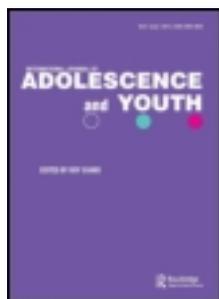


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Véronique Rouvès^a & François Poulin^a

^a Department of Psychology, Université du Québec à Montréal, Case Postale 8888, Succursale Centre-ville, Montréal, Québec, Canada H3C 3P8,

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Romantic involvement and alcohol use in middle and late adolescence

Véronique Rouvès and François Poulin*

Department of Psychology, Université du Québec à Montréal, Case Postale 8888, Succursale Centre-ville, Montréal, Québec, Canada H3C 3P8

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This study examined the associations between various dimensions of romantic involvement and alcohol use in middle and late adolescence. Based on Brown's model (1999, *The development of romantic relationships in adolescence*. Cambridge: Cambridge University Press, pp. 291–329), significant associations were expected to be found in middle adolescence only, and these associations were expected to be stronger among girls than among boys. Participants ($N = 294$; 61% girls) filled out questionnaires at age 16 and again at age 20. At age 16, the results showed that adolescents who were involved in romantic relationships reported higher levels of alcohol use than those who were not. Moreover, the greater the number of romantic partners that the adolescents had and the greater the extent to which their romantic partners were older than they were, the higher their level of alcohol use would be. These effects did not vary according to participants' gender. Finally, none of these effects were found at age 20.

Keywords: romantic relationships; romantic involvement; alcohol use; adolescence

Introduction

Frequent and excessive use of alcohol during adolescence is associated with aggression, reduced inhibition, a greater risk of subsequent alcohol abuse, alcohol dependence and other alcohol-related problems, higher levels of depression, and non-suicidal self-injury (Guo, Collins, Hill, & Hawins, 2000; Hasking, Momeni, Swannell, & Chia, 2008; Labouvie, 1990; Swahn, Bossarte, & Sullivent, 2008; Warner & White, 2003). It is thus important to identify the factors that may contribute to alcohol use among adolescents. Aside from individual, contextual, and familial factors, whose contributions have been widely documented (Donovan, 2004), peer relationships appear to play a key role in adolescents' drinking habits (Engels, Bot, Scholte & Granic, 2007). The present study is in line with this perspective and investigates one type of peer relationships that has received little attention to date and its association with alcohol use in adolescence: romantic relationships.

Romantic involvement during adolescence

Adolescents generally begin to enter into romantic relationships around the age of 15 (Regan, Durvasula, Howell, Ureno, & Rea, 2004) and the prevalence of romantic involvement increases with age (Carver, Joyner, & Udry, 2003). Romantic relationships in adolescence present several positive features such as intimacy and mutual support (Connolly & McIsaac, 2009). However, they are also associated with an increase in

*Corresponding author. Email: poulin.francois@uqam.ca

depressive symptoms (Davila, Steinberg, Kachadourian, Cobb, & Fincham, 2004) and various behavioural problems including delinquency and alcohol use (Lonardo, Giordano, Longmore, & Manning, 2008). Previous studies have generally examined the associations between romantic relationships and alcohol use in a cursory way and have failed to consider various personal, contextual, and developmental factors which might have affected the associations observed. A literature review has suggested that at least three dimensions of romantic involvement might contribute to alcohol use in adolescence: (1) involvement with at least one romantic partner, (2) involvement with many romantic partners, and (3) involvement with older romantic partners. Each of these dimensions will be discussed in detail below.

Some developmental theories (e.g. Elder, 1985; Erikson, 1959) may shed light on why involvement with at least one romantic partner during adolescence appears to be associated with greater alcohol use. According to these theories, romantic relationships that take place in adolescence occur at the same time as identity formation. Thus, being involved in a romantic relationship at the age of 16 may interfere with the achievement of certain central developmental tasks. This could then foster the emergence of problem behaviours, including alcohol use. On an empirical level, several studies have confirmed that romantic involvement is positively associated with alcohol use and other problems, particularly among girls (Cui, Ueno, Fincham, Donnellan, & Wickrama, 2011; Haynie, 2003; Wong, 2005; Zimmer-Gembeck, Siebenbruner, & Collins, 2001).

Beyond involvement in a romantic relationship, it is plausible that the number of romantic partners may be positively associated with alcohol use. Indeed, adolescents who have several partners probably also experience a higher number of breakups and conflicts which could negatively affect their emotional health (e.g. cause depressive symptoms) (Davila et al., 2004; Zimmer-Gembeck et al., 2001) and lead to alcohol use for the purposes of self-medication (Borsari & Carey, 2006). This hypothesis has received some empirical support. It has been shown that having several romantic partners is associated with problematic drug use and problem behaviours (Neemann, Hubbard, & Masten, 1995; Zimmer-Gembeck et al., 2001) and even with an increase in these problem behaviours, including alcohol use (Davies & Windle, 2000).

A third dimension that may contribute to alcohol use is involvement with an older romantic partner (or partners). Indeed, older adolescents are likely to be at a later stage of experimentation with alcohol (Bachman et al., 2002). Involvement with older partners could, moreover, lead to contact with social groups and contexts in which alcohol use tends to be more prevalent (Stattin & Magnusson, 1990). On an empirical level, involvement with older romantic partners has been shown to be associated with delinquency, drug use, and problematic alcohol use, particularly among girls (Stattin, Kerr, Mahoney, Persson, & Magnusson, 2005; Young & d'Arcy, 2005).

In summary, involvement with at least one romantic partner, involvement with many romantic partners, and involvement with older romantic partners all constitute factors that may be associated with greater alcohol use during adolescence. However, the studies conducted to date on these issues have had several limitations. First, some of these studies used a total problem behaviour scale including items measuring alcohol and drug use as well as other forms of problem behaviours (e.g. Lonardo et al., 2008). Thus, there is a need to examine alcohol use in isolation in order to draw up a precise portrait that is representative of the risk factors linked with its use. Second, several studies have examined frequency of alcohol use on its own, without including a measure of frequency in the aim of becoming drunk (e.g. Aikins, Simon, & Prinstein, 2010; Miller et al., 2009). However, given that the prevalence of alcohol intoxication among adolescents is

significant (Santé Canada, 2011), this dimension should not be overlooked in evaluating alcohol use among this population. A combined measure of alcohol use including two complementary indicators of frequency would be more complete and representative of the phenomenon. Third, several of these studies (e.g. Cui et al., 2011; Zimmer-Gembeck et al., 2001) neglected to examine the impact of romantic involvement on alcohol use while controlling for some already known risk factors such as best friends' alcohol use and problem behaviours (Engels et al. 2007; Huang, White, Kosterman, Catalano, & Hawkins, 2001). To ensure that drinking habits are not simply a continuation of problem behaviours, this variable must also be taken into account. Fourth, the contribution of these three dimensions of romantic involvement to alcohol use has never been explored within the context of one particular study. Such an examination would better clarify the unique contribution made by each of these dimensions.

Furthermore, in all of the studies conducted to date on the associations between romantic involvement and alcohol use, adolescence has been considered as a homogeneous block without taking into account the changes that can occur over the course of this developmental period. Yet, the prevalence, meaning, and functions of romantic relationships evolve a great deal between middle and late¹ adolescence (Brown, 1999; Furman, Brown, & Feiring, 1999). According to Brown's model (1999), two major periods can be identified. During the first period (ages 11–16), romantic relationships tend to be short term and to focus on the need for self-development and peer approval. Moreover, these needs lead adolescents to attach greater importance to the context surrounding the romantic relationship. For example, involvement with many romantic partners and with older romantic partners could help increase their self-confidence and popularity among peers. During the second period (ages 17 and older), romantic relationships tend to be more stable, deeper, and more committed, with the emphasis being more on the romantic partner and the relationship itself. It is therefore possible that the impact of romantic involvement on alcohol use evolves, and thus may be different over the course of adolescence, and that the specific dimensions of each of these two periods come into play. In light of the above, it is plausible that the three dimensions of romantic involvement discussed here have an impact on alcohol use during middle adolescence (age 16) but do not have such an impact during late adolescence (age 20).

Lastly, it has been shown that the patterns of alcohol use (Johnston, O'Malley, Bachman, & Schulenberg, 2008) and the experience of romantic involvement (Feiring, 1996) are different for boys and girls. Girls tend to be more affected than boys by the harmful effects of romantic relationships (Stattin et al., 2005; Young & d'Arcy, 2005). It is thus plausible that the associations between alcohol use and the three dimensions of romantic involvement will be stronger among girls than among boys.

The present study

This study examined the associations between three dimensions of romantic involvement (i.e. romantic involvement status, number of romantic partners, and age difference with romantic partners) and alcohol use during middle adolescence (age 16) and late adolescence (age 20). It was expected that alcohol use would be higher among adolescents who had at least one romantic partner compared with those who did not. It was also expected that, among those who were involved in at least one romantic relationship, the greater the number of partners they had and the greater the extent to which their romantic partners were older than they were, the higher their alcohol use would be. According to Brown's model (1999) of the development of romantic relationships, it was expected that

these effects would be observed in middle adolescence only. Lastly, these effects were also expected to be stronger among girls than among boys. These hypotheses were tested while controlling for problem behaviours and best friend's alcohol use.

Methodology

Participants

The data used for this article were drawn from a longitudinal study on the social development of adolescents. This study began in 2001 among 390 grade 6 pupils (58% girls; mean age = 12.38, $SD = 0.42$ years) from eight French-speaking elementary schools in Quebec, Canada. Among the available population of pupils, 75% participated in the study. The sample was 90% European Canadian. At the first wave of measurement, 72% of participants lived with both biological parents. Most of them were from middle-class families, and the average family income was between \$45,000 and \$55,000. Mothers and fathers had completed an average of 13.10 ($SD = 2.68$) and 13.20 ($SD = 3.20$) years of schooling, respectively.

Since one of the aims of this article was to examine two developmental periods, i.e. middle and late adolescence, two waves of data were studied. The first wave of data was collected when the adolescents were age 16 (middle adolescence) ($N = 294$; 61% girls). Group comparison analyses were performed to test whether the adolescents who participated in this wave differed from those who did not, in terms of gender and problem behaviours. Chi-square tests revealed that the sample of adolescents who participated in the study included significantly more girls than the group of adolescents who dropped out of the study [$\chi^2(1, N = 390) = 4.92, p < 0.05$]. No difference was found for problem behaviours. The second wave of data was collected when the adolescents were age 20 ($N = 250$; 62% girls). Of the 294 participants, 44 (15%) dropped out of the study from wave 1 to wave 2. Analyses were performed to investigate whether the participants who remained in the study were different from those who dropped out. The two groups were similar on all the study's variables measured at age 16.

Procedure

Written informed consent was obtained from the parents at ages 12 and 16 and from the participants at age 20. At ages 12 and 16, the questionnaires were filled out at school under the supervision of research assistants. At age 20, the questionnaires were filled out at school, for those who were still students, or at home, for those who were not. Each year, the participants received compensation in the form of cash or a gift certificate.

Measures

Romantic involvement at age 16

Participants were first asked to write down the name of up to five romantic partners with whom they had been involved in the previous year. The number of romantic partners was limited to five in order to be consistent with procedures used by other researchers (e.g. Young & d'Arcy, 2005). For each romantic partner, the participants were asked to specify: (1) the partner's age at the start of the relationship, (2) their own age at the start of this relationship, and (3) how long the relationship lasted. In line with previous studies, only relationships that lasted at least 2 weeks were considered (Miller et al., 2009; Zimmer-Gembeck et al., 2001; Zimmer-Gembeck, Siebenbruner, & Collins, 2004). It is

important to note that this research was not designed to study stable relationships, but rather romantic involvement and experiences, such as the number of partners over a short period of time. Selecting relationships that lasted at least 2 weeks allowed us to study this phenomenon on a larger sample of adolescents and to take into account the more subtle variations of these experiences within a 1-year period. Three variables were calculated based on this instrument. The first variable was *romantic involvement status*. This variable included two levels: (1) no romantic involvement in the previous year or (2) involvement with at least one romantic partner in the previous year. The other two variables were calculated only for the participants who were identified as having had at least one romantic partner. The *number of romantic partners* with whom the participant had been involved over the previous year was calculated by adding up the number of romantic partners reported (up to a maximum of five). The *age difference with romantic partner(s)* was calculated in two steps. First, the age difference was calculated for each partner by subtracting the age of the romantic partner at the start of the relationship from the age of the participant at the start of the relationship. Second, in the case where a participant reported having had more than one romantic partner, the mean age difference with all the participant's romantic partners was calculated. A positive value indicated that the participant was older than his/her romantic partner(s), whereas a negative value indicated that the participant was younger than his/her romantic partner(s).

Romantic involvement at age 20

The instrument used was identical to that administered at age 16, with one exception. The participants were asked to write down their romantic partner's date of birth rather than his/her age. The romantic partner's age was converted into months. The three variables calculated at age 16 were also calculated at age 20.

Alcohol use at ages 16 and 20

Alcohol use was measured based on two indicators of frequency: frequency of use and frequency of alcohol use in the aim of becoming drunk. For frequency of use, the participants were asked to indicate how many alcoholic beverages they had consumed in the previous month, on a 14-point scale ranging from '0' to '41 or more'. This procedure is consistent with that used in other studies (e.g. Aikins et al., 2010; Zimmer-Gembeck et al., 2004). For frequency of alcohol use in the aim of becoming drunk, the participants were asked to report how many times they had consumed alcohol with the aim of becoming drunk in the previous month, on a 14-point scale ranging from '0' to '41 or more'. A mean score was calculated based on these two items ($r = 0.75$; $p < 0.01$ at age 16; $r = 0.54$; $p < 0.01$ at age 20).

Control variables

Best friend's alcohol use at ages 16 and 20

The participants were asked to indicate whether their best friend had consumed alcohol in the previous month (yes/no).

Problem behaviours at age 12

The problem behaviour score was created by combining measures from three sources: self-reports, teacher ratings, and peer nominations. For self-reports, a modified version of the

antisocial behaviour scale developed by Metzler, Biglan, Ary, and Li (1998) was used. The participants were asked to rate 16 items on a scale ranging from 1 (*never*) to 5 (*more than 10 times*). A mean score was calculated for the 16 items ($M = 1.43$; $SD = 0.53$; $\alpha = 0.83$). The teacher-rating measure was based on 10 items including the six items from Dodge and Coie's (1987) measure of reactive and proactive aggression and four items from the Social Behaviour Questionnaire developed by Tremblay et al. (1991). The teacher was asked to rate these items on a scale of 1 (*never*) to 5 (*almost always*). A mean score was calculated for the 10 items ($M = 1.62$; $SD = 0.75$; $\alpha = 0.95$). The peer nomination scale included five items from the Revised Class Play (Masten, Morrison, & Pellegrini, 1985). Examples of items included 'Gets into a lot of fights', and 'Hits and pushes others around.' The participants were given a list of the names of all the other participants in the classroom in alphabetical order. They were then asked to select the three peers who best corresponded to each behavioural description. The participants' scores for each item were obtained by adding up the number of peer nominations they had received. These scores were then converted into Z-scores within each classroom, and a total score was obtained by calculating the mean score for the five items ($M = -0.03$; $SD = 0.89$; $\alpha = 0.90$). The composite score for problem behaviours was obtained by standardising (Z-score) all scores and calculating a mean score based on these three measures (correlations were between 0.38 and 0.51; $\alpha = 0.69$).

Analyses

The first set of analyses aimed to determine whether alcohol use differed according to romantic involvement status and gender. To this end, 2 (status) \times 2 (gender) analyses of covariance including problem behaviours and best friend's alcohol use as covariates were performed at ages 16 and 20. The second set of analyses examined the contribution of number of romantic partners and age difference with romantic partner(s) to the participants' alcohol use, while controlling for problem behaviours and best friend's alcohol use and testing for the moderating effect of gender. Multiple hierarchical regressions were performed at ages 16 and 20. For each analysis, participants providing all the data needed were selected.

Results

Did alcohol use differ according to romantic involvement status?

The means and standard deviations of alcohol use according to romantic involvement status and gender, at ages 16 and 20, are presented in Table 1. Logarithmic transformations were applied to the variables that were highly skewed. At age 16, the analyses revealed that alcohol use differed significantly according to romantic involvement status [$F(1, 286) = 10.71$; $EMC = 0.09$; $p = 0.00$; $\eta^2 = 0.04$]. Participants who reported having at least one romantic partner in the previous year presented a significantly higher level of alcohol use than those who reported no romantic involvement. However, no gender effect [$F(1, 286) = 0.46$; $p = 0.50$] or interaction between gender and status [$F(1, 286) = 0.07$; $p = .80$] was found. At age 20, alcohol use did not differ significantly according to romantic involvement status [$F(1, 243) = 2.19$; $p = 0.15$] and the interaction between gender and status was not significant [$F(1, 243) = 0.74$; $p = 0.39$]. To test whether the impact of romantic involvement status on alcohol use differed at ages 16 and 20, the partial η^2 values associated with the variables of interest were converted into correlation coefficients and then statistically compared using Guilford's formula (1965).

Table 1. Means and standard deviations of alcohol use according to romantic involvement status and gender, at ages 16 and 20.

	No romantic involvement			Involvement with at least one partner		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Age 16						
Girls	33	0.17	0.22	145	0.47	0.35
Boys	32	0.26	0.30	82	0.51	0.40
Total	65	0.21	0.27	227	0.49	0.37
Age 20						
Girls	18	2.89	2.84	135	5.14	3.46
Boys	31	4.65	4.25	65	5.83	3.78
Total	49	4.00	3.85	200	5.37	3.58

There was no significant difference between the two developmental periods ($Z = -1.18$; $p = 0.24$).

Were number of romantic partners and age difference with romantic partner(s) associated with alcohol use?

At age 16, 227 of the 294 participants reported having had at least one romantic partner in the previous year. At age 20, 201 of the 250 participants reported having had at least one romantic partner in the previous year. Hierarchical regression analyses were performed for these participants.

Table 2 presents the correlations and the means and standard deviations for the variables of interest before the logarithmic transformations, in middle and late adolescence. An examination of the correlations reveals that at age 16, alcohol use was positively associated with problem behaviours, best friend's alcohol use, and number of romantic partners in the previous year. It was negatively associated with having older romantic partner(s). At age 20, alcohol use was positively associated with problem behaviours and best friend's alcohol use. However, it was not associated with number of romantic partners or age difference with romantic partner(s).

Hierarchical regression models were then calculated. The dependent variable was the participants' alcohol use. The independent variables were introduced into the model in three steps. In step 1, the control variables (problem behaviours and best friend's alcohol use) were introduced. In step 2, number of romantic partners, age difference, and gender were added to the model to examine the main potential effects of these variables. Lastly, the interactions between the two dimensions of romantic involvement and gender were introduced in step 3, following Baron and Kenny's (1986) procedure. This regression model was applied both at ages 16 and 20.

Table 3 presents the standardised betas (β), changes in the squared correlation coefficients (ΔR^2), and the final adjusted squared correlation coefficients (R^2) associated with the regression models in middle and late adolescence. At age 16, the R^2 value was found to be significant in step 1 [$R^2 = 0.34$; $F(2, 224) = 57.86$; $p < 0.01$]. The standardised betas showed that problem behaviours and best friend's alcohol use positively predicted alcohol use. The R^2 value was also found to be significant in step 2 [$R^2 = 0.38$; $F(5, 221) = 26.92$; $p < 0.01$], explaining an additional 4% of the variance. The standardised betas showed that alcohol use was positively predicted by the number of romantic partners and negatively predicted by age difference. The last step, including the interactions, did not significantly increase the R^2 value.

Table 2. Correlations, means and standard deviations for all the variables included in the regression model, at ages 16 and 20.

	Age 16 (<i>n</i> = 227)						Age 20 (<i>n</i> = 198)					
	1	2	3	4	5	6	1	2	3	4	5	6
1. Gender	-	0.42**	-0.04	-0.17*	0.46**	0.06	-	0.38**	-0.01	-0.09	0.49**	0.09
2. Problem behaviours	-	-	0.23**	0.10	0.03	0.40**	-	-	0.01	-0.04	0.09	0.18*
3. Best friend's alcohol use	-	-	-	0.11	-0.19**	0.51**	-	-	-	-0.02	0.02	0.22**
4. Number of partners	-	-	-	-	-0.17*	0.22**	-	-	-	-	-0.08	0.08
5. Age difference (in months)	-	-	-	-	-	-0.22**	-	-	-	-	-	-0.01
6. Alcohol use	-	-	-	-	-	-	-	-	-	-	-	-
<i>M</i>		0.03	0.41	2.84	-0.67	3.28		-0.08	0.79	1.35	-13.83	5.35
<i>SD</i>		0.80	0.49	1.52	1.31	3.48		0.70	0.41	0.72	32.75	3.59

Notes: The means and standard deviations presented here are those before the logarithmic transformations. **p* < 0.05; ***p* < 0.01.

Table 3. Multiple hierarchical regressions predicting alcohol use according to the number of partners and age difference with partner(s), at ages 16 and 20.

Variables	Age 16 (<i>n</i> = 227)		Age 20 (<i>n</i> = 198)	
	ΔR^2	β	ΔR^2	β
Step 1	0.34**		0.08**	
Problem behaviours		0.30**		0.17*
Best friend's alcohol use		0.44**		0.22*
Step 2	0.04**		0.01	
Gender		0.05		0.06
Number of partners		0.13*		0.10
Age difference		-0.16*		-0.05
Step 3	0.00		0.00	
No. of partners \times gender		0.01		-0.06
Age difference \times gender		0.01		-0.01
Final adjusted R^2	0.36**		0.06	

Note: * $p < 0.05$; ** $p < 0.01$.

At age 20, the R^2 value was found to be significant in step 1 [$R^2 = 0.08$; $F(2, 195) = 8.58$; $p < 0.01$]. The standardised betas showed that problem behaviours and best friend's alcohol use positively contributed to the prediction of alcohol use. However, neither step 2 [$R^2 = 0.09$; $F(5, 192) = 3.95$; $p = 0.46$] nor step 3 [$R^2 = 0.10$; $F(7, 190) = 2.87$; $p = 0.78$] was found to be significant.

A last analysis was performed to determine whether the contribution of number of romantic partners and age difference to the participants' alcohol use differed in middle and late adolescence. The R^2 change associated with step 2 in the age 16 model was compared with that associated with step 2 in the age 20 model (Steiger, 1980). The result indicated that there was no difference between the two regression models ($Z = -0.58$; $p = 0.56$).

Discussion

This study examined the associations between three dimensions of romantic involvement (romantic involvement status, number of romantic partners, and age difference with romantic partners) and alcohol use in middle and late adolescence. Based on Brown's model (1999) of the development of romantic relationships, it was expected that these three dimensions would contribute significantly to alcohol use in middle adolescence only. Overall, our study results tend to support this hypothesis. Contrary to what was expected, however, the effects observed did not differ according to participants' gender.

The results show that adolescents who are involved in at least one romantic relationship in middle adolescence consume more alcohol than those who are not. The developmental theories put forward by Erikson (1959, 1982) and Elder (1985) may shed some light on the meaning of these results. Erikson suggested that identity development is central to adolescence and that it is possible to experience true intimacy with another person only after one has developed one's own identity. Thus, romantic relationships experienced in middle adolescence take place during a period in which a young person's identity is not yet firmly anchored. Moreover, Elder argued that romantic involvement in adolescence is premature and can even hinder a young person's development. According to these theories, romantic involvement during adolescence could interfere with the achievement of certain developmental tasks, lead to psychological distress, and result in the development of various problem behaviours such as alcohol use (Davila et al., 2004;

Young & d'Arcy, 2005; Zimmer-Gembeck et al., 2001). Another hypothesis is that adolescents may be tempted to use alcohol in order to appear brave, daring, and mature so as to attract and impress potential romantic partners (Lucas & Lloyd, 1999). It is also plausible that adolescents have more difficulty resisting pressure from a romantic partner to use alcohol since rejection by the partner could affect their self-esteem and their status within the peer group, two central needs in middle adolescence (Brown, 1999). However, we cannot exclude the possibility that the differentiation between the adolescents who are involved in at least one romantic relationship and the ones who are single is in part driven by those with a high number of partners. The results also show that in middle adolescence, number of romantic partners is positively associated with alcohol use. Three possible explanations are proposed. First, romantic involvement with several partners necessarily entails a certain number of breakups. It has been shown that relationship dissolution may be associated with emotional distress and depression (e.g. Monroe, Rohde, Seeley, & Lewinsohn, 1999). Park, Sanchez, and Brynildsen (in press) have observed that individuals who base their self-esteem to a great extent on having a romantic partner report higher levels of emotional distress when they experience a breakup. This may be the case with younger adolescents, for whom romantic involvement plays a central role in the development of self-esteem (Brown, 1999). Alcohol is often used by adolescents to enhance positive emotional states (Stewart, Loughlin, & Rhyno, 2001) and cope with negative emotional states (Kairouz, Gliksman, Demers, & Adlaf, 2002). Adolescents may therefore use alcohol to reduce the emotional distress caused by the breakups they have experienced. Second, adolescents who have many romantic partners are also more often exposed to new intimate contexts. Alcohol could thus be used to lessen shyness, facilitate communication, and help them express intimate emotions (Traeen & Lewin, 1999). Morr & Mongeau (2004) have observed that when people meet in a context in which they have access to alcohol, they expect both partners to be more receptive and to confide more in one another. In some cases, romantic involvement with many partners could also be the result of a high level of alcohol use rather than the reverse, as alcohol could reduce inhibition on the part of both partners (Zimmer-Gembeck et al., 2001, 2004). Third, each romantic relationship provides a context where adult supervision is less present or absent and youth may be more prone to engage in a variety of delinquent behaviours, such as alcohol use (Wong, 2005), especially when their romantic partners are drinking themselves. In a future study, it would be interesting to include a measure of romantic partner's alcohol use to determine whether this explains this detrimental effect. The results also show that the greater the extent to which middle adolescents' romantic partners were older than they were, the higher their alcohol use. Epidemiological studies have shown that alcohol use gradually increases throughout adolescence and then tends to decline in young adulthood (Bachman et al., 2002). At age 16, adolescents who have older romantic partners are thus in contact with individuals who are likely to present higher levels of alcohol use. Due to behaviour contagion, these adolescents may be influenced by their romantic partner's alcohol use and adopt similar drinking habits (Aikins et al., 2010). Indeed, it appears that pressure from older peers has a greater influence on substance use initiation in early adolescence (Lucas & Lloyd, 1999). It is also plausible that adolescents whose romantic partners are older also have access to older social contexts and peer networks in which alcohol use is more prevalent. Given that the legal age to purchase alcohol in Quebec is 18, it is likely that adolescents whose romantic partners are older also have easier access to this substance. Since alcohol use begins to decline in young adulthood (Bachman et al., 2002), it is likely that older romantic partners of 20-year-old adolescents present drinking habits that are similar to theirs.

However, it is important to note that the results mentioned above are based on concurrent analysis. Consequently, the data indicate that romantic relationships can contribute to alcohol use, but does not speak to the causal order. Furthermore, the direction of these relationships cannot be clearly identified. It is therefore possible that it is the adolescents' alcohol use that has an impact on the dimensions of romantic relationships studied and not the reverse. Nevertheless, only the use of a longitudinal design would enable us to answer these questions. Moreover, although problem behaviours have been controlled in the present study, we cannot exclude the possibility that risky romantic experiences are actually driven by individual or environmental antecedents.

As predicted by our hypotheses, at age 20, romantic involvement status, number of romantic partners, and age difference with romantic partner(s) were not associated with alcohol use. Brown (1999) argued that romantic relationships in middle adolescence mainly help adolescents forge their identity, develop positive self-esteem, and gain status among their peers. Indeed, adolescents are very susceptible to peer influence (Gardner & Steinberg, 2005) and peers play an important role in the choice of romantic partner and the nature of romantic involvement (Brown, 1999). Among adolescents, being involved in a romantic relationship is often associated with greater popularity within the peer group, particularly when one's romantic partner presents deviant behaviour (Miller et al., 2009). By showing that they are worthy enough to attract partners, get involved with several partners, and get involved with older partners, adolescents hope to fulfil their need for approval, popularity, and recognition. These needs, however, gradually decrease as adolescence progresses, being replaced by deeper needs relating to the nature of romantic involvement and the development of stable and satisfying intimate relationships (Brown, 1999). It is plausible that variables related to the romantic relationship, its content, and the romantic partner themselves (e.g. partner's alcohol use, quality of the romantic relationship) are more at play in late adolescence. These results, however, should be qualified. In fact, although the analyses showed that the contribution of romantic involvement to alcohol use is significant in middle adolescence only, this contribution was not significantly greater at age 16 than at age 20.

Compared with previous studies, which found that the impact of romantic involvement on alcohol use was greater among girls (e.g. Stattin et al., 2005; Young & d'Arcy, 2005), no gender difference was found in our study. Our results do not necessarily contradict those of previous studies and may extend our understanding of this phenomenon. It is possible that the contribution of romantic involvement to alcohol use operates differently among boys than among girls. For example, girls may use alcohol to attract romantic partners (Lucas & Lloyd, 1999). Moreover, girls are influenced to a greater extent than boys by their romantic partner's alcohol use (e.g. Haynie, Giordano, Manning, & Longmore, 2005). Girls, therefore, appear to be more susceptible to the influence of romantic partners who use alcohol. As for boys, they are often the ones who lead girls to use drugs (Eaves, 2004; Moon, Hecht, Jackson, & Spellers, 1999). Therefore, it is possible that boys carry out this role through their romantic relationship and act as a point of access to alcohol for their romantic partner. Thus, while romantic involvement appears to contribute equally to alcohol use among boys and girls, different processes appear to be involved. This hypothesis is speculative, however, and needs to be tested.

Limitations and future studies

This study has some limitations. The first limitation is that most of the measures used were self-reported. However, studies have shown that self-report measures of alcohol use, while

not perfect, are reliable (O'Malley, Johnston, Bachman, & Schulenberg, 2000) and comparable to more complex measures, such as the Timeline Followback method (LaBrie, Pedersen, & Earleywine, 2005). Furthermore, no additional indication was given with regard to the definition of a romantic relationship. This may have blur boundaries between romantic and non-romantic involvement, especially for relationships of short duration, such as 2 weeks. In parallel, the reciprocity of romantic involvement (i.e. the fact that both romantic partners recognise involvement with each other) was not taken into account. A third limitation concerns the composition of the sample. Most of the participants were born in Canada, lived in the suburbs, and came from middle-class families. It would be inappropriate to generalise these results to adolescents living in other regions, from diverse ethnic groups or from different socio-economic backgrounds.

This study aimed to examine the contribution of romantic involvement to alcohol use among adolescents. This research provides a significant contribution to the current literature, offering interesting avenues for reflection in regard to the role of romantic relationships in alcohol use at two distinct developmental periods of adolescence. In future research, it would be relevant to study the influence of romantic involvement on alcohol use among adolescents with a longitudinal design, for example while examining its impact on the trajectories of alcohol use. The contribution of the romantic partner, his/her drinking habits, and the characteristics of the relationship (e.g. quality) to alcohol use among adolescents should also be examined.

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Note

1. There is no consensus in regard to the age where adolescence ends. According to the 'American Academy of Child and Adolescent Psychiatry' (2008) and the 'American Academy of Pediatrics' (2008), late adolescent would take place between 18 and 21 years of age. In agreement with other authors working on romantic relationships in adolescence, we will use the term 'late adolescence' to designate the 20-year-old period (Dunphy, 1963; Horne & Zimmer-Gembeck, 2005; Owens & Bergman, 2010; Wells, Horwood, & Fergusson, 2004).

Notes on contributors

Véronique Rouvés is a graduate student in the PhD psychology programme at Université du Québec à Montréal. Her research interest focuses on adolescents' adjustment problems.

François Poulin received his PhD in developmental psychology from Université Laval in Québec City. He conducted post-doctoral research at the Oregon Social Learning Center and the University of Oregon. He is currently a full professor in the psychology department at Université du Québec à Montréal. His research interests include peer relations and adjustment, linkages between peer and family contexts, participation in organised activities and the prevention of problem behaviours in childhood and adolescence.

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