxication and as a moderator of peer socialization processes related to alcohol intoxication. The longitudinal sample included 457 Italian adolescents (262 females and 195 males) ranging in age of 14 to 20 years ( $M = 16.1$  years of age). Sociometric and behavioral data were collected at the beginning and end of the academic school year. Actor-based models were applied to simultaneously estimate selection and socialization processes accounting for interdependencies among friends' drinking behaviors. The results indicated that adolescents did not select friends with similar levels of alcohol intoxication or RSE, but adolescents did adopt their friends' drinking behaviors. RSE was negatively associated with adolescent drinking behaviors and moderated socialization processes related to alcohol use, with adolescents reporting higher levels of RSE being less likely to adopt their friends' drinking behaviors than adolescents with lower levels of RSE.*

*Keywords:* alcohol use; adolescence; peer influence; regulatory self-efficacy

## Introduction

The prevalence of problematic alcohol use (e.g., alcohol intoxication) among youths and its negative short- and long-term effects on health and psychosocial adjustment are currently among the most problematic issues in Western societies (Hibell et al., 2009; Johnston, O'Malley, Bachman, & Schulenberg, 2005). Many of the psychosocial

theories explaining this phenomenon emphasize the interplay of interpersonal processes (e.g., peer selection and socialization) and individual characteristics when explaining adolescent alcohol use (e.g., Jessor, Donovan, & Costa, 1991). Individual characteristics have been suggested as moderators of peer socialization processes with some adolescents being less susceptible to peer socialization than others. For instance, adolescents who are able to regulate their own behaviors are thought to be less likely to adopt the behaviors of their friends (Wills & Dishion, 2004). Yet, measures of self-regulation have not been formally tested as moderators of peer socialization related to alcohol use. The present study addresses this by examining whether adolescents with high levels of regulatory self-efficacy are less likely to adopt the drinking behaviors of their friends. Specifically, we employ a social network analytic approach to: (1) assess the degree to which adolescents change their own drinking behaviors to become more similar to their friends' behaviors (peer socialization), adjusting for effects of peer selection; (2) examine the role of regulatory self-efficacy as a predictor of changes in friendship and adolescent drinking behaviors; and (3) test whether socialization processes related to alcohol intoxication are moderated by self-efficacy and gender.

#### *Interpersonal Processes Explaining Adolescent Alcohol Use: Selection and Socialization*

Adolescents and young adults are similar to their friends in drinking behaviors (Andrews, Tildesley, Hops, & Li, 2002; Bosari & Carey, 2001; Popp, Laursen, Kerr, Stattin, & Burk, 2008). This similarity may be attributed to peer selection and socialization processes. *Selection* refers to the tendency of adolescents to choose friends with similar drinking behaviors. *Socialization*, on the other hand, refers to adolescents changing their own drinking behaviors to become more similar to their friends' alcohol use. In other words, selection refers to similarity prior to the initiation of the friendship, and socialization refers to similarity that emerges after friendships have already been formed (Laursen, Popp, Burk, Kerr, & Stattin, 2008).

Selection and socialization operate in a complementary manner to explain adolescent alcohol use. Of the theories describing the role of friends in the initiation and development of alcohol use, peer-clustering theory (Oetting & Beauvais, 1986, 1987) is especially relevant because it focuses on dyadic and peer group dynamics. According to this theory, adolescents with different patterns of drinking behavior initiate friendships with peers with similar drinking behaviors, and these dyadic friendships form homogeneous clusters within peer networks. Once peer clusters are constituted, members will socialize each other's behavior via norms about acceptable and desirable behavior. This theoretical framework has been substantiated by several empirical studies investigating adolescent alcohol use among friends and peer group members (e.g., Kiuru, Burk, Laursen, Salmela-Aro, & Nurmi, 2010; Steglich, Snijders, & West, 2006; Urberg, Değirmencioğlu, & Pilgrim, 1997).

The study of behavioral similarities in dyadic friendships and among peer group members implies that participants' behaviors are interdependent. Accounting for statistical interdependencies is important because the degree of similarity between friends' behaviors systematically biases significance tests of traditional statistical techniques, such as ANOVAs and linear regressions (Laursen et al., 2008). In addition to statistical interdependence, researchers investigating socialization processes must also account for structural dependencies in peer networks because dyadic friendships

form overlapping peer groups (e.g., cliques), which are embedded within larger peer group structures (Carrington, Scott, & Wasserman, 2005). Models capable of accounting for structural dependencies in peer relationships and statistical interdependence in individual behaviors have recently been developed (Snijders, Steglich, & Schweinberger, 2007; Snijders, Van de Bunt, & Steglich, 2010) and successfully applied to the examination of selection and socialization related to delinquency (Burk, Kerr, & Stattin et al., 2008; Burk, Steglich, & Snijders, 2007; Snijders & Baerveldt, 2003) and substance use (Kiuru et al., 2010; Pearson, Steglich, & Snijders, 2006; Steglich et al., 2006). However, studies that applied such models to study similarity related to alcohol use have focused primarily on normative drinking behaviors among adolescents from northern Europe (Kiuru et al., 2010; Knecht, Burk, Weesie, & Steglich, 2011; Pearson et al., 2006; Steglich et al., 2006). It remains unclear whether these results generalize to more problematic drinking behaviors and whether peer socialization is also a robust predictor of drinking behaviors of adolescents in southern Europe.

#### *Moderators of Peer Socialization: Regulatory Self-efficacy and Gender*

Adolescents with less self-control are thought to be more likely to adopt the drinking behaviors of their friends compared to adolescents who are able to better regulate their own behaviors (Wills & Dishion, 2004). Although researchers conceptualize self-control in different ways, in the present study, we focus on regulatory self-efficacy (Bandura, 1997, 2004), which refers to personal beliefs in one's ability to resist environmental pressure or situations associated with risk taking behaviors. Generally speaking, adolescents with higher levels of RSE experience lower levels of problem behavior, including substance abuse (Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001; Engels, Wiers, Lemmers, & Overbeek, 2005; Lee, Oei, & Greeley, 1999). Although regulatory self-efficacy has not been explicitly tested as a moderator of peer socialization related to alcohol use, two studies provide some evidence that self-regulatory behaviors do moderate peer socialization of deviant behaviors. Goodnight, Bates, Newman, Dodge, and Pettit (2006) found that self-regulation moderated the effect of friends' delinquency on young adolescents' externalizing behaviors. This finding was extended by Gardner, Dishion, and Connell (2008), who found that self-control moderated the link between adolescent antisocial behavior and deviant peer affiliations, using adolescent, parent, and teacher reports.

Gender has also been considered as a moderator of peer influence. Some research suggests that female adolescents are more susceptible to peer influence-related drinking behaviors than male adolescents, because females attribute greater importance to peer group membership than males (Crockett, Losoff, & Petersen, 1984). Furthermore, females report more intimacy, loyalty, and support in their friendships during adolescence than males (Schulenberg et al., 1999). However, other researchers posit that males may be more susceptible than females to peer influence, particularly for drinking measures of intoxication and drunkenness because males are more likely than females to perceive social pressure to consume excessive amounts of alcohol (Suls & Green, 2003; Windle, 2000). Although both ideas have received some empirical support, most studies have failed to detect gender differences in peer socialization of adolescent drinking behaviors (e.g., Jaccard, Blanton, & Dodge, 2005; Poelen, Engels, van der Vorst, Scholte, & Vermulst, 2007).

## *The Present Study*

The first goal of the present study is to investigate peer socialization related to alcohol intoxication in Italian adolescent friendship networks, adjusting for the effects of homophilic selection. Although selection and socialization processes are both expected to emerge as significant predictors of similarity between friends' drinking behaviors, there is some question as to whether previous results, which are predominantly based on samples of adolescents from the USA and northern Europe, will generalize to Italian adolescents. Two potential reasons why this might not be the case are that drinking behaviors of Italian adolescents are generally more moderate than their North American and northern European counterparts (Ciairano, 2004; Lintonen & Konu, 2003), and because peers play a much less central role in Italian adolescents' daily lives (Claes, 1998). The second aim of this study is to examine RSE as a predictor of changes in friendship and changes in adolescent drinking behaviors. We expect adolescents with high levels of RSE to be more central in friendship networks (i.e., they will receive more friendship nominations) than adolescents with low levels of RSE (Caprara, Barbaranelli, Pastorelli, & Cervone, 2004). We also expect that RSE will be negatively associated with subsequent drinking behaviors. The third aim of this study is to test whether RSE and gender moderate peer socialization. We anticipate that adolescents with higher levels of RSE will be less likely to adopt the drinking behaviors of their friends. We also tentatively expect that males will be more likely to adopt the drinking behaviors of their friends than female adolescents because we utilize measures describing frequency of alcohol intoxication (drunkenness) opposed to more normative drinking behaviors, such as number of glasses of alcohol consumed.

## **Method**

### *Participants*

The sample consisted of 457 adolescents (262 females and 195 males) ranging in age from 14 to 20 years ( $M = 16.1$ ,  $SD = 1.4$ ). Participants attended 38 classrooms of six high schools in northwestern Italy. Regarding relevant demographic indicators, the sample is generally comparable to the general Italian population (Istituto Nazionale di Statistica, National Institute of Statistics [ISTAT], 2009). The unemployment rate in Italy is roughly 10 percent whereas for the families in our sample it is 6 percent. Approximately 9 percent of participants' parents were divorced (vs. 11.5 percent in Italy), and 3 percent of adolescents lived in single-parent households. Roughly half of the adolescents had older or younger siblings. With respect to the level of parental education, 37 percent of parents completed primary school, 39 percent completed high school, 10 percent had some vocational specialization, and 14 percent graduated from university, which is similar to the national population (ISTAT, 2009).

### *Procedure*

Seven public schools in a single school district were invited to participate in the study: three lyceums (university preparatory), two technical schools, and two vocational schools. All agreed to be involved in both waves of the study: two months after the beginning of the school year (November) and six months later, just before the end of the school year (May). Of the 46 classrooms within these schools, 82 percent

participated. In accordance with Italian law and the ethical code of the Association of Italian Psychologists, students and parents were informed about the characteristics of the study and provided written consent several weeks prior to the initial data collection. Parents were mailed a letter describing the study and a consent form, which they were asked to sign and return via mail. Students with consent were approached in class, with research assistants describing the study and informing students that their answers would be kept confidential and anonymous. Of the 634 students who were approached (in the 38 classrooms), 603 students and parents (95 percent) agreed to participate in the study, and 584 adolescents (92 percent) completed the questionnaires at the initial measurement. Of these, 457 (78.2 percent) completed surveys six months later. A logistic regression examined whether students who participated in both waves differed from those lost to attrition with regard to age, gender, alcohol use, and RSE. This analysis revealed a significant effect for gender ( $OR = 2.65, p < .001, 95 \text{ percent } CI = 1.70\text{--}4.12$ ), indicating that females were overrepresented in the longitudinal sample. Age, alcohol intoxication, and RSE did not predict differences between adolescents in the longitudinal sample and those who only completed surveys at the initial assessment.

### *Measures*

Trained researchers administered the questionnaires in each classroom. Teachers were not present. Students completed identical questionnaires at both measurements.

*Friendship Nominations.* Participants were asked to nominate up to five best friends using a sociometric procedure similar as that used by Ennett and Bauman (1994). Using these nominations, friendship networks were constructed for all study participants. These networks were formally represented as two directed adjacency matrices with dichotomized cells, indicating the presence or absence of a relationship between each pair of youth at each measurement. Fourteen nominations (3 percent) were excluded from the analyses because the nominee did not attend one of the participating schools.

*Alcohol Intoxication Frequency.* Participants completed two items describing alcohol intoxication during the previous six months. The first item assessed the frequency of high volume drinking by asking participants how many times they drank five or more glasses of alcohol (wine, beer, or other alcoholic beverage) on a single occasion. Response categories ranged from 1 (never) to 9 (more than twice a week). The second item assessed the frequency of drunkenness by asking adolescents how many times they got drunk during the previous six months. Response categories ranged from 1 (never) to 4 (very often). These questions were developed by Jessor, Donovan, and Costa (1989), and have been used as a measure of problematic alcohol use in several previous studies (Bonino, Cattellino, & Ciairano, 2005; Cooper, 1994; Jessor et al., 2003). The two items differ in their number of response categories, so were standardized and averaged to form a composite measure of alcohol use. The internal reliability of these two items was .80 at time 1 and .81 at time 2. Actor-based models require behavioral outcomes to be categorized, so six categories were created from the alcohol composites: no drinking (less than  $-1 \text{ } SD$ ), very infrequent (between  $-1 \text{ } SD$  and  $-.25 \text{ } SD$ ), infrequent (between  $-.5 \text{ } SD$  and zero), some (between zero and  $+.5 \text{ } SD$ ), frequent (between  $+.5 \text{ } SD$  and  $+1 \text{ } SD$ ), and very frequent (greater than  $+1 \text{ } SD$ ). Categories were

**Table 1. Descriptive Statistics of Friendship Networks and Individual Alcohol Intoxication**

	Time 1	Time 2
Network structure		
Number of ties	757	741
Average degree	1.78	1.85
Number of reciprocated dyads	230	223
Reciprocity index	.61	.60
Number of transitive triplets	439	469
Transitivity index	.29	.31
Individual characteristics		
Alcohol intoxication		
None	26%	23.4%
Very infrequent	23.6%	29.5%
Infrequent	15.4%	12.9%
Some	17.9%	20.2%
Frequent	9.2%	8.3%
Very frequent	7.9%	5.7%
Similarity of friends' alcohol intoxication		
ICC	.20	.19
Moran's I	.22	.19

*Notes:* N = 457. Average degree represents the average number of outgoing network ties per individual. The reciprocity index describes the proportion of reciprocated ties in relation to the total number of ties. The transitivity index describes the proportion of transitive triplets in relation to the total number of triadic configurations. Intra-class correlations (ICC) and network auto-correlation (Moran's I) describe the degree of similarity between friends' alcohol misuse.

computed using the time 1 and 2 composite measures, which were standardized at the same time (time 2 scores were included below time 1 scores) to ensure that changes in category membership from time 1 to time 2 reflect actual changes in individual reports over time, not changes due to distributional differences in the two standardized alcohol composites. Table 1 presents the proportion of adolescents in each category at time 1 and 2.

*Regulatory Self-efficacy.* Participants completed 12 items (Caprara, 2001) describing beliefs in their abilities to resist peer pressure involving risk behaviors, such as substance use, delinquency, and unprotected sex (e.g., 'How well can you resist peer pressure to drink beer, wine, or liquor?'). This measure has been shown to have good psychometric properties and a single factor structure (Caprara, Regalia, & Bandura, 2002; Caprara et al., 1998). Response categories ranged from 1 (not at all) to 4 (very much). The average of these items was used in all analyses. At time 1, the average score

was 3.29 ( $SD = .57$ ); at time 2, the average score was 3.30 ( $SD = .57$ ). Cronbach's alphas were .88 at each time point.

### *Plan of Analysis*

The structural features of the friendship networks and the frequency of alcohol intoxication are initially described. Intra-class correlations and Moran's I network autocorrelation statistics (Moran, 1950) assessed the amount of concurrent similarity in friends' drinking behaviors. To investigate our primary research aims, we employed actor-based models of network and behavioral dynamics using the SIENA (Simulation Investigation for Empirical Network Analysis) software program (Ripley & Snijders, 2010). These models estimate parameters that describe changes in friendship ties (network dynamics) and changes in individual drinking behaviors (behavioral dynamics) using a continuous-time Markov Chain Monte Carlo (MCMC) approach. Specifically, the total amount of change in friendship networks and individual drinking behaviors observed between the two discrete measurements is modeled as the most probabilistic sequence of individual changes in friendship ties and drinking behaviors, with changes in friendships depending on changes in behaviors and vice versa. That is, each actor-based model includes two dependent variables (i.e., friendships and individual behaviors). The complexity of the resulting model does not allow for the explicit calculation of parameter values, so parameter estimates and their standard errors are derived from iterative computer simulations. Readers interested in more detailed descriptions of these models and statistical formulations of parameters are referred to Snijders et al. (2007, 2010).

Three nested models were performed using a forward selection procedure. The first model estimated the relative contributions of selection and socialization related to alcohol intoxication. *Selection* is formally represented by changes in friendship ties predicted by similarity in the drinking behaviors of actors (ego) and their friends (alters); *socialization* is defined as changes in adolescents' drinking behaviors that are predicted by the alcohol use of friends at time 1. Several additional predictors of network dynamics are included as control parameters in this model, namely, the effects of the endogenous network structure such as reciprocity and transitivity (i.e., friendship ties tend to be reciprocated and tend to form triadic relational structures), the effects of shared social contexts (same school and classroom), and the effects of individual attributes (age, gender, and alcohol use). Each individual attribute is represented by three parameters in network dynamics: *ego* (effect of an attribute on outgoing nominations), *alter* (effect of an attribute on incoming nominations), and *ego by alter* (homophilic selection). Several additional predictors of behavioral dynamics are also included as control parameters, including individual differences in drinking behaviors (linear and quadratic behavioral tendencies) and differences in alcohol intoxication as a function of age and gender.

The second model examined the role of RSE as a predictor of changes in friendship and individual drinking behaviors. Specifically, in addition to the parameters included in the first model, this model included four parameters: three parameters estimating the effects of RSE on changes in friendship ties (ego, alter, and ego by alter) and one parameter estimating the effect of RSE on changes in alcohol intoxication.

The third model examined RSE and gender as moderators of alcohol-related peer socialization. This model included two interactions in addition to the parameters included in the previous models. The first tests whether adolescents with low levels of

RSE are more likely to change their drinking behaviors to become more similar to their friends' behaviors; the second tests whether male or female adolescents are more likely to adopt their friends' drinking behaviors.

## Results

### *Descriptive Analyses*

Table 1 presents descriptive statistics of the friendship networks and adolescent alcohol intoxication. The indices of network structure collectively indicate a stable network, with approximately 750 friendship ties at each time point (an average degree of nearly two friendship nominations per adolescent). Specifically, the reciprocity index indicates that 60 percent of friendship ties are reciprocated at each time point; the transitivity index indicates that 30 percent of all triadic configurations demonstrated transitive network closure (i.e., cohesive peer groups). Intra-class correlations and Moran's I network autocorrelation statistic indicate a moderate degree of similarity between friends' reports of alcohol intoxication, accounting for approximately 20 percent of the variance in dyadic reports (see Table 1).

### *Friendship Selection and Socialization Related to Adolescent Alcohol Intoxication*

Table 2 presents the unstandardized estimates for the three actor-based models. The first model (model 1) examined the role of peer socialization related to alcohol intoxication, adjusting for structural dependencies in relationship ties, effects of peer selection, and gender and age differences on individual drinking behaviors. The four parameters representing endogenous effects of network structure all emerged as significant predictors of friendship ties. The negative values of *outdegree* and *geodesic distance-2* indicate that friendship is a selective process (i.e., adolescents do not randomly select friends) and that adolescents do not prefer to maintain relationships through an intermediary. The positive values of *reciprocity* and *transitive triplets* indicate that adolescents tend to reciprocate friendship nominations and that dyadic friendship ties tend to form cohesive triadic relational structures (i.e., cliques). The two parameters approximating constraints based on shared contexts also emerged as significant predictors of friendship ties. The positive values of *schoolmates* and *classmates* indicate that adolescents tend to nominate friends in the same school and same class, respectively.

The only attribute-related effect that reached statistical significance was the interaction between gender ego and gender alter, which indicates that friendship ties are most likely between adolescents of the same sex. The non-significant ego and alter effects of age and gender indicate that youth of different ages and males and females did not differ on the number of friendship nominations sent (network activity) or received (network popularity). All three effects modeling the effects of alcohol intoxication on friendship dynamics emerged as non-significant, indicating that network activity and popularity are not associated with alcohol intoxication and that youth do not select friends with similar levels of alcohol intoxication.

Alcohol intoxication dynamics are modeled with parameters describing individual drinking trajectories, age, and gender differences on alcohol intoxication, and the effects of friends' drinking behaviors on changes in adolescent drinking (i.e., peer socialization). The negative and statistically significant value of the *linear tendency*

**Table 2. Parameter Estimates for Actor-based Models of Friendship Network and Alcohol Intoxication Dynamics**

Parameters	Model 1 <sup>a</sup>		Model 2 <sup>b</sup>		Model 3 <sup>c</sup>	
	Est.	SE	Est.	SE	Est.	SE
Network dynamics						
Outdegree	-7.88**	1.18	-8.02*	1.08	-7.97**	1.29
Reciprocity	2.33**	.37	2.45**	.43	2.44**	.42
Transitive triplets	.44**	.20	.46**	.21	.47**	.22
Geodesic distance-2	-.89**	.29	-.89**	.28	-.90**	.31
Same school	2.28**	.48	2.29**	.47	2.31**	.47
Same class	3.58**	1.20	3.45**	1.11	3.39**	1.32
Age alter	-.01	.18	-.06	.21	-.06	.22
Age ego	.34	.19	.36	.24	.37	.25
Age ego x alter	.07	.09	.13	.11	.13	.10
Gender alter	-.64	.47	-.50	.52	-.51	.51
Gender ego	.64	.47	.95	.50	.95	.53
Gender ego x alter	2.35**	.92	2.44**	.97	2.47**	1.01
Alcohol alter	.08	.13	.21	.15	.20	.16
Alcohol ego	.03	.13	.25	.21	.25	.20
Alcohol ego x alter	-.01	.09	-.05	.11	-.03	.14
(selection)						
RSE alter			.05	.03	.05	.03
RSE ego			.10*	.04	.10*	.04
RSE ego x alter			.01	.01	.01	.01
Gender ego x alcohol alter					-.02	.29
RSE ego x alcohol alter					.01	.03
Alcohol dynamics						
Linear tendency	-.19**	.04	-.18**	.04	-.17**	.04
Quadratic tendency	.02	.02	-.01	.02	-.01	.02
Average similarity	1.03**	.42	.80*	.40	.73	.45
(socialization)						
Effect from age	-.05	.03	-.05	.03	-.04	.03
Effect from gender	.04	.08	-.06	.08	-.08	.08
Effect from RSE			-.03*	.01	-.03**	.01
Average similarity x gender					-1.56	.89
Average similarity x RSE					-.17*	.08

Notes: N = 457. RSE = regulatory self-efficacy.

<sup>a</sup> Friendship selection and socialization related to adolescent alcohol intoxication.

<sup>b</sup> The role of regulatory self-efficacy in friendship and behavioral dynamics.

<sup>c</sup> Moderators of alcohol-related peer socialization. Statistical significance of each parameter is determined by dividing the estimate by its standard error and comparing it to a normalized z-distribution.

\*  $p < .05$ , \*\*  $p < .01$ .

parameter indicates that a majority of youth reported low levels of alcohol intoxication (i.e., less than the midpoint of the behavioral categories). The non-significant *quadratic tendency* indicates that changes in drinking behaviors did not differ as a function of initial levels of drinking behaviors. Age and gender differences on alcohol intoxication were also non-significant. The *average similarity* parameter emerged as positive and statistically significant, indicating that adolescents adopted the drinking behaviors of their friends over time. Taken together, this model suggests that adolescents do not select friends with similar drinking behaviors, but adolescents do change their drinking behaviors to be more similar to the drinking behaviors of their friends.

### *The Role of Regulatory Self-efficacy in Friendship and Alcohol Use Dynamics*

The second model examined the role of RSE in friendship selection and alcohol intoxication dynamics. The same pattern of statistically significant parameters emerged in this model; therefore, we only describe the four additional effects specific to RSE. Of these parameters, two emerged as statistically significant. The positive value of the *regulatory self-efficacy ego* effect indicates that youth reporting more RSE tended to nominate more friends compared to adolescents reporting lower levels of RSE. The negative value of the *effect from regulatory self-efficacy* on alcohol intoxication indicates that youth reporting more RSE also reported less frequent alcohol intoxication. The two non-significant parameters indicate that youth do not select friends with similar levels of self-efficacy (*regulatory self-efficacy ego x alter*) and that youth reporting various levels of RSE do not differ on the number of nominations received (*regulatory self-efficacy alter*). Collectively, these effects indicate that RSE plays a minimal role in friendship selection but is negatively associated with individual drinking behaviors.

### *Moderators of Alcohol-related Peer Socialization*

The third model examined whether alcohol-related peer socialization differed as a function of RSE and gender. A similar pattern of results were also found in this model compared to the two previous models with one exception: the main effect of peers' drinking behaviors (average similarity) was no longer statistically significant when the two interactions were also included. The interaction between *average similarity and regulatory self-efficacy* emerged as statistically significant; the interaction between average similarity and gender did not. The negative value of the interaction involving RSE indicates that adolescents reporting high levels of RSE are less likely to adopt the problematic drinking behaviors of their friends compared to adolescents reporting average and low levels of self-efficacy.

## **Discussion**

This study examined peer socialization related to adolescent alcohol intoxication and regulatory self-efficacy (RSE) as a predictor of friendship and alcohol intoxication of Italian adolescents. Overall, our findings provide evidence for the relative importance of peer socialization processes related to drinking behaviors and for the moderating effect of RSE on these socialization processes. However, we did not find any evidence for homophilic selection related to alcohol intoxication nor did we find evidence for

differences between males and females on susceptibility to peer socialization. Although several recent studies have questioned the relative importance of alcohol-related peer influence (Jaccard et al., 2005; Knecht et al., 2011), our results suggest that even when relevant effects of peer selection are accounted for, friends' drinking behaviors predict changes in adolescent alcohol use over time. Somewhat unexpectedly, our findings did not indicate that adolescents also initiate relationships with peers reporting similar drinking behaviors.

There are several possible explanations for our pattern of results. Firstly, previous studies focused on normative alcohol consumption whereas the current study investigated more problematic drinking behaviors (i.e., frequency of alcohol intoxication). It might be that adolescents are simply less likely to choose a peer with similar frequency of alcohol intoxication compared to a friend who had had a similar number of alcoholic beverages because alcohol intoxication is a less normative behavior. A second reason for the lack of selection effects related to alcohol use involves the length of time between assessments. Previous research has typically used annual measurements, there were roughly six months between the two waves of data in the present study. As a result, many friendships between adolescents in our network were stable (i.e., relationships existed at both time points). Considering selection effects can only be detected in friendships that are either initiated or dissolved during the study, the lack of change in friendship ties may have led to the non-significant effects of selection in this sample. A final explanation for the failure to detect selection effects in the present study related to cultural differences. Although studies conducted in northern European and/or North American contexts have consistently reported the importance of friendship selection related to alcohol use (e.g., Bot, Engels, Knibbe, & Meeus, 2005; Pearson et al., 2006), our study is the first to examine peer socialization in networks of Italian adolescents. In Italy, the transition to adulthood is longer than in most other Western countries, and the family plays a central role in the process of emerging adulthood (Bonino, Cattelino, & Ciairano, 2006). Furthermore, Italian parents are more likely to control their children's behavior directly instead of merely supporting their process of growing up; this parental pattern has been shown to be protective with respect to involvement in risk behavior and general well-being (Ciairano, Kliewer, Bonino, & Bosma, 2008; Scabini, Lanz, & Marta, 1999). Thus, we may assume that Italian adolescents are simply less likely than their peers from other social and cultural contexts to freely and autonomously select their friends, which may explain the lack of peer selection effect to a certain degree. Future studies are needed to determine whether differences between this study and the extant literature are due to differences in study design or culture.

The second aim of this study was to examine whether RSE predicts changes in friendship and alcohol intoxication. Although recent research has shown that adolescents with high RSE are more popular among their peers (Caprara et al., 2004), we did not find that efficacious youth received more friendship nominations. However, youth reporting a high level of RSE did nominate more friends (i.e., they were more active in the friendship network). We also found no evidence to suggest that adolescents select friends with similar levels of RSE. Consistent with previous research, we did find that youth with high levels of RSE reported less frequent alcohol intoxication (e.g., Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). Other scholars have shown that self-efficacy is a better predictor of problem behavior than other dispositional characteristics, suggesting that adolescents who believe they are more capable of self-regulating their actions in the face of peer pressure experienced lower levels of problem behavior (e.g., Caprara et al., 2004). Our results go a step further, confirming

the protective role of RSE within friendship networks while adjusting for various other predictors of changes in friendship and drinking behaviors.

The third goal of our study was to investigate whether RSE and gender moderate peer socialization processes related to adolescent drinking behaviors. In line with social cognitive theory (Bandura, 1997), our results indicate that adolescents who believe that they are capable of resisting peer pressure are less likely to adopt the problematic drinking behaviors of their friends compared to adolescents with lower levels of RSE. These findings have important implications in terms of prevention because they underscore the central role of interventions focused on enhancing specific life skills (e.g., self-efficacy). Indeed, these findings suggest that interventions aimed to increase personal beliefs might be effective in preventing adolescent engagement in misusing alcohol. However, we did not find evidence for gender as a moderator of peer socialization. This is in line with several previous studies that also failed to detect gender differences in peer influence (Jaccard et al., 2005; Kiuru et al., 2010; Urberg, Luo, Pilgrim, & Değirmencioglu, 2003). These results suggest that, even if males and females differ on the prevalence of alcohol use, the importance of friends' behaviors when predicting male and female alcohol use does not differ as a function of gender.

This study has several strengths, including the use of actor-based models that allowed for the estimation of socialization processes, adjusting for effects of peer selection, and the examination of self-efficacy and gender as moderators of socialization. However, several limitations must be acknowledged. Firstly, the six-month interval between observed time points produced a rather stable friendship network, which might have reduced our chances of detecting selection processes due to the lack of changes in friendship nominations. Although previous studies conducted assessments at the beginning and end of the academic year, the optimal interval between observed time points has not been established. Secondly, although this study represents one of the first studies to examine individual characteristics as moderators of socialization, we did not consider dyadic characteristics, such as differences between reciprocated and unilateral friendships or differences in friendship quality. Both have been previously found to impact socialization processes related to adolescent problem behavior (Adams, Bukowski, & Bagwell, 2005; Bot et al., 2005; Burk et al., 2007; Ciairano, Rabaglietti, Roggero, Bonino, & Beyers, 2007). Thirdly, we utilized adolescent self-reports of alcohol intoxication and regulatory self-efficacy. Although adolescents have been found to be reliable reporters of both constructs, additional research is necessary to more fully understand the interplay between these (and related) constructs because shared reporter variance remains a concern when generalizing our results. Finally, although this sample is generally representative of the population from which it was drawn, additional research is necessary to replicate our findings in more diverse samples in terms of socioeconomic status and ethnicity, not only in other Mediterranean countries that are most likely to have similar patterns of drinking behaviors as Italians, but also in northern European and North American countries.

In conclusion, our findings suggest that in a cultural context like the Italian one, where traditionally parents teach their children moderate drinking behaviors (Ciairano, 2004), and where the role of the family is more central compared to other countries (Claes, 1998), peers still play a major role in engagement and development of adolescent drinking behaviors. However, adolescents who enter their peer relations with beliefs of personal efficacy, believing that they are capable of self-regulating their actions in the face of peer pressure, seem to be less susceptible to peer influence processes. This finding indicates the need for practical interventions aimed at reducing

adolescents' involvement in alcohol use by focusing strongly on increasing adolescents' beliefs in their own abilities.

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