The role of impulsivity, emotion regulation, parental monitoring and parental warmth on risky drunken behaviors among adolescents

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Abstract

Alcohol use is frequent among Nordic adolescents. Because of the negative consequences it may bring, that is worrying. Impulsivity and poor emotion regulation have been linked to both higher levels of alcohol use and risky behaviors. Also, parental monitoring and parental warmth have been associated with lower levels of alcohol drinking and risky behaviors. In the current study, we were interested to see if the parental variables could moderate the association between the individual variables and risky drunken behaviors among adolescents who get drunk. The sample was taken from the Seven School study. It consisted of 343 adolescents in 7th through 9th grades from seven different high schools in Örebro, Sweden. The current study had a cross-sectional design. We found that impulsivity and poor emotion regulation predicted engagement in risky drunken behaviors. Parental warmth, but not monitoring, significantly and negatively predicted engagement in risky drunken behaviors. Contrary to our hypothesis, no moderation effects by parental warmth and monitoring were found. The result is discussed considering prior research and their implications.

Key words: adolescence, impulsivity, emotion regulation, parental monitoring, parental warmth, risky behaviors, risky drunken behaviors.
Riskfyllda berusade beteenden hos ungdomar och betydelsen av impulsivitet, emotionsreglering, föräldraövervakning och föräldravärme

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Sammanfattning

The role of impulsivity, emotion regulation, parental monitoring and parental warmth on risky drunken behaviors among adolescents

Alcohol drinking is a prevalent problem among adolescents in the European countries. According to the latest report from the European School Survey Project on Alcohol and Other Drugs (2016), 67% of Swedish, Norwegian and Danish 15 and 16 year olds have used alcohol at least once in their life. Also, during the last 30 days, 36% have consumed alcohol and 14% have used alcohol to the level that they got drunk. These rates of alcohol use are alarming, given the negative effects alcohol have on adolescents. Therefore, we wanted to investigate whether there are individual factors that make some adolescents more vulnerable to certain kinds of negative consequences associated with alcohol use, and if parents can do anything to moderate that association.

Effects of alcohol consumption in adolescence

Alcohol consumption during adolescence is linked to several negative outcomes in various areas such as: neuropsychological, psychological, social and physical. Negative consequences for neuropsychological development consist of damage to the brain (De Bellis, Clark, Beers, Soloff, Boring, Hall, & Keshavan 2000; Crews, Braun, Hoplight, Switzer & Knapp 2000; Hiller-Sturmhöfel & Swartzwelder 2004; Squeglia, Jacobus & Tapert, 2009). The adolescent brain is more vulnerable than the adult brain to abuse of alcohol because it is still developing and shows more plasticity (Hiller-Sturmhöfel, & Swartzwelder, 2004; Squeglia et al., 2009). Thus, alcohol use in adolescence may have lasting effects. For example, differences between heavy and light drinkers have been reported in brain activation on a spatial working memory task (Tapert, Schweinsburg, Barlett, Brown, Brown & Meloy, 2004). Even though the task performance of these two groups was similar, heavy drinkers showed more activation in the parietal lobe and less activation in the occipital and cerebellar regions compared to light drinkers (Tapert, et al., 2004). The frontal areas of the brain and the
hippocampus seem to be especially vulnerable during adolescence (De Bellis et al., 2000; Hiller-Sturmhöfel, & Swartzwelder, 2004; Squeglia, et al., 2009). The hippocampus is involved in memory functioning, learning, and together with the prefrontal cortex, it controls impulsive behavior. Damage to hippocampus among adolescent heavy drinkers may result in difficulty in inhibiting impulsive behaviors, keeping attention focused on tasks, performance of spatial working memory, verbal and non-verbal memory (Hiller-Sturmhöfel, & Swartzwelder, 2004; Squeglia et al., 2009). Heavy drinking also affects the development of higher order cognitive abilities, which leads to difficulties in planning, thinking through the consequences of behavior, self control, goal setting and motivation (Crews et al., 2000). Due to these damages, adolescents who drink have been shown to use their brain differently compared to nondrinkers. Magnetic resonance imaging (M.R.I) scans have shown more activity in the parietal areas towards the back of the skull among young drinkers compared to their non-drinking peers during a spatial test (Tapert et al., 2004). Hippocampus and the frontal lobes have shown to be smaller among heavy drinking adolescents. However, it is not clear if the hippocampus and the frontal lobes were smaller before the alcohol use started (De Bells et al., 2000; Squeglia, et al., 2009). A study of female drinkers in their early 20’s showed low activation in frontal and parietal part of the brain compared to non drinkers (Tapert, Brown, Kindermann, Cheung, Frank, & Brown, 2001). These findings show that drinking affects the adolescent brain in several ways, and in turn, may result in abnormalities in brain functioning (Squeglia, et al., 2009). These effects can lead to consequences in several different domains of life, in the present and in the future.

One important negative outcome because of alcohol use in the psychological domain is the increased risk of future alcohol addiction (Crews et al., 2000; Donovan, 2004). Age when people start drinking is a significant predictor for current and later alcohol related problems. Alcohol initiation at age 14 or younger is a significant predictor of lifetime alcohol
problems and addiction (Calvert, Keenan Bucholz, & Steger-May, 2010). The risk for future alcohol addiction reduces by 14%, and misuse decreases by 8%, for every year the alcohol debut is postponed. Alcohol consumption also increases the risk of other drug use, like smoking cigarettes and marijuana (Donovan, 2004; Calvert et al., 2010).

Drinking in adolescence is also associated with specific problem behaviors that are linked to academic outcomes. For instance, alcohol consumption can have an impact on adolescents’ education which in turn can have serious consequences for their future. Alcohol consumption have been linked to school-related problems such as dropping out, academic failure and low motivation as well as impaired cognitive processing which affects learning negatively (Donovan, 2004; Dryfoos, 1990).

Adolescence drinking can also affect physical health and lead to serious life and death consequences. Alcohol consumption increases the risk of being involved in accidents, fights, motorcycle- and car accidents (Donovan, 2004). Motor vehicle accidents are one of the most common causes of death among 10-24 years old. It is reported that approximately 10.5% of all high school students have driven after drinking alcohol at some point (Palamar, Fenstermaker, Kambouklos, Ompad, Cleland & Weitzman, 2014). On the specific occasions that adolescents drink alcohol they are more likely to get involved in accidents, injure themselves or others, get into trouble with the police and damage their relationships (Bonomo, Coffey, Wolfe, Lynskey, Bowes & Patton, 2001). This is due to an increase in risky behaviors like unsafe driving, behaving in a way that one regrets afterwards and antisocial behavior that leads to fights or arguments. Also, the suicide risk is higher among drinkers compared to non-drinkers (Cohen, Mannarino, Zhitova & Capone, 2003).

Another physical consequence of adolescent drinking is risky sexual behaviors. Alcohol consumption is related to increased risk of early sex during adolescence, and to engage in risky sexual behavior (Bonomy et al., 2001; Calvert et al., 2010; Palamar et al.,
2014). The risky sexual behaviors could involve having several sexual partners, having sex without a condom, and having sex without consent (Bomono et al., 2001; Calvert et al., 2010). Early alcohol use is also linked to high risk of teenage pregnancy and sexually transmitted diseases (Donovan, 2004; Calvert et al., 2010). Risky sexual behaviors that are specifically elevated under the influence of alcohol are: sex without discussion about sexual diseases with the partner, sex without a condom, and sex with a casual/new partner, (Cooper, Peirce & Farmer Huselid, 1994; Kiene, Barta, Tennen & Armeli, 2009).

Alcohol consumption has shown to have serious effects on adolescent behavior in a number of ways. The brain changes due to regular consumption and adolescents show more risky behaviors if their alcohol debut is early, and when they are under the influence of alcohol. The increases in risky behaviors during while drunk can partly be explained from the loss of inhibitions that is the result of alcohol consumption (Palamar et al., 2014). However, not all adolescents who drink alcohol engage in risky behavior. Nevertheless, there is limited research on the factors that explain who gets involved in risky behaviors under the influence of alcohol. It is important to understand the risk factors that may explain who is likely to engage in risky behaviors under the influence of alcohol in creating effective prevention and treatment programs (Hair, Park, Ling & Moore, 2009).

**Aim**

In the current study, we examined whether impulsive traits and poor emotion regulation are associated with engagement in risky drunken behaviors among alcohol drinking adolescents (Hypothesis 1). We also examined whether parental monitoring and parental warmth could moderate the associations between impulsivity and poor emotion regulation and engagement in risky drunken behaviors (Hypothesis 2).

**Risky behavior and risky drunken behavior**
Risky behavior can be defined as practices and actions that have the potential to damage a person's health or general well-being (Kerpelman, McElwain, Pittman & Adler-Baeder 2016). Risky drunken behaviors are risky behaviors that occur under the influence of alcohol. Since alcohol use just by itself is linked with several negative consequences among adolescents (De Bellis, Clark, Beers, Soloff, Boring, Hall, & Keshavan 2000; Crews, Braun, Holpight, Switzer & Knapp 2000; Hiller-Sturmhölkel & Swartzwelder 2004; Squeglia, Jacobus & Tapert, 2009), risky drunken behaviors are therefore extra problematic for adolescent since it combines the negative consequences of alcohol use and risky behaviors. Risky drunken behaviors have not received much attention in prior studies and due to their negative consequences it is important to study to be able to create effective interventions.

**Impulsivity**

Impulsivity is a widely used term in both clinical practice and psychological research. However, there is no universal definition. Rather, there are several different approaches in defining impulsivity in psychological research. One well-known definition is the multidimensional conceptualization proposed by Whiteside & Lynam (2001). They define impulsivity being composed of urgency (i.e., impulsive behavior caused by strong impulses in order to ease negative affect, without thinking about the consequences), (lack of) premeditation (i.e., no reflection about the consequences of a certain act before engaging in it), (lack of) perseverance (i.e., not doing things one needs to do because of reluctance) and sensation seeking (i.e., engagement in exciting activities and being open to try new activities that may or may not be dangerous).

When it comes to impulsive adolescents engaging in risky drunken behaviors, one might, in light of the given definition of impulsivity, expect these individuals to engage in activities that gives them pleasure, or takes away a negative feeling, without thinking about the negative consequences the activity might bring. For example, driving drunk might seem
like a good idea for an impulsive adolescent, because they might think it is fun to drive fast. The risk of hurting themselves or someone else may never cross their mind. In general, adolescents show more impulsive behaviors compared to children and adults due to transformation from child to adult during these years (Spear, 2000). The heightened impulsivity helps the adolescent to become more independent because it makes adolescents try things they would probably not do otherwise which gives them new experiences. Thus, one can expect higher levels of impulsivity in a sample of adolescents than one would in a sample of children or adults. However, some individuals show impulsive behavior long before they enter adolescence (Block, Block & Keyes, 1988). This suggests that some adolescent individuals show impulsive behaviors not because of the general elevated levels of impulsivity in adolescence, but because of other features. Individuals that show impulsive behaviors in the preschool years may express behaviors such as irritability, having a hard time waiting for gratifications, rapid tempo, changing mood quickly and often among other things (Block, Block & Keyes, 1988). These kinds of behaviors predict risky behaviors in adolescence. In adolescent, impulsive behaviors often consist of risk behaviors, such as substance use. In a meta-analytical study, it was found that genes and non-shared environment (i.e., environmental influencers that are not the same for siblings living in the same household) were important influencers on impulsivity (Bezdjian, Baker & Tuvblad, 2011), suggesting that impulsivity is at least partly inherited. That is, impulsive adolescents who have been engaging in impulsive behaviors before adolescence do most likely have a predisposition towards impulsive behaviors.

Impulsivity has been found to be consistently linked to adolescent alcohol use (Fernie et al., 2013; McGue, Iacono, Legrand, Malone & Elkins, 2001; Stautz & Cooper, 2013). In an English study, impulsivity predicted alcohol use 6 months later in 12-15 year olds (Fernie et al., 2013). In another study, adolescents who had tried alcohol before or at age 14, were rated
as more impulsive by their teachers compared to adolescents who had not tried alcohol by age 14 (McGue, Iacono, Legrand, Malone & Elkins, 2001). In a meta-analytic review, it was found that impulsive traits among 10-19 year olds were linked to alcohol use and problematic drinking in 87 studies (Stautz & Cooper, 2013). The problematic drinking linked to impulsivity was for example fights (Cyders, Flory, Rainer & Smith, 2009), illegal acts (Cyders, Flory, Rainer & Smith, 2009; Curcio & George, 2011), unprotected and unplanned sex (Curcio & George, 2011) as well as drunk driving (Curcio & George, 2011; Moan, Norström & Storvoll, 2013). Overall, impulsivity has been shown to be a risk factor for adolescent drinking. Also, impulsive adolescents are more likely to engage in risky behavior when they drink alcohol than their non-impulsive peers. Thus, we examined impulsivity as a major risk factor for engagement in risky drunken behaviors among adolescents.

**Emotion regulation**

Poor emotion regulation skills are another risk factor for adolescents’ alcohol consumption and alcohol related behaviors. Emotion regulation refers to several internal and external processes (Thompson, 1994). First, it involves intensifying and retaining of the emotion as well as suppressing and inhibiting it. Second, the regulation also affects the timing of the emotion, how long the emotion lasts and what is incorporated in the emotion. Third, emotions are also regulated externally. An example could be a crying baby being held by its caretaker, or someone trying to make a friend laugh in a frustrated situation. At last, it is important to mention that emotion regulation is supposed to work in a functional way (Thompson, 1994). That is, the goal of the regulator(s) is not only to keep an individual in a positive mood. Rather, the emotions are regulated to adapt to a certain situation and it may be enhancing anger as well as suppressing joy. Since situations may change quickly, the goal of the regulator may also change quickly.

Poor emotion regulation on the other hand, is an inability to use regulators in an
adaptive way (Bunford, Evans & Wymbs, 2015). This leads to problematic situations where
the individual may get very angry, frustrated, sad, excited or exuberant. The feelings are
usually natural and adequate responses to the situation but since the feelings are not regulated
they get very strong and lead to problematic behavior, for example screaming or crying very
loudly. Poor emotion regulation is a predictor of psychopathology in adolescence
(McLaughlin, Hatzenbuehler, Mennin & Nolen-Hoeksema, 2011), and it has been linked to
several psychiatric disorders (Stringaris, Rowe & Maughan, 2012). Poor emotion regulation
has been linked with exposure to violence in childhood and adolescence (Buckholdt, Weiss,
Young & Gratz, 2015), suggesting that the environment plays a role in developing poor
emotion regulation.

Poor emotion regulation is linked to several problem behaviors during adolescence
and young adulthood, like alcohol use (Cooper, Wood, Orcutt & Albino, 2003; Cooper,
Russell & George, 1988; Hessler & Katz, 2010; Weiss et al., 2015), drug and cigarette use
(Cooper et al., 2003; Hessler & Katz, 2010) including hard drugs use (Hessler & Katz, 2010),
alcohol and drug abuse (Winberg & Klonsky, 2009). Also, risky sexual behaviors (Cooper et
al., 2003; Hessler & Katz, 2010; Weiss et al., 2015), drunk driving (Weiss et al., 2015),
impulsive spending, truancy (Cooper et al., 2003), property and violent crimes, and
educational problems are associated with poor emotion regulation among adolescents and
young adults.

High impulsivity and poor emotional regulation are both linked to risky behaviors
during adolescence. These factors may be additional risks for adolescents who drink alcohol
to engage in risky drunken behavior. Above and beyond the negative influence of alcohol on
decision-making processes, impulsivity and poor emotion regulation may further increase the
risk of adolescents’ engagement in problematic behaviors when they are under the influence
of alcohol. In the current study, we examined whether impulsivity and poor emotion
regulation are associated with adolescents’ engagement in risky behaviors under the influence of alcohol. We also examined whether certain parenting behaviors, such as parental monitoring and warmth, may protect adolescents from engaging in risky behaviors when they are drunk.

**Parental monitoring**

Certain aspects of adolescents' developmental environment may play a protective role, especially for those who display individual level risk factors such as impulsivity and poor emotion regulation. Among these protective factors, parents' behaviors towards and relations to their adolescent child have primary importance. Monitoring seems to be one of the important potential protective factors.

Monitoring has been defined in several ways in research (Stattin & Kerr, 2000), for example as several parenting behaviors that correlate with each other involving attention to and tracking the adolescent. The parent are informed about how their adolescents are doing in school, how they spend their free time, who their peers are and where the adolescents are when they are not home (Dishion & McMahon 1998).

Monitoring can also be defined as the knowledge parents have about their children's activities in and outside home. Parents can acquire this knowledge in several ways for example by initiating conversations with the child and people in their surroundings like peers and teachers. The child can also choose to disclose information to their parent(s) which means that the child spontaneously share information (Stattin & Kerr, 2000). The latter definition of monitoring will be used in this study, and the differences between the definitions is that the first focus on direct supervision and the latter on the quality of the parent-child relationship and the child's willingness to confide to their parent (Stattin & Kerr, 2000). The distinctions in the different definition are important because most attempts to measure monitoring are really an assessment of the parents’ knowledge of the child which parents
have been assumed to acquire through tracking and surveying their child. But studies show that parents gain their knowledge through a good relationship with their child where the child confide to the parent, rather than the parent tracking the child (Kerr & Stattin, 2000).

Monitoring develops in a context of a trusting parent-child relationship where the child is willing to confide in the parent (Kerr & Stattin 2000). Communication is an important part of monitoring and good monitors have made an effort to establish a good communication climate with their child (Kerr & Stattin 2000). A positive relationship both enhances the parents’ motivation to monitor their child (Dishion & McMahon, 1998) and makes it easier for the child to confide to their parents (Kerr & Stattin, 2000). It also enhances the parents’ motivation to use functional behavior management practices (Dishion & McMahon, 1998).

Monitoring have been shown to be related with several adjustment and developmental outcomes of adolescents; it correlates negatively with antisocial behavior, delinquency, deviance, poor external adjustment and having undesirable friends among adolescents (Donaldson, Handren & Crano, 2016; Hemovich, Lac & Crano, 2011; Lac & Crano, 2009; Kerr & Stattin, 2000). Several studies have linked substance use, alcohol consumption, smoking and an early alcohol debut among adolescents to low parental monitoring (Dick, Purcell, Pulkkinen, Viken, Kaprio & Rose, 2007; Dishion & McMahon, 1998; Ryan, Jorm, Lubman, 2010; Steinberg, Fletcher & Darling 1994). But there are some mixed results, some studies have reported a positive link between monitoring and higher substance use (Fletcher, Steinberg & Williams-Wheeler, 2004). However this effect were not seen over time in longitudinal studies and can possibly be explained by that parents are more likely to monitor adolescents who are using illicit substances; and that this monitoring will not decrease or increase substance use in the future (Fletcher, et al., 2004). Thus, majority of the studies on monitoring report a negative association between monitoring and adolescents substance use (Fletcher, et al., 2004).
There are several possible mechanisms that can help explain the positive effects of parental monitoring; it promotes the development of autonomy and improve intrinsic motivation (behavior that is driven by internal reward, engaging in activities due to the enjoyment associated with them, which creates positive feelings within the individual) (Joussemet, Landry, & Koestner, 2008). Adolescents who are monitored by their parents also receive effective socialization from their family (Steinberg et al., 1994). Because monitored adolescent are less likely to use drugs and alcohol they also are less likely to put themselves in situations with drug-using peers (Steinberg et al., 1994). Monitoring also seems to mediate through adolescents’ social and intrapersonal beliefs and attitudes. When monitoring is low, adolescents seem to turn to their peers for behavior models and information which is linked to substance use (Hemovich et al., 2011).

Overall, parental monitoring is associated with lower levels of risky and problematic behaviors among adolescents. In the current study, we examined whether parental monitoring could protect adolescents with impulsivity and poor emotion regulation from engaging in risky behaviors under the influence of alcohol.

**Parental Warmth**

Parental warmth could be another moderator of the risk factors for engagement in risky behaviors under the influence of alcohol. It can be defined as the extent to which children feel that their parents care for and love them, and if they feel like their parents are involved and responsive to their needs (Lowe and Dotterer, 2013). Children disclose more information to warm and accepting parents compared to parents that show less warmth and acceptance (Fletcher el al., 2004; Kliewer, Borre, Wright, Jäggi, Drazdowski & Zaharakis, 2016). This stresses the importance of a positive parent child relationship if parents want to be able to successfully monitor their children (Fletcher el al., 2004).
Warm parenting is linked to healthy psychological adjustment and development among adolescents (Gray & Steinberg, 1999). Adolescents perceiving their parents as warm are helped in the process of forming an identity, they show better school performance, higher social competence, higher emotional understanding, more prosocial behavior, higher feelings of well being, increased feelings of security and decreased stress reactivity (Eisenberg, Valiente, Morris, Fabes, Cumberland, Reiser, & Losoya, 2003; Gray & Steinberg, 1999; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Power, 2004). Adolescent are also less likely to develop problems with depression and anxiety, and to engage in problematic behavior like drug use, alcohol use and school misconduct (Fletcher et al., 2004 Gray & Steinberg, 1999).

There are several possible mechanisms that can help explain the positive effects of parental warmth. Warm parents provide models that help adolescents develop emotion- and self regulation skills in several ways: by promoting coping skills, assisting in problem solving, providing support and by giving advice (Eisenberg et al., 2003; Power, 2004).

There are several negative effects to be seen among adolescents with parents low in warmth. Low warmth are linked to poor emotional regulation, poor social competence and externalizing behavior like aggression and delinquency among adolescents (Eisenberg, Gershoff, Fabes, Shepard, Cumberland, Losoya, & Murphy, 2001; Eisenberg, Liew, & Pidada, 2001). Adolescent binge drinking is more common among adolescent whose parents show low warmth and low monitoring (Donaldson, Handren & Crano, 2016). Adolescents whose parents show low levels of parental warmth and support in combination with a high level of surveillance (i.e., controlling parents) show negative outcomes like substance use (Donaldson, Nakawaki & Crano, 2015). Studies have shown that controlling parents in combination with low warmth can suppress intrinsic motivation and activate no optimal forms of internalization among adolescents. Internalization is part of the socialization process...
parents provide to their children when assisting them to regulate themselves. It helps the child to integrate this in their own behavior and learn to regulate themselves. When internalization is optimal it is linked with a better psychosocial adjustment, well-being and learning (Joussemiet et al., 2008). Thus, adolescents who has not internalized in an optimal way, may have a hard time to regulate themselves.

It is important to see what strategies parents use to monitor their child and also how warm their child perceives them. Parental warmth helps adolescents develop emotion regulation skills which could be one of the moderating effects that explain why it has positive effects on adolescents drinking. Overall, parental warmth is associated with low levels of risky and problematic behaviors among adolescents. In the current study, we examined whether parental warmth and parental monitoring could protect adolescents with impulsivity and poor emotion control from engaging in risky behaviors under the influence of alcohol.

**Why are these variables important to study?**

There are several factors that could be risk- and protective factors for adolescent engagement in risky drunken behaviors. The focus in this study will be on impulsivity, poor emotion regulation, monitoring and parental warmth. There are several reasons why these factors are important. Impulsivity is a rather stabile trait, however it have been seen to be heightened in adolescent (Block, Block & Keyes, 1988). Since (high) impulsivity are linked with risky behaviors like substance use (Fernie et al., 2013; McGue et al., 2001; Stautz & Cooper, 2013), it has the potential to affect adolescent behaviors a lot during this time. Also, since alcohol use are linked with a loss of inhibitions (Palamar et al., 2014), impulsive traits are probably extra strong when adolescent are drunk, which probably makes them more likely to act out an impulse without thinking about consequences.

Poor emotional regulations have been linked with alcohol use and other risky behaviors (Cooper, Russell & George, 1988; Cooper, Wood, Orcutt & Albino 2003; Hessler
& Katz, 2010; Weiss et al., 2015) and adolescents with poor emotional regulation have been hypothesized to use alcohol as a coping mechanism. When affected by alcohol, they probably have a much harder time regulating their emotions and have easier to react when being provoked.

Since both impulsivity and poor emotional regulation have been linked with alcohol consumption and risky behaviors in general (Cooper et al., 1988; Cooper et al., 2003; Fernie et al., 2013; Hessler & Katz, 2010; McGue et al., 2001; Stautz & Cooper, 2013 Weiss et al., 2015) we believe that they also would be linked to risky drunken behaviors because alcohol is linked to loss of inhibitions (Palamar et al., 2014). Adolescents that have problems with regulation and controlling impulses normally would probably have a much harder time when they are drunk and therefore risk doing things in heat of the moment that they later regret.

Parental monitoring has been seen to prevent delinquency and substance use among adolescent together with other factors (Dishion & McMahon, 1998; Ryan et al., 2010; Keijsers, 2016; Steinberg, et al., 1994). But why is parental monitoring relevant to study as a preventive factor? When parents know what is happening in their children’s life they can take action. They can support the child and help them make more responsible decisions in the future (Keijsers, 2016). So if adolescent are engaging in risky drunken behavior and their parents get to know about it they can help the adolescent to avoid similar situations in the future. That would potentially decrease risky drunken behaviors and support adolescents that show extra vulnerability by being impulsive with poor emotional regulation skills.

Parental warmth is also linked with a healthy development and the development of several positive skills among adolescent (Eisenberg et al., 2003; Power, 2004). By being warm parents facilitate a good relationship with their child which facilitate monitoring (Fletcher el al., 2004; Kliwer et al., 2016) and they also help adolescents in the development of emotional regulation skills (Eisenberg et al., 2003; Power, 2004). We therefore believe that
parental warmth would moderate the effect of poor emotional regulation on risky drunken behaviors. Since low warmth are linked with externalizing behavior (Eisenberg et al., 2001; Eisenberg et al., 2001) perhaps higher levels of warmth would make adolescents less likely to acting out and to do things that they would regret later when they are drunk. Therefore, we believe that parental warmth could moderate the effect of impulsivity on risky drunken behaviors.

**The current study**

The literature provides substantial evidence suggesting that impulsivity, (poor) emotion regulation, (low) parental monitoring and (low) parental warmth are linked to adolescents' engagement in problematic and risky behaviors. Impulsivity and (poor) emotion regulation increase the likelihood of risky behavior under influence of alcohol. On the other hand, parental monitoring and parental warmth are related to positive adjustment outcomes such as low levels of problem behaviors, low alcohol use, and fewer engagements in risky behaviors. In this study we examined whether impulsive traits and poor emotion regulation are associated with engagement in risky drunken behaviors among alcohol drinking adolescents. We also examined whether parental monitoring and parental warmth could moderate the associations between impulsivity and poor emotion regulation and engagement in risky drunken behaviors among adolescents. We hypothesized that impulsivity and poor emotional regulation would predict risky drunken behaviors and that parental monitoring and parental warmth would moderate the association of impulsivity and poor emotion regulation to risky behaviors under the influence of alcohol among adolescents. Specifically, we expect that adolescents who are impulsive and have poor emotion regulation skills would be less likely to engage in risky behaviors when drunk if their parents use high levels of monitoring strategies and are perceived as warm. On the other hand, if their parents use low levels of monitoring and warmth, then they would engage in higher levels of risky behaviors.
Similarly, we argue that adolescents who are impulsive and have poor emotion regulation skills would be less likely to engage in risky behaviors when they maintain warm relationships with their parents. In sum, both parental monitoring and parental warmth would protect impulsive and poor emotion regulators from engaging in problematic behaviors when intoxicated with alcohol.

**Method**

**Participants**

The data in the current study is based on a longitudinal study from the “Seven Schools” datasets, where adolescents’ experiences in and out of school were examined during the years of 2008 through 2012, as well as their relationships with parents, peers and teachers. The original sample consisted of students in seven junior high-schools in a middle-sized town in Sweden. Students in 7th through 9th grades participated in the study over three years, which allowed following up 7th grade students over three years and 8th grade students over two years. The schools were located in different socioeconomic neighborhoods and the ethnic composition was taken into account when schools were selected. The analytic sample for the current study was defined as all adolescents who already started drinking alcohol when the second wave of the data was collected. The target sample in wave two consisted of N = 1485 adolescents, and the analytic sample was composed of N = 343 adolescents who at least once drunk alcohol by the time data was collected (mean age M = 14.75, SD = .91, range 13-17, 49.3% girls). Seventy-six percent were from Sweden and 18, 7% were from immigrant families. Almost half of the adolescents were from divorced families (47.5%). We choose a cross-sectional design due to differences regarding how the data was collected in the first year of the study. Some students participated in the spring and some in the autumn which could have affected how they answered the questionnaire. By choosing a cross-sectional
design we also got a greater number of participants than with a longitudinal design, since the 9th graders would be graduating and were not participating in the later data collections.

**Procedure**

All students were asked to participate. Parent’s permission was requested through a passive consent procedure where parents could decline request for participation by sending a letter using a prepaid envelope. In classrooms, participants were informed about the aim of the study, the time required to fill in the questionnaire and that all answers would be confidential before the data collection session started. Participation was voluntary and students were told they could leave the study if and whenever they wanted to. Data were collected during regular school hours by trained research assistants. The study was approved by a Regional Ethics Review Board in Sweden.

**Measures**

**Drunkenness.** Drunkenness was measured with the following question: “Have you had so much beer, liquor, or wine that you got drunk - during the past year?” The item was answered with one of five alternatives where 1 represented “No, it has not happened” and 5 represented “More than 10 times”. Higher scores indicated more frequent drunkenness.

**Risky drunken behaviors.** Risky behaviors under the influence of alcohol were measured with seven questions, including: “Has any of the following happened when you’ve been drunk,” “You ended up in a fight or row”, “Your personality changed – you become a whole different person than you usually are” and “You ended up in sexual situations”. The items were answered in one of the following three ways: 1 “No, it has not happened,” 2 “Once,” or 3 “Several times.” Responses to the seven items were averaged to create a scale score. Higher scores indicated more engagement in risky behaviors. Cronbach’s alpha was .89.
**Impulsive personality traits.** Impulsivity was measured using the impulsivity-irresponsibility subscale of the Youth Psychopathic Traits (YPI). The YPI was developed to assess psychopathic traits among adolescents, who were 12 years or older, in a community sample. The YPI consists of 44 items covering three various dimensions: a grandiose-manipulative dimension, a callous-unemotional dimension, and an impulsive-irresponsible dimension. The impulsivity-irresponsibility subscale consists of three dimensions; thrill seeking, irresponsibility and impulsivity. Thrill seeking were measured with five items, like “I like doing things just for the thrill of it”, “I get bored quickly when things stay the same”, and “I like to be where exciting things happen”. Irresponsibility were measured with three items “I have often been late for work or school”, “I've borrowed something and then lost it on several occasions” and “I often don’t have my school - or work assignments done on time”. Impulsivity were measured with four questions, including: “I often speak first and think later”, “If I get the chance to do something fun I'll do it, regardless of what I'm doing at the time”, and “I'd rather spend my money as soon as I get it then save it”.

The participants responded to these questions on a 4-point scale, where 1 was equal to “don’t agree at all” and 4 was equal to “agree completely”. Higher scores indicated more impulsivity. In the current study, the inter-item reliability was .80.

**Emotion regulation.** Students were asked to think about "What happens when [they] get REALLY ANGRY with someone?" and then, rated a number of statements to indicate their probable response. The items were for example “Feel I have no control over myself”, “Do things I regret afterwards”, and “Act aggressively, even though I don't want to”. The participants rated these statements on a 4-point scale, where 1 was equal to “don’t agree at all” and 4 was equal to “agree completely”. Adolescents’ responses to the seven items were averaged to create a scale score. Higher scores indicated poor emotional regulation. Cronbach’s alpha was .75.
Parental monitoring. Parental monitoring was assessed with six items, like: “Do your parents usually talk with your friends if they come to your home? (Ask what they do or what they think and feel about different things)?”, “During the past month, how often have your parents started a conversation with you about your free time?”, and “How often do your parents initiate a conversation about things that happened during a normal day at school?” The response format contained a 5-point scale where lower values indicate higher frequency of these behaviors and higher scores indicate lower frequencies. The responses were reverse coded so that higher values indicate higher levels of parental monitoring. Adolescent’s responses to the seven items were averaged to create a scale score. Cronbach’s alpha for this measure was .77.

Parental warmth. Parental warmth was rated by six items, including: “Takes up the positive and seldom the negative things that you do”, “Always shows his/her love for you without a reason – almost independent of what you do”, and “Shows with words and gestures that he/she likes you”. The response format ranged from one to three: 1 = never, 2 = sometimes, and 3 = most often. Adolescent’s responses to the seven items were averaged to create a scale score. Higher scores indicated high parental warmth. Cronbach’s alpha was .87.

Statistical analyses. Stepwise regression analyses were performed to examine if individual variables (i.e., impulsivity and poor emotional regulation) and parental variables (i.e., parental monitoring and parental warmth) could predict engagement in risky drunken behaviors, and if parental variables could moderate the relationship between individual variables and risky drunken behaviors.
Results

Engagement in risky behaviors

First, we examined the frequency of engagement in various types of risky behaviors under the influence of alcohol (see Table 1). Adolescents that stated they had engaged in risky behaviors several times under the influence of alcohol varied between 9.6 to 30% depending on the type of the behavior. The most common risky behavior that the adolescents stated had happened several times was “not remembering what he/she said or did the day after” (30%). On the other hand, 26.4% of the adolescents indicated that they experienced this situation only once and 43.6% of them never experienced such things. The least common experience was “destroying things such as windows, street lamps, phone booths, furniture, benches etc” (9.6%). This had happened once among 18.3% of the participants and 72.1% reported it had never happened.

Table 1. Frequency of involvement in risky behaviors under the influence of alcohol. The stem question was “Has any of the following happened when you've been drunk?”

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Once</th>
<th>Several times</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. You don't remember what you said or did the day after</td>
<td>43.6%</td>
<td>26.4%</td>
<td>30.0%</td>
</tr>
<tr>
<td>2. You ended up in a fight or row</td>
<td>64.4%</td>
<td>19.6%</td>
<td>16.0%</td>
</tr>
<tr>
<td>3. You said stupid things to others that you were ashamed of afterwards</td>
<td>64.2%</td>
<td>21.8%</td>
<td>14.0%</td>
</tr>
<tr>
<td>4. Your personality changed – you become a whole different person than you usually are</td>
<td>52.3%</td>
<td>23.9%</td>
<td>23.9%</td>
</tr>
<tr>
<td>5. You ended up in sexual situations</td>
<td>64.8%</td>
<td>20.3%</td>
<td>14.9%</td>
</tr>
<tr>
<td>6. You destroyed things such as windows, street lamps, phone booths, furniture, benches etc.</td>
<td>72.1%</td>
<td>18.3%</td>
<td>9.6%</td>
</tr>
<tr>
<td>7. You did other things you regretted the day after</td>
<td>49.2%</td>
<td>29.7%</td>
<td>21.0%</td>
</tr>
</tbody>
</table>
Bivariate associations among the study variables

Second, we inspected the bivariate correlations to inspect how the study variables were associated to each other (see Table 2). There was a strong positive correlation between risky drunken behaviors and frequency of drunkenness $r (336) = .53, p < .001$. That is, higher levels of alcohol consumption were associated with frequent risky drunken behaviors. Next, there was a moderate positive correlation between risky drunken behaviors and impulsivity, $r (335) = .31, p < .001$, and a small positive correlation between risky drunken behaviors and poor emotional regulation $r (338) = .19, p < .001$. Specifically, adolescents who had higher scores on the impulsivity and poor emotion control measure were more likely to engage in risky drunken behaviors. Risky drunken behaviors had also a negative correlation with parental warmth, $r (321) = -.19, p < .001$, and parental monitoring, $r (324) = -.13, p < .05$. That is, both high levels of parental warmth and monitoring were associated with lower levels of risky drunken behaviors. Also, parental monitoring had a small negative correlation with poor emotional regulation, $r (324) = -.12, p < .05$, but not with impulsivity. Finally, there were no significant correlations between risky drunken behaviors and the demographic variables, (i.e., age, immigrant status, gender, perceived family socioeconomic status and parent's’ marital status).
Table 2. Correlations among the study variables, means, standard deviations, minimum, maximum values, and inter-item reliabilities.

<table>
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<tr>
<th>Variables</th>
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<td>.12*</td>
<td>.25***</td>
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<td>.05*</td>
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<td>11. Parental warmth</td>
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<td>- .14*</td>
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<td>- .19</td>
<td>- .10</td>
<td>- .08</td>
<td>.29***</td>
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</table>

Mean: 14.75, .51, .20, .48, 2.72, 1.60, 3.31, 2.23, 2.64, 3.20, 2.16
Standard deviation: .91, .50, .40, .50, .55, .55, 1.07, .76, .49, .83, .55
Minimum: 13.00, .00, .00, .00, 1.00, 1.00, 2.00, 1.00, 1.15, 1.00, 1.00
Maximum: 17.00, 1.00, 1.00, 1.00, 4.00, 3.00, 5.00, 4.00, 4.00, 5.00, 3.00
Inter-item reliabilities: -.71, .89, -, .80, .80, .77, .87

*p<.05, **p<.01, ***p<.001
N = 343
Do impulsivity and poor emotion regulation predict risky drinking behaviors?

To test whether individual level risk factors (i.e., impulsivity and poor emotion regulation) predict engagement in risky drunken behaviors, we entered impulsivity and poor emotion regulation variables in the second step of the regression model, after the control variables (see Table 3). The overall model explained 40% of the variation in engagement in risky drunken behaviors. Impulsivity and poor emotion regulation together explained 11% of the variation in risky drunken behaviors, $F(2, 275) = 25.84, p < .001$. Both impulsivity ($\beta = .22, p < .001$) and poor emotion regulation ($\beta = .22, p < .001$) positively predicted engagement in risky drunken behaviors. Specifically, the more adolescents displayed impulsive traits and poor emotion regulation skills, the more they engaged in risky drunken behaviors.

Do parental monitoring and warmth predict less engagement in risky drunken behaviors?

To test whether parenting behaviors (i.e., parental warmth and monitoring) predicted less engagement in risky drunken behaviors, we entered parental warmth and monitoring variables in the third step of the regression model, after the control and individual level risk factors. The overall model explained 42% of the variation in engagement for risky drunken behaviors. Parental warmth and monitoring together explained 2% of the variations in risky drunken behaviors, $F(2,273) = 5.75, p < .001$. Parental warmth ($\beta = -.12, p < .05$) predicted less engagement in risky drunken behaviors, but there was no significant effect of monitoring. Specifically, adolescents with parents high in warmth tended to engage less in risky drunken behaviors compared to adolescents with parents low in warmth.
Do parental monitoring and warmth moderate the associations between individual risks and risky drunken behaviors?

To test whether parenting behaviors (i.e., parental warmth and monitoring) moderate the associations between individual risk factors (i.e., impulsivity and poor emotion regulation) and engagement in risky drinking behaviors, we entered the interactions terms in the fourth step of the regression model, after the control variables, individual risk variables and parenting variables. The overall model explained 43% of the variation in engagement in risky drunken behaviors. The interaction term together explained 1% of the variations in risky drunken behaviors, $F(4,269) = 1.32, p = .263$, however the interaction was not statistically significant. Consistently, none of the individual interaction terms were statistically significant suggesting that the proposed protective factors (i.e., parental monitoring and warmth) did not moderate the associations of impulsivity and poor emotion regulation with risky drunken behaviors.
### Table 3. Results from the regression model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
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</thead>
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<tr>
<td>Frequency of drunkenness</td>
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<td>0.49***</td>
<td>.485***</td>
<td>.497***</td>
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<td>.06</td>
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<td>.03</td>
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<td>Immigrant status</td>
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<td>.09</td>
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<tr>
<td>Marital status</td>
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<td>-0.03</td>
</tr>
<tr>
<td>Perceived family SES</td>
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<td>-0.00</td>
<td>.19</td>
<td>.01</td>
</tr>
</tbody>
</table>

\[ R^2 = .29*** \]

**Step 2**

<table>
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<th>Variables</th>
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<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor emotion regulation</td>
<td>0.22***</td>
<td>.21***</td>
<td>.20***</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0.22***</td>
<td>.21***</td>
<td>.19***</td>
</tr>
</tbody>
</table>

\[ R^2_{change} = .11*** \]

**Step 3**

<table>
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<tr>
<th>Variables</th>
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<td>Parental monitoring</td>
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<tr>
<td>Parental warmth</td>
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<td>-.108*</td>
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</table>

\[ R^2_{change} = .02** \]

**Step 4**

<table>
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</thead>
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<tr>
<td>Emotion regulation*Monitoring</td>
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</tr>
<tr>
<td>Emotion regulation*Warmth</td>
<td>-.030</td>
</tr>
<tr>
<td>Impulsivity*Monitoring</td>
<td>-.064</td>
</tr>
<tr>
<td>Impulsivity*Warmth</td>
<td>-.057</td>
</tr>
</tbody>
</table>

\[ R^2_{change} = .01 \]

\[ \text{Overall } R^2 = .29*** \quad .40*** \quad .42*** \quad .43*** \]

*p<.05, **p<.01, ***p<.001

F-tests for Model R^2 and R^2 change:
- Step 1: Model R^2, F(6, 277) = 18.44, p < .001; R^2 change, F(2, 275) = 25.84, p < .001;
- Step 2: Model R^2, F(8, 275) = 22.77, p < .001; R^2 change, F(2, 275) = 5.75, p < .01;
- Step 3: Model R^2, F(10, 273) = 19.99, p < .001; R^2 change, F(2, 273) = 1.32, p = .263;
- Step 4: Model R^2, F(14, 269) = 14.72, p < .001; R^2 change, F(4, 269) = 1.32, p = .263
Discussion

The aim of the current study was to investigate if impulsivity and poor emotion regulation were associated with engagement in risky drunken behaviors among adolescents (Hypothesis 1) and whether parents’ behaviors (i.e., monitoring and warmth) could moderate the association between individual level risk factors (i.e., impulsivity and poor emotion regulation) and risky behaviors under the influence of alcohol among adolescents (Hypothesis 2). The first hypothesis was supported but not the second hypothesis.

The role of impulsivity and poor emotion regulation

Supporting our hypothesis, impulsivity positively predicted risky drunken behaviors. That is, the more impulsive the adolescents were, the more they engaged in risky drunken behaviors. This finding is consistent with previous research, where impulsivity has been consistently linked to both alcohol use (Fernie et al., 2013; McGue, Iacono, Legrand, Malone & Elkins, 2001; Stautz & Cooper, 2013) and risky behaviors while drinking (Stautz & Cooper, 2013; Cyders, Flory, Rainer & Smith, 2009; Curcio & George, 2011; Moan, Norström & Storvoll, 2013). Impulsive individuals tend to engage in risky behaviors overall (Cheng & Lee, 2012; Braddock, Dillard, Voigt, Stephenson, Sopory & Anderson, 2011; Dir, Coskunpınar & Cyders, 2014) and so also when they are drunk (Stautz & Cooper, 2013). For someone who is vulnerable to engage in risky behaviors because of impulsivity, drunkenness will probably make it worse. First, alcohol consumption in itself leads to loss of inhibitions (Palamar et al., 2014), so the individual with impulsive traits will probably become even more impulsive under the influence of alcohol. Impulsive individuals overall tend to not reflect upon the negative consequences of a certain act (Whiteside & Lynam, 2001) and have selective attention towards rewards (Patterson & Newman, 1993). With that in mind, when impulsive adolescents are drunk, they are probably more likely to, for example, be provoked by someone and therefore engage in a fight or an argument, driving drunk or have sexual
intercourse compared to when they are sober and compared to other drunk adolescents. Second, impulse individuals tend to be more reinforced by alcohol than others (Kiselica & Borders, 2013). That is, impulsive individuals drinking alcohol may get a stronger soothing effect on negative feelings as well as a stronger physical arousal. This fact might lead these individuals to drink more alcohol and in turn they get more alcohol-related problems. The link is, however, not clear and will have to be answered by future research. A caution must be made considering the fact that impulsivity is in general heightened in adolescence. We do not know whether the adolescents scoring high on the impulsivity measure did so because of normal development or because they have underlying impulsive traits. However, since impulsivity is elevated in adolescence and therefore more or less normative, one may suppose that individuals with impulsive behaviors because of adolescence would not report higher levels of impulsivity because they are just like everyone else in their age. In sum, impulsivity is presumably a risk factor for both alcohol use as well as risky drunken behaviors.

Poor emotion regulation was also found to predict risky drunken behaviors. The poorer the emotion regulation skills, the more the adolescents engaged in risky drunken behaviors. When adolescents lack emotion regulation skills they are more likely to engage in risky drunken behaviors, which is consistent with previous research. Specifically, poor emotion regulation has been found to correlate with substance use (Hessler & Katz, 2010; Weiss et al., 2015; Cooper, Wood, Orcutt & Albino, 2003; Cooper, Russell & George, 1988; Winberg & Klonsky, 2009) and other risky behaviors (Hessler & Katz, 2010; Weiss et al., 2015; Cooper, Wood, Orcutt & Albino, 2003). In the current study, we contributed to these findings by showing that emotion regulation can predict risky drunken behaviors among adolescents. There are probably several possible explanations why poor emotion regulation is linked with risky behaviors among adolescents. One is that adolescents who have problem with regulating emotions may engage in risky behavior in an attempt to block their feelings...
Specifically, avoidance coping have been associated with drinking to cope (Cooper, Frone, Russell & Mudar, 1995), suggesting that adolescents may use alcohol as a (dysfunctional) coping mechanism in order to avoid the emotions they are not able to regulate. In a large adolescent sample, about 30% reported that they had been drinking to forget about problems and to relieve a depressed mood (Stapinski et al., 2016). Adolescents with poor emotion regulation skills seem to be more vulnerable to alcohol use, probably because of the general picture of alcohol as numbing. Overall, individuals low in emotion regulation drink more because of their desire to avoid the unpleasant negative feelings that they cannot regulate (Kober, 2014). Therefore, adolescents with poor emotion regulation skills may engage in a higher level of risky drunken behaviors because they reach a higher level of drunkenness. However, it is not clear why adolescents with poor emotion regulation skills engage in higher levels of risky drunken behaviors than adolescents with adequate emotion regulation skills. Future research will have to answer that question as well. In any case, poor emotion regulation might also be seen as a risk factor for both alcohol use and risky drunken behaviors.

The role of parenting behaviors

Parental monitoring did not predict risky drunken behaviors among adolescents, although it was negatively correlated to this outcome. This is inconsistent with most of the prior research, where parental monitoring has been linked to low alcohol use (Dishion & McMahon, 1998; Ryan, Jorm, Lubman, 2010; Steinberg, Fletcher & Darling 1994) and less engagement in several types of risky behavior like antisocial behaviors and delinquency (Donaldson, Handren & Crano, 2016; Hemovich, Lac & Crano, 2011; Lac & Crano, 2009; Kerr & Stattin, 2000). However, some studies have found that high levels of parental monitoring were associated with higher levels of substance use among adolescents (Fletcher, et al., 2004). The finding was explained by the fact that some parents were more likely to
monitor adolescents when they displayed risky behaviors (Fletcher, et al., 2004). This tendency might explain why we did not see a predictive effect of monitoring on risky drunken behaviors. In fact, in this study, we focused on adolescents who already started drinking and experienced drunkenness at least once during the past year. Thus, some of the parents who were aware of their adolescent's risky behavior might have increased their monitoring as a reaction to their child's problem behaviors.

Also, some parents may monitor their adolescents less when they engage in risky drunken behaviors. Several studies have shown that adolescent behavior can affect parenting and that parents may alter their parenting as a response to adolescent behavior (Huh, Tristan, Wade & Stice, 2006; Kerr, Stattin & Özdemir, 2012). That would mean that if adolescent are hard to monitor, monitoring will decrease with time. Risky behaviors like delinquency and substance use have been seen to predict less parental warmth, perceived parental support and behavior control over time (Huh et al., 2006; Kerr et al., 2012). If adolescent engage in risky behaviors, it might put a strain on parent-child relationship, especially if adolescents display antisocial behaviors towards parents, which could make parents withdrawn from the adolescent (Huh et al., 2006). A good parent child relationship is important if parents are going to be able to monitor their adolescent successfully (Stattin & Kerr, 2000), and adolescents might challenge the relationship by engaging in risky behaviors, and thus making it harder for parents to influence adolescents’ behavior. Additionally, an adolescent who is engaging in risky drunken behaviors would probably disclose less information about his or hers whereabouts compared with an adolescent that is not engaging in risky drunken behaviors. That is, it is probably harder for parents to monitor adolescents that are engaging in risky drunken behaviors compared to adolescents that are more well adjusted. This could lead to a reduction in certain parenting behaviors over time, like expressing warmth and exert behavioral control (Huh et al., 2006). In sum, there are several processes that could explain
why parental monitoring could not predict risky drunken behaviors in the current study. To identify the link between monitoring and risky drunken behaviors, it is necessary to use a longitudinal design focusing on adolescents who have not started drinking alcohol yet.

Parental warmth was, on the other hand, found to predict risky drunken behaviors. Specifically, adolescents with parents high in warmth tended to engage less in risky drunken behaviors compared to adolescents with parents low in warmth. This finding is consistent with prior research. Previous studies have linked parental warmth to low alcohol use and less engagement in several types of risky behavior like anti social behaviors and delinquency (Fletcher et al., 2004; Gray & Steinberg, 1999). A positive parent child relationship is more likely to exist in families where parents show warmth toward their children, which in turn makes it more likely that the adolescent discloses information to their parents (Fletcher et al., 2004). Parental warmth has been linked with a positive psychosocial development and lower levels of internalized distress among adolescents (Gray & Steinberg, 1999). In turn, psychological well-being has been found to be associated with a positive identity development (Kuiper, Kirsh & Maiolino, 2016). Substance use in early adolescence is more common in adolescents not successful in, for example, school and sports because of their desire to form an identity, to “be someone” (Griffin, 2010). Instead of being no one they might turn to substances, because then they might, at least, get an identity as a rebel (Griffin, 2010). Adolescents with warm parents are more likely to have a higher level of psychological well-being, and therefore also experience a positive identity development which could make them less likely to turn to alcohol or other substances in order to form an identity. Also, adolescents usually turn to like-minded peers (Griffin, 2010), and well adjusted adolescents will probably turn to other well adjusted adolescents. That might make them less exposed to situations where risky behaviors are more accepted and maybe also encouraged. In addition, adolescents with warm parents internalize parents standards for appropriate behaviors and
demands for self regulation (Eisenberg et al., 2003), which have been seen to protect adolescent from developing risky behaviors (Pasalich, Dadds, Hawes & Brennan 2011). In sum, there are several processes which may explain why parental warmth can predict lower levels of risky drunken behaviors.

Neither parental monitoring nor parental warmth did protect adolescents with impulsive traits and poor emotion regulation skills from engaging in risky drunken behaviors. Considering the positive outcomes of parental warmth on adolescents, it was somewhat surprising that it did not moderate the link between individual level vulnerabilities and risky drunken behaviors. On the other hand, the finding that parental monitoring did not moderate the association between individual factors and risky drunken behaviors were not so surprising, considering there was no predictive effect. When controlling for impulsivity and poor emotion regulation, parental factors may not be as important as individual risk factors since individual factors explained more of the variation in risky drunken behaviors. One can imagine that parents’ values or rules do not come to mind in the first place in an impulsive adolescent, considering the fact that they do not think about negative consequences (Whiteside & Lynam, 2001). It is also likely that adolescents with poor emotion regulation skills do not live by their parents’ values and rules when they are drunk. That is, because parents are not present in the situation and setting where the adolescent gets drunk, the individual factors do probably play a much greater part in the risky drunken behaviors than the parental behaviors. Beyond impulsivity and poor emotion regulation, the development phase that adolescents naturally go through at this age, where friends are much more important (Griffin, 2010), might also be part of the explanation why parenting behaviors do not protect the adolescents from risky drunken behaviors. If the sample had consisted of children in younger ages, maybe we would have found a moderation effect on other risky behaviors. But, adolescents strive towards becoming autonomous and think of themselves as
individuals able to make their own decisions and think they can be responsible for that (Griffin, 2010). Thus, parenting behaviors may not be as influential at this age as in childhood and it might be that parents’ ability to guide their children in a different direction has decreased substantially. Peers are on the other hand very important, and adolescents often turn to like-minded peers (Griffin, 2010). That is, adolescents engaging in risky behaviors might make friends with other adolescents also engaging in risky behaviors. If so, they might be even more likely to engage in risky behaviors, because of encouragement from their friends, and because there might be an accepting attitude towards risky behaviors in the peer group. Finally, our study focused exclusively on adolescents that already displayed risky behavior, by drinking alcohol. Perhaps the adolescents did not receive the level of monitoring and warmth that is required to protect them from engaging in risky drunken behaviors when they display impulsive traits and poor emotion regulation skills.

**Additional reflections about the results**

Between 43.6% and 72.1 % of the adolescents in the sample stated that they had never engaged in a specific risky drunken behavior. This raises the question why some adolescents engage in risky drunken behaviors when others do not? Since all items were measured with self report questionnaires there is a possibility that some of the participants underreported their risky drunken behaviors. It might be that they did not want to report that they did something they were ashamed of or that they were afraid that somebody else would see their answers. However, there might be factors that were not examined in this study that could be associated with risky drunken behaviors and would explain the variance in a better way. Not all adolescents that drink alcohol engage in risky drunken behavior, and future studies need to examine which specific factors make some adolescents more prone to this than others. Nevertheless we can see that adolescents who report higher levels of impulsivity and poor emotional regulation are more likely to engage in risky drunken behavior compared
with adolescent that show lower levels of these individual factors. It implies that these factors are important, but most likely in combination with other factors since individual factors did only explain a part of adolescent engagement in risky drunken behaviors.

**Strengths and limitations**

The limitations of the study should be considered in interpretation of the findings. First, since data in the current study is cross-sectional, the result only represents the relationship between the variables in the time period where the data was collected. That is, no conclusions can be made about causality. Therefore, we do not know if the parental factors (i.e., warmth and monitoring) are a consequence of adolescent risky drunken behaviors promoted by the individual factors (i.e., impulsivity and poor emotion regulation), or if the parental factors interacts with the individual factors resulting in risky drunken behaviors. Second, the measurement of drunkenness was based on a single item: “Have you had so much beer, liquor, or wine that you got drunk - during the past year?” The measure only assesses if the adolescents had been feeling drunk and does not address issues such as how, when, with whom and where they got drunk. A more comprehensive assessment could provide richer understanding of the predictors of risky drunken behaviors. Third, the data is based on self-reports questionnaires from adolescents. There are several risks with this approach, such as underreporting of problem behaviors. Adolescents who have engaged in behaviors they are ashamed of may not be willing to disclose information. Alternatively, they may have forgotten what really happened when they were under the influence of alcohol. Thus, some of them who actually engaged in risky drunken behaviors may not report due to memory issues.

The study has several strengths. First, the current study consists of a relatively large sample ($N = 343$). In other words, the study probably has adequate statistical power. That is, the possibility that the results are random decreases and the possibility that the effects seen
are true for this population is more likely. The results are most likely generalizable to adolescents with impulsive traits and poor emotion regulation skills in the rest of Sweden. Second, the data is collected from seven different high schools in a middle-sized town in Sweden where ethnicity and socioeconomic status were taken into account. Third, in the current study the focus was exclusively on youth who got drunk. This gives a deeper understanding of the adolescents in this group by contracting on a specific population and seeing what affects this group of adolescent. This domain has not gained so much attention when it comes to interactions with individual and parental factors in earlier studies. Since both individual and parental factors are included this makes it possible to compare these factors and see what is most important regarding adolescents involvement in risky drunken behaviors, which provides a deeper understanding. This is especially important for clinical practices when designing effective treatment programs, by knowing what to target.

**Overall conclusion**

The current study demonstrates that individual level risk factors are important in understanding risky drunken behaviors among adolescents, and that parental factors might not be equally important in protect adolescents against risky drunken behaviors. The findings suggest that adolescents with impulsive traits and poor emotion regulation skills tend to engage in risky drunken behaviors at a higher level than adolescents with lower levels of these individual factors, and that parental monitoring and parental warmth do not protect these adolescents from engaging in risky drunken behaviors. The findings imply that personal characteristics could be prioritized in treatment programs when working with adolescents who are engaging in risky drunken behaviors. However, these results should be interpreted with caution, and a longitudinal study would give more information about cause and effect. Also, the area needs more research in order to create effective prevention and treatment programs for this group of adolescents.
References


RISKY DRUNKEN BEHAVIORS AMONG ADOLESCENTS


Spear, L. P. (2010). The adolescent brain and age-related behavioral manifestations. *Neuroscience & Biobehavioral Reviews, 24*, 417-463. doi: [http://dx.doi.org/10.1016/S0149-7634(00)00014-2](http://dx.doi.org/10.1016/S0149-7634(00)00014-2)


Stringaris, A., Rowe, R., & Maughan, B. (2012). Mood dysregulation across developmental


Whiteside, S. P., & Lynam, D. R. (2001). The five factor model and impulsivity: Using a structural model of personality to understand impulsivity. *Personality and individual differences, 30*, 669-689. doi: [http://dx.doi.org/10.1016/S0191-8869(00)00064-7](http://dx.doi.org/10.1016/S0191-8869(00)00064-7)