Alcohol Intoxicated Witnesses: Perception of Aggression and Guilt in Intimate Partner Violence

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Abstract
Many witnesses to violent crimes are alcohol intoxicated, but research is lacking regarding how alcohol affects their perception of aggression and guilt. This study investigated to what extent alcohol intoxicated eyewitnesses differed from sober witnesses regarding how aggressive and guilty they perceived the involved parts in an intimate partner violence (IPV) situation. Eighty-seven healthy men (n = 44) and women (n = 43) were randomized to an alcohol group (0.7 g/kg) or a non-alcohol group. In a laboratory setting, alcoholic/non-alcoholic drinks were consumed before viewing a film depicting IPV between a man and a woman. Ten min after viewing, in an interview, the participants rated how aggressive and guilty they perceived the involved parts to be. Alcohol intoxicated participants perceived both parts' physically aggressive behavior as comparatively less severe, but their neutral behavior as more hostile. Sober witnesses perceived

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the man to be the most guilty part, whereas intoxicated witnesses distributed guilt more evenly. Alcohol had a strong but complex impact on the perception of aggression in IPV (i.e., heightened during the neutral interaction and lowered during physical aggression). These results may be explained by the cognitive consequences of alcohol’s anxiety-dampening effects. Regarding the asymmetric difference in perceived guilt, stereotypical expectations of gender-appropriate behavior in an IPV situation may need to be considered.

**Keywords**

alcohol, intoxication, eyewitness, perception, aggression, guilt, intimate partner violence

It is well known that alcohol negatively affects perception and memory (Curran, 2006). Research has shown, for example, that alcohol intoxication disrupts attention, information processing, memory, and planning, as well as influences perception and assessments made during intoxication (e.g., Curran, 2006; Denton & Krebs, 1990). Furthermore, it is also well documented that witnesses to violent crimes are commonly alcohol intoxicated (Evans, Schreiber Compo, & Russano, 2009; Palmer, Flowe, Takarangi, & Humphries, 2013).

A very common violent crime is intimate partner violence (IPV: “physical, sexual and/or psychological harm by a current or former partner or spouse,” see Statens Offentliga Utredningar [Official reports of the Swedish Government] (SOU), 2006, p. 65; WHO/London School of Hygiene and Tropical Medicine, 2010). IPV is considered to be a serious health problem (Wilt & Olson, 1996), suffers from severe underreporting, and is positively correlated with alcohol consumption (Capaldi, Knoble, Shortt, & Kim, 2012; Murdoch, Pihl, & Ross, 1991; Wilkinson & Hamerschlag, 2005). Although alcohol is not the sole cause of IPV, it is considered a catalyst for the violent behavior in general, including IPV (Brottsförebyggande Rådet [The Swedish National Concil for Crime Prevention] (BRÅ), 2009; Wilkinson & Hamerschlag, 2005). IPV often happens during weekends and holidays, and although the majority of instances occur in the home without adult witnesses present, an outbreak of IPV outside the victims/offenders residence (where the probability of it being observed by other adults is considerably higher) is not uncommon (estimated to between 13% and 23 %; BRÅ, 2009; Dobash & Dobash, 1984; Greenfield et al., 1998; Gustafsson & Lundberg, 2004; Wilkinson & Hamerschlag, 2005). Furthermore, alcohol is associated with the locations and points in time where IPV may be observed by third-part
witnesses (i.e., outside or inside the parts’ residence during evenings/night-time especially at weekends/holidays) in milieus such as house parties, in parks, or in other public places (Balvig & Kyvsgaard, 2006; Gustafsson & Lundberg, 2004). The processing of IPV cases is difficult, and a contributing factor is that the involved parts (and possible witnesses) were intoxicated at the time (Gustafsson & Lundberg, 2004). A dynamic developmental systems perspective (see Capaldi et al., 2012) on IPV is used in the present article, where interaction patterns within the dyad are emphasized, but it also takes into account the typical pattern of physical violence in IPV (among heterosexual couples) observed by legal practitioners where men’s physical aggression have the most severe consequences and women’s physical aggression is mostly defensive (Strack, n.d.).

It is reasonable to assume that intoxication affects how IPV is perceived, because alcohol has been shown to increase propensity to harbor aggressive attitudes; decrease anxiety, which results in greater displays of aggressive behavior; decrease behavior inhibition; and cause greater acceptance of anti-normative behavior (Bushman & Cooper, 1990; Ito, Miller, & Pollock, 1996; Sayette, 1993). In sum, alcohol induces changes in attention, memory, and emotional response, which require that legal practitioners and health care professionals are informed about how alcohol may affect witnesses’ perception of aggression and guilt in IPV scenarios. Despite this, to our knowledge, no experimental study has investigated how alcohol intoxication affects eyewitnesses’ perception of aggression and guilt in an IPV scenario.

**Dual Process Theory and the General Effects of Alcohol on Information Processing**

Decisions made under alcohol intoxication are more immediately self-serving, and more often result in loss of resources (e.g., time and money) and risk-taking behaviors that may cause physical harm (e.g., aggressive behavior, illicit drug use; Carmona-Perera, Verdejo-García, Young, Molina-Fernandez, & Pérez-García, 2012; Denton & Krebs, 1990; Fromme, D’Amico, & Katz, 1999; George, Rogers, & Duka, 2005; Sayette, Kirchner, Moreland, Levine, & Travis, 2004). A cognitive explanation for this may be found within the dual process framework of cognition (Chaiken & Trope, 1999; Kahneman, 2011; Kahneman & Fredrick, 2005; Tversky & Kahneman, 1973), where System 1 (i.e., intuitive, automatic cognitive processes) can be assumed to be more involved in making decisions during alcohol intoxication than System 2 (i.e., analytic, effortful cognitive processes). Therefore, people are more likely when intoxicated to make decisions based on approximations
and general heuristic rules, than to thoroughly search memory for relevant facts and weigh advantages and disadvantages before making a decision.

Direct experimental evidence of an increase in heuristic processing of social information due to intoxication is still lacking, but research from both forensic psychology and neuropsychology support such an assumption. For example, research has shown that use of heuristic routes and stereotypes is more likely when cognitive capacity is limited (Ask & Landström, 2010; Hasher & Zacks, 1979), and limited cognitive capacity has in turn been established as a feature of intoxication (Eckhardt et al., 1998; Koelega, 1995; Tzambazis & Stough, 2000). Alcohol has detrimental effects on a number of functions involved in analytic information processing, such as cognitive-abstracting capacity, attentive processing, planning, verbal fluency, and memory (Hashtroudi, Parker, DeLisi, Wyatt, & Mutter, 1984; Hull & Bond, 1986; Peterson, Rothfleisch, Zelazo, & Pihl, 1990; Sayette, 1993). These negative consequences for cognition restrict capacity to engage in controlled, effortful cognitive processing, but have little impact on highly practiced, automatic processing (Hasher & Zacks, 1979; Steele & Josephs, 1988). This, in turn, results in processing of fewer cues and less thorough processing of each cue. The perceived information is more poorly understood, because an alcohol-induced decrease in controlled processing reduces the ability to integrate and relate incoming information to existing knowledge. In light of these results, it has been suggested that alcohol intoxication increases reliance on general heuristic processing (Hashtroudi et al., 1984; Sayette, 1993). It has also been proposed that intoxicated individuals tend to rely more on automatic schemas (a basic feature of System 1), such as stereotypes of gender-appropriate behavior during interpersonal conflict (Ogle & Miller, 2004).

Impact of Alcohol’s Anxiety-Reducing Effects on Cognition

Because emotional activation heavily influences perception and assessment of information (Finucane, Alhakami, Slovic, & Johnson, 2000; Gardner, Brownell, Wapner, & Michelow, 1983), a purely cognitive perspective such as the dual process framework is not alone sufficient to explain the effects of alcohol in the present context. A crucial factor to consider is how alcohol and anxiety, separately and in interaction, affect the perception of aggression (for a discussion, see Ito et al., 1996).

The alcohol myopia theory has been frequently used to explain the effects of alcohol on attention and anxiety (e.g., Josephs & Steele, 1990; Schreiber Compo et al., 2012). Josephs and Steele (1990) proposed that alcohol
narrowed attention capacity in both time and space, thereby reducing anxiety for a forthcoming anxiety-provoking event as the intoxicated person is more easily distracted from thinking about the event. Hence, Josephs and Steele (1990) proposed that feelings of anxiety are cognitively mediated through focused attention, not by automatic effects of appraisal. However, Sayette (1993) presented evidence that anxiety-reducing effects of alcohol are consciously mediated through attention and through non-conscious neurochemical effects that dampen the intensity of felt anxiety. According to Sayette’s (1993) appraisal-disruption model, alcohol’s anxiety-dampening effects are caused by lowered emotional activation during stress, less available attention resources (i.e., ability to perceive information), and diminished capacity of association (i.e., ability to link incoming information to existing knowledge and predict harmful consequences). These assumptions have been supported by both neuropharmacological and cognitive research, which has shown that alcohol has strong sedative and anxiety-dampening effects, as well as causes diminished capacity for sustained attention and association of incoming information to stored information (Eckhardt et al., 1998; Josephs & Steele, 1990; Sayette, 1999; Sher et al., 2007; Söderpalm, 2011; Steele & Josephs, 1988). In the present study, the appraisal-disruption model is used because it encompasses alcohol’s effects on both the automatic and consciously directed cognitive processes in increasing the reliance on automatic processes and thereby lessens the use of consciously directed processes.

Perception of Aggression in Social Interaction and Guilt in IPV

Intoxicated witnesses to IPV are often located in a social drinking environment, where they are involved in and observe social interaction (Gustafsson & Lundberg, 2004). Hence, in addition to the general effects of alcohol, specific research on perceptions of aggression and guilt in social interactions during intoxication must be considered when examining the effects of alcohol on witness statements of IPV.

Alcohol and Perception of Aggression in Social Interaction

Multiple laboratory-based studies, field studies, and reviews have shown a relationship between alcohol and an increased experience and display of aggressive attitudes and behavior (Bushman & Cooper, 1990; Ogle & Miller, 2004; Pihl & Sutton, 2009; Taylor & Chermack, 1993). It is well established that alcohol tends to increase the likelihood of harboring/displaying aggressive
attitudes and behavior in general, and to increase the risk of retaliation and escalation of aggression (Ito et al., 1996; Taylor & Chermack, 1993). Furthermore, research has shown that alcohol intoxication may distort social information and increase the salience of hostile/provocative cues (Clements & Schumacher, 2010). Importantly, alcohol intoxication can both lower the perception of danger in a risky situation (Bushman & Cooper, 1990; Taylor & Chermack, 1993) and create a heightened perception of aggression in another person’s behavior during a neutral interaction (Clements & Schumacher, 2010; Ogle & Miller, 2004). These effects have been attributed to alcohol’s anxiety-dampening properties that may cause less inhibited behavior, increased risk-taking, and anti-normative behavior in situations that would be perceived as frightening or uncomfortable when in a sober state (see appraisal-disruption model, Eckhardt et al., 1998; Ito et al., 1996; Parrott, Gallagher, & Zeichner, 2012; Sayette, 1993; Sayette et al., 2004). Accordingly, the general threshold for aggressive reactions is lowered in an intoxicated state, which makes an individual comparatively more prone to perceive hostility and to react with aggression (Ito et al., 1996; Parrott et al., 2012; Pihl & Peterson, 1995; Pihl, Peterson, & Lau, 1993). In other words, due to reduced anxiety, an intoxicated person may perceive an aggressive response to an actual threat as less dangerous than if he or she was in a sober state, because he or she is less fearful of the consequences of his or her own or other peoples’ aggressive behavior (Bushman & Cooper, 1990; Parrott et al., 2012).

Alcohol-induced increase of aggressive attitudes and behaviors has been proposed to be moderated by gender, but the results are mixed. Ogle and Miller (2004) showed that alcohol intoxicated men were more likely to interpret ambiguous social interactions as hostile, compared with women and sober counterparts. However, a meta-study on alcohol and aggression (within an experimental aggression paradigm) showed that when intoxicated, both men and women behaved more aggressively toward another person compared with when in a sober state, and that both intoxicated men and women behaved more aggressively toward a woman compared with when the target person was male (Bushman & Cooper, 1990).

Perception of Guilt in IPV Situations

The perception of a perpetrator’s and/or victim’s guilt in IPV situations has been studied extensively in non-intoxicated witnesses, and in these studies, alcohol and/or drug intoxication of the perpetrator/victim has frequently been manipulated. In brief, sober witnesses tend to perceive sober female victims of IPV to be at least partially guilty, and to deserve some blame for the aggression exerted against them (Stewart & Maddren, 1997). Furthermore, sober
persons tend to attribute more blame to female victims if portrayed as intoxicated, than if portrayed as sober (Hirschel & Hutchison, 2011; Richardson & Campbell, 1982; Sperry & Siegel, 2011). However, to our knowledge, these results have not been replicated with alcohol intoxicated witnesses, which is important because IPV may occur in locations where witnesses are under the influence of alcohol (Gustafsson & Lundberg, 2004). The focus of the present study was to examine how witnesses to an IPV scenario distribute guilt among the involved parts.

The Present Study

There is a large body of research on alcohol and aggression, as well as on perception of guilt in relation to IPV. However, to our knowledge, no previous study has focused on the effects of alcohol on IPV witnesses’ perception of the involved parts’ aggression and guilt. Therefore, we examined the effect of alcohol on witnesses’ perception of displayed levels of verbal and physical aggression, and how alcohol affected the distribution of guilt among the involved parts. The present study was conducted in a laboratory setting where participants, after consuming drinks containing alcohol or no alcohol, viewed a film depicting IPV between a man and a woman in a home environment. Critically, the interaction escalated from neutral to a verbal quarrel and to physical violence.

Based on the appraisal-disruption model, it was predicted that alcohol intoxicated witnesses would perceive the displayed verbal aggression (Hypothesis 1a) and physical aggression (Hypothesis 1b) as less severe than sober witnesses. Based on previous empirical findings (Ogle & Miller, 2004) and alcohol’s anxiety-dampening effects (Ito et al., 1996; Parrott et al., 2012; Sayette et al., 2004), alcohol intoxicated witnesses were predicted to perceive the aggression as comparatively more severe with respect to the parts’ neutral interaction (Hypothesis 2). Based on the assumption that alcohol increases use of heuristic processing and decreases use of effortful processing, as predicted by the appraisal-disruption model and dual process theory (Chaiken & Trope, 1999; Kahneman & Fredrick, 2005), it was predicted that intoxicated witnesses would distribute guilt more evenly between the man and woman, compared with sober witnesses (Hypothesis 3). In addition, potential differences between male and female witnesses in relation to all of the above dependent variables were examined. Concerning the impact of gender on the perception of aggression and guilt in an intoxicated state, no hypotheses were formed because previous research is inconclusive (regarding aggression) or lacking (regarding guilt; Bushman & Cooper, 1990; Ogle & Miller, 2004; Wells, Mihic, Tremblay, Graham, & Demers, 2008).
Method

Participant Recruitment and Screening

Eighty-seven healthy, social drinking participants (44 men, 43 women; 19-32 years; mainly university students) were recruited via posters at departments of University of Gothenburg. Initial eligibility was established in a screening interview (approx. 5-20 min), conducted by the first author or a research nurse via telephone. Participants were required to be between 19 and 40 years of age, to take no medication, and to have no alcohol or drug addiction or dependence. Those who passed the first screening interview were called to the laboratory in groups of five to seven for a more extensive screening (approx. 1 hr), which included a medical examination, a psychiatric screening (Symptom Checklist 90 [SCL-90]; Derogatis, 1983), and an alcohol consumption screening (The Alcohol Use Disorders Identification Test [AUDIT]; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). In addition, they completed a personality inventory (Health-relevant Personality 5 Inventory, HP5i) and a more general health questionnaire with sections on lifetime and current socioeconomic status, alcohol/drug use, and experience of violence. The HP5i is modeled after the five-factor model (FFM) and consists of five aspects represented by four items each (α level for twin sample/clinical sample, corresponding FFM factor and representative example of item content in parenthesis): hedonic capacity (α = .54/0.65; extraversion; “I think life is filled with interesting things”), impulsivity (α = .66/0.76; conscientiousness; “I act on the spur of the moment”), negative affectivity (α = .69/0.70; neuroticism; “I feel uncomfortable and uneasy without apparent reason”), alexithymia (α = .70/0.61; openness to experience; “I don’t understand other’s feelings”), and antagonism (α = .65/0.67; agreeableness; “Someone who offends me can count on trouble”). All items were rated on a 4-point scale with the following alternatives: not at all correct, not especially correct, somewhat correct, precisely correct (for more information regarding HP5i, see Petter Gustavsson, Jönsson, Linder, & Weinryb, 2003). Exclusion criteria at the second screening stage were current problems that required medication or could be aggravated by alcohol (e.g., ulcer); current Axis 1 psychiatric disorder (American Psychiatric Association, 1994) or history of psychosis; current or history of alcohol/drug abuse or dependence; lack of fluency in Swedish; and currently working night shifts or having a body mass index <19 or >26. On this occasion, written consent to participate was signed, and participants who met all the above mentioned criteria booked a time to complete the study. Reminders to eat before arriving at the laboratory were sent via email the day before participation. All details about the procedure were given in the informed consent and no structured debriefing protocol was used. However, after the interview, all participants were
given the opportunity to ask questions and all were given contact information to be able to ask questions later. The study was approved by the Regional Ethic Committee in Gothenburg, Sweden.

**Design and Procedure**

An experimental between-groups design—2 (alcohol intoxicated vs. sober) × 2 (male vs. female)—was used.

The alcohol dosage was 0.7 g/kg, which was expected to result in a BAC level of 0.07. The 43 females and 44 males were randomized to the alcohol or non-alcohol group, but an even gender dispersion between the groups was ensured (alcohol condition: \( n = 44, 22 \text{ men}, 22 \text{ women} \); non-alcohol condition: \( n = 43, 22 \text{ men}, 21 \text{ women} \)). The independent variables were alcohol intoxication and gender. The dependent variables were ratings of perceived aggression (in a neutral, verbally aggressive and physically aggressive context), experienced unpleasantness, and distribution of guilt between a man and a woman for the outcome of an IPV situation in a home environment witnessed on film.

The laboratory, located at the Addiction Biology Unit (Section of Psychiatry and Neurochemistry, Institute of Neuroscience and Physiology), Sahlgrenska University Hospital, University of Gothenburg, was furnished to mimic a living room (sofa, coffee table, lounge chairs, TV screen, paintings, bookshelf containing sculptures and books). To mimic a social drinking setting, the subjects participated in groups of two to three. When the participants arrived at the laboratory, their blood alcohol concentration (BAC) was measured with a portable breathalyzer model (Alert J5, Alcohol Countermeasure Systems Corp., Canada, 2006). After this, they were weighed, given overall information about the procedure, and informed whether or not their group would consume alcoholic drinks. Second, the participants consumed their drinks (alcohol condition: solution of 0.7 g/kg alcohol, type Absolute Vodka 40%, mixed with pulp-free orange juice; non-alcohol condition: pulp-free orange juice, amount based on body weight) during 15 min of social interaction with other participants under supervision of the experiment leader. Five min after consumption of alcohol, BAC was measured again, and was measured every 15 min after this until the end of the experiment. Twenty min after start of consumption (i.e., 5 min after their BAC was measured for the second time), the film depicting IPV was viewed in silence on a TV screen (the distance between sofa and TV was 3 meters). The film was followed by an individually conducted, 10-min filler task. When the filler task was completed, each participant was taken separately to an adjacent room and interviewed about the event. During the interview, they rated their perception of the man and woman regarding the level of aggression they displayed and how
much guilt they assigned to each part for the situation’s violent conclusion. After participation, subjects in the non-alcohol group left the laboratory by themselves and subjects in the alcohol group went by taxi to their home address. Compensation for participation was £35 or 3 cinema tickets.

**Material**

**Film.** The film (11.5 min) depicted IPV between a man and woman in a home environment and portrayed three distinct patterns of social interaction between the parts: An emotionally neutral conversation turned into verbal aggression and ended in physical violence (previously used in Hildebrand Karlén, Roos af Hjelmsäter, Fahlke, Granhag, & Söderpalm Gordh, 2015). Each pattern was displayed during 3 min and 50 s. During the first stage, the couple interacted in a neutral fashion, discussing their day and economic situation while sitting in a kitchen. Toward the end of this interaction, the man suddenly left the room, possibly irritated. In the second stage, the woman followed him into the living room and they began to argue about their finances while sitting on the living room sofa. This stage consisted of verbal and non-verbal hostile interaction. The verbally aggressive part of the video ended with the man knocking down a flower pot from the coffee table, whereupon the woman left the room, highly irritated, and entered the kitchen. The man followed her, and directly after, they both entered the hall. The third stage (physical aggression) took place in the hall where the argument continued, with the man restraining the woman who said she wanted him to let go. She broke loose and pushed him into the wall. They continued their heated argument, which contained multiple expressions of physical violence from both parts (e.g., the woman pushed the man, the man slapped the woman). Just before the film ended, the man pinned the woman to the floor, which resulted in her banging her head against it. While sitting on her stomach, he threatened to hit her in the face with his fist, but hit the floor instead. The film ended with the man getting up, walking out the front door, and slamming it shut. After this, the woman slowly got up from the floor while holding a hand to her head, apparently hurt. It is important to note that although the physically aggressive behavior was mutual, almost all of the woman’s physical aggression was defensive, whereas almost all of the man’s physical aggression was offensive.

**Filler task.** To counteract the recency effect and also prevent the participants from rehearsing the scenario between viewing the film and the interview, they completed a word task in which they created as many new words as possible from the letters in a given 14-letter word. They wrote the words in silence on a sheet of paper (the heading contained the assigned word) for 10 min, and were asked to work as quickly as they could.
**Interview.** The interview consisted of five parts, completed in the following order. Part I consisted of free recall of the entire IPV event. Parts II, III, and IV consisted of free recall and open questions regarding the emotionally neutral interaction in the kitchen (II), the verbally aggressive interaction in the living room (III), and the physically aggressive interaction in the hall (IV). Each of these parts ended with a rating of the perceived level of aggression portrayed by the man and the woman in that specific part (“How aggressive did you perceive the man and woman respectively to be during the time they were in the kitchen/living room/hall?” scale: 1 to 6, *not at all aggressive* to *extremely aggressive*). In Part V, participants rated how much guilt they ascribed to the man and woman for the situation ending the way it did (“After seeing the entire scenario, how guilty do you perceive the man and woman respectively to be for the situation ending the way it did?” scale: 1 to 6, *no guilt at all* to *all guilt*). Participants then rated how engaging, realistic, and unpleasant the participant had experienced the film overall (“How engaging/realistic/unpleasant did you perceive the film to be?” scale: 1 to 6, *not at all* to *very engaging/realistic/unpleasant*). Finally, participants stated how sure they were that the reported information was correct (“How sure are you that the answers you’ve given are correct?” scale: 1 to 6, *very unsure* to *very sure*). All interviews were audiotaped, and to minimize the effects of alcohol on reading comprehension and motor activity, all questions to be rated were read by the interviewer who also noted the participant’s answer on a response sheet.

**Data preparation.** All statistical tests were conducted in SPSS for Windows (Version 18; SPSS Inc., Chicago, Illinois). The ratings of aggression were not modified before analysis. Regarding guilt, it was considered important that the measure would capture how guilty the participants perceived the man and woman to be in relation to each other, because the study’s focus was not victim blame, but guilt dispersion between IPV perpetrator and victim. Guilt ratings ascribed to the woman were subtracted from guilt ratings ascribed to the man for each witness, resulting in a measure that captured the difference in assigned guilt that the witnesses perceived between the man and woman. This procedure was only done regarding the guilt measure and not the aggression measure, for the following reason: Whereas aggression can be perceived as a personality trait and perceived in a concrete manner (i.e., a person can exhibit different kinds of aggressive behavior or not), guilt is a more abstract and multifaceted concept (Alicke, 2000) in which many factors may influence the decision. Examples of such factors are as follows: Alcohol intoxication heightens the victim’s guilt (Sperry & Siegel, 2011), exhibited passive behavior in a victim lowers the victim’s guilt (Ask & Landström, 2010), and if prevailing expectations of female IPV-victim behavior assimilation to traditional gender roles are met, guilt is lowered (Davies, 2007; Wrede & Ask,
in press). Therefore, to diminish such potential effects on “raw” measures of the man’s and woman’s guilt, each participant’s ratings of the man’s and woman’s respective guilt were combined to a single measure of the distribution of guilt between the parts.

**Results**

**Preliminary Analyses and Manipulation Checks**

On arrival at the laboratory, all participants registered a BAC of 0.00‰. Mean BAC during the experiment for intoxicated men was $M = 0.07\%$ ($SD = 0.04$; range = 0.06%; min-max = 0.05%-0.10%), and for intoxicated women $M = 0.08\%$ ($SD = 0.04$; range = 0.06%; min-max = 0.04%-0.10%). One female participant was excluded from analyses due to a faulty BAC measurement, resulting in a total of 86 participants (42 women, 44 men) in the analyses of BAC.

To investigate whether BAC differed when comparing alcohol intoxicated men and women, a repeated-measures mixed 2 (Gender: men vs. women) × 6 (Time: six BAC assessment points) ANOVA was conducted. There was a significant main effect of gender, $F(1, 41) = 7.48, p = .009, \eta^2 = .15$, showing that the mean BAC level for women ($M = 0.80, SD = 0.04$) was consistently higher than for men ($M = 0.70, SD = 0.03$). As expected, there was a significant main effect of time, $F(5, 37) = 210.23, p < 0.001, \eta^2 = .97$, indicating a decrease in BAC over time. The interaction effect between time and gender was not significant $F(5, 37) = 2.32, p = .054, \eta^2 = .28$. This created a problem in comparing alcohol intoxicated men and women, because differences in perception between genders may arise from different BAC means. However, due to the even gender dispersion between the experimental and control conditions, the impact of the 0.7 g/kg alcohol dose on men’s and women’s ratings of aggression and guilt was investigated.

To investigate whether alcohol affected how unpleasant, realistic, and engaging the participants experienced the scenario, three one-way ANOVAs were conducted with alcohol and gender as independent variables and unpleasantness, realism, and engagement in the scenario as the dependent variables. The analyses showed that alcohol affected how unpleasant the film was experienced, $F(1, 83) = 5.85, p = .018, \eta^2 = .07$, with alcohol intoxicated participants rating the film as less unpleasant ($M = 3.48, SD = 0.19$) than sober participants ($M = 4.14, SD = 0.20$). There were no effects of gender or interaction between alcohol intoxication and gender on unpleasantness (both $ps > .461$). There were no significant effects of alcohol, gender, or the interaction between alcohol and gender regarding perceived realism or engagement.
in the scenario (all \( p > .283 \)). All participants thought the film was realistic (\( M = 4.97; SD = 1.07 \)) and engaging (\( M = 4.64; SD = 1.05 \); min-max value was 1-6).

Because witnesses’ anxiety proneness may have influenced their perception of the IPV scenario, a Pearson chi-square test was conducted to examine whether persons in either one of the two beverage conditions were more predisposed to experience anxiety (established by the personality inventory HP5i, subscale negative affectivity). Results showed an even dispersion of participants high and low in negative affectivity (established by median split) in the alcohol and the sober groups, \( \chi^2(1) = 0.556, p = .456 \). Furthermore, alcohol may have made participants less certain of their answers, therefore eliciting more neutral answers that were positioned in the middle of the scale, avoiding extreme values. However, no difference regarding confidence in the given answers was found between the alcohol (\( M = 4.63; SD = 0.22 \)) and the sober groups (\( M = 4.89; SD = 0.13 \)), \( F(1, 83) = 2.05, p = .156, \eta^2 = 0.02 \).

**Aggression**

To investigate whether alcohol affected participants’ ratings of aggression, a one-way MANOVA was performed. The dependent variables were the rated level of aggression of the man and woman respectively in the three parts of the film (neutral, verbally aggressive, and physically aggressive), resulting in six dependent variables. A significant multivariate effect of alcohol on rated level of aggression was found, \( F(6, 78) = 7.05, p < .001, \) Wilks’ lambda = 0.654, \( \eta^2 = .35 \), but no multivariate effect was found for gender, \( F(6, 78) = 0.99, p = .437, \) Wilks’ lambda = 0.929, \( \eta^2 = .07 \), or for the interaction between alcohol and gender, \( F(6, 78) = 0.56, p = .813, \) Wilks’ lambda = 0.941, \( \eta^2 = .06 \). Univariate analyses for the effect of alcohol showed that alcohol intoxicated participants perceived the level of aggression in the neutral part of the film to be higher than sober participants, for both the man, \( F(1, 85) = 8.29, p = .005, \eta^2 = .09 \), and the woman, \( F(1, 85) = 4.03, p = .048, \eta^2 = .05 \). However, the opposite pattern was found concerning physical aggression. Alcohol intoxicated participants rated the physical aggression displayed by both the man, \( F(1, 85) = 13.49, p < .001, \eta^2 = .14 \), and the woman, \( F(1, 85) = 11.02, p < .001, \eta^2 = .12 \), as lower than sober participants. No differences between alcohol intoxicated and sober participants were found for ratings of verbal aggression displayed by the man, \( F(1, 85) = 0.13, p = .718, \eta^2 < .00 \), or the woman, \( F(1, 85) = 0.92, p = .340, \eta^2 = .01 \) (for further details regarding aggression, see Table 1).
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<td>1.64 (0.75)</td>
</tr>
<tr>
<td>Verbal aggression</td>
<td>2.59 (0.80)</td>
<td>2.14 (0.64)</td>
<td>2.64 (0.87)</td>
</tr>
<tr>
<td>Physical aggression</td>
<td>3.32 (0.89)</td>
<td>3.86 (1.04)</td>
<td>3.27 (1.02)</td>
</tr>
</tbody>
</table>

Note. Mean values reported, SD in parentheses, scale ranged from 1 to 6 *(not at all aggressive to extremely aggressive).*

*p < .05.
Guilt

An ANOVA was performed to investigate whether alcohol or gender affected how the guilt for the situation ending in violence was distributed between the man and woman in the IPV scenario (dependent variable: difference in guilt between the man and woman). The results showed that alcohol intoxicated participants perceived a smaller difference in guilt between the man and the woman (\(M = 1.52; SD = 1.92\)) than sober participants did (\(M = 2.42; SD = 1.59\)), \(F(1, 83) = 5.59, p = .020, \eta^2 = .06\). No main effect was found for gender, \(F(1, 83) = 0.78, p = .380, \eta^2 = .01\), and no interaction effect was found between alcohol and gender, \(F(1, 83) = 0.08, p = .775, \eta^2 < .00\). The results also showed that both groups assigned more guilt to the man than to the woman, because both groups’ mean values were positive (observe that the amount of guilt assigned to the woman was subtracted from the guilt assigned to the man). For further details regarding guilt, see Table 2.

Discussion

The results show that alcohol intoxicated witnesses perceived both parts’ physical aggression as less severe compared with sober witnesses, which confirmed Hypothesis 1b. However, no difference was found between intoxicated and sober witnesses with respect to their perception of expressed verbal aggression. Hence, there was no support for Hypothesis 1a. Alcohol intoxicated witnesses perceived both parts’ behavior in the neutral part of the film as comparatively more hostile, which confirmed Hypothesis 2. Furthermore, all participants assigned more guilt to the man than to the woman, but alcohol intoxicated participants perceived the guilt to be comparatively more evenly distributed between the parts, which confirmed Hypothesis 3. The gender of the witnesses did not affect their perception of verbal or physical aggression or guilt. Furthermore, sober participants experienced the film as more unpleasant than their intoxicated counterparts. In sum, the current results are the first to show that alcohol affects witnesses’ perception of aggression and guilt in an IPV scenario. The results point to the importance of considering the social context to predict the effect of alcohol on witnesses’ accounts of aggression. The results also tentatively support the possibility of generalizing several of alcohol’s effects previously observed in a non-witness context to a witness context, such as (a) hostility bias (i.e., that alcohol makes neutral behavior seem more aggressive, see Ogle & Miller, 2004), (b) a more accepting attitude toward using physical violence (which has been observed in previous alcohol/aggression research and here inferred from the lower rating of severity of physical aggression among intoxicated witnesses), and (c) an
Table 2. Mean Rating Scores of Guilt by Experiment Group and Gender.

<table>
<thead>
<tr>
<th></th>
<th>Male Witnesses</th>
<th>Female Witnesses</th>
<th>Beverage Group Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alcohol</td>
<td>Sober</td>
<td>Alcohol</td>
</tr>
<tr>
<td>Man’s guilt</td>
<td>4.45 (1.30)</td>
<td>5.00 (0.69)</td>
<td>4.43 (0.98)</td>
</tr>
<tr>
<td>Woman’s guilt</td>
<td>2.82 (1.10)</td>
<td>2.36 (0.73)</td>
<td>3.00 (1.18)</td>
</tr>
<tr>
<td>Difference in guilt</td>
<td>1.64 (0.38)</td>
<td>2.64 (0.38)</td>
<td>1.41 (0.38)</td>
</tr>
</tbody>
</table>

Note. Mean values reported, SD in parentheses, scale ranged from 1 to 6 (no guilt to all guilt).
*p < .05.
The Possible Relationship Between Anxiety-Dampening Effects and Perception of Aggression

As predicted by the appraisal-disruption model (Sayette, 1993), alcohol intoxicated participants perceived the IPV scenario as less unpleasant and the physical aggression as less severe. In addition, intoxicated participants perceived the behavior during the neutral interaction as more aggressive. These results advance previous research on alcohol and aggression, and emphasize alcohol’s complex effects on both emotion and cognition. According to the appraisal-disruption model and previous experimental research, alcohol intoxication (a) disrupts the appraisal of stressful information by decreasing the ability to maintain attention, (b) constrains the activation of associations between newly perceived information and stored information in long-term memory, and (c) lessens the ability to perceive meaning in a scenario (Birnbaum & Parker, 1977; Craik, 1977; Jones & Jones, 1977; Sayette, 1993; Steele & Josephs, 1990). The complex result regarding perception of aggression in the different stages of interaction combined with the lower ratings of unpleasantness suggests that third-part intoxicated witnesses experience an anxiety-dampening effect, which may co-occur with an altered perception of aggression in an IPV scenario. Disinhibition follows lowered fear, and disinhibition is a plausible explanation for alcohol’s complex effects on perception of aggression in a neutral and physically aggressive context (Ito et al., 1996; Sayette, 1993). Accordingly, an intoxicated person will be more prone to perceive and/or react with a higher level of aggressive behavior toward a non-provocative counterpart and to view physical aggression as a more acceptable response to provocation (Bushman & Cooper, 1990; Eckhardt et al., 1998; Hull & Bond, 1986; Ito et al., 1996; Parrott et al., 2012; Sayette et al., 2004; Taylor & Chermack, 1993). This disinhibiting effect may explain the intoxicated participants’ heightened perception of aggression in a neutral conversation, while they perceived actual physical aggression as more acceptable and less severe compared with sober participants.
From the present study, it is not possible to distinguish whether alcohol’s anxiety-dampening effects were caused mainly by impairment of conscious information processing (influenced by attention focus) or by automatic appraisal processes (influenced by emotional arousal in response to incoming information). For example, research on the alcohol myopia theory has shown that alcohol only dampens anxiety while attention is distracted from the anxiety-provoking material and not when attention is focused on it (i.e., anxiety dampening is caused by a failure to maintain focus of attention; Steele & Josephs, 1990). However, because the intoxicated participants in the present study were instructed to focus their attention on the scenario, and perceived it as comparatively less unpleasant, a non-conscious anxiety-dampening effect of alcohol may have influenced the perception of aggression and cannot be ruled out as a causal factor. A previous meta-study questioned whether it is possible to examine cognitive and emotional influences on aggression separately in a practically meaningful manner, and emphasized the appraisal-disruption model as a promising framework for taking alcohol’s effects on both cognitive and emotional factors into account as possible factors in reducing anxiety (Ito et al., 1996).

**Guilt, Aggression, and Possible Relation to Heuristic Processing**

In the IPV scenario used here, the woman was the victim of the most severe physical violence, and the man was perpetrating it. Regarding guilt, it is important to note that both the intoxicated and the sober witnesses generally assigned more guilt to the man, and that all witnesses perceived the woman as comparatively less guilty. However, compared with sober witnesses, intoxicated witnesses perceived the guilt as more evenly distributed between the parts. Because intoxicated witnesses perceived the film as less unpleasant, the reduction in guilt ascribed to the man may stem from lower emotional activation of fear (i.e., how dangerous they perceived the physically violent part of the scenario to be). This is in line with the appraisal-disruption model (Sayette, 1993) and previous research on the anxiety-dampening effects of alcohol intoxication (Ito et al., 1996; Pihl & Peterson, 1995; Sayette et al., 2004). However, this model cannot properly explain the increase in guilt that the intoxicated witnesses ascribed to the woman. Instead, the mixed effects of alcohol with respect to guilt (i.e., lowered for the man, heightened for the woman) require a more nuanced cognitive explanation, generally based on dual process theory (Chaiken & Trope, 1999; Kahneman, 2011) and specifically on gender stereotypes.

According to dual process theory, an alcohol-induced reduction in cognitive capacity may increase intoxicated witnesses’ use of automatic processing...
(System 1), which draws on heuristics and increased tendency to use stereotypes. This is supported by studies showing that intoxicated persons are less likely to analyze long-term consequences and take counterarguments into consideration when making moral and social decisions (Denton & Krebs, 1990; Ogle & Miller, 2004). Ogle and Miller (2004) proposed that this effect might be due to a potential increase in heuristic processing (see also Kahneman, 2011). This explanation is supported by the appraisal-disruption model (Sayette, 1993), where intoxication is proposed to increase heuristic information processing. It is also supported by the attention-allocation model (Steele & Josephs, 1988), as increased use of heuristics is a plausible effect of a narrowed cognitive focus for both time and detail.

Regarding the use of stereotypes, previous research supports the notion that more stereotypical male assertive and aggressive behavior (Davies, 2007) is accepted by intoxicated individuals (Ogle & Miller, 2004). A male stereotype of assertive behavior (Davies, 2007; Hoyle, 2007; Lindholm & Yourstone Cederwall, 2010), sometimes including physical aggression (Ahola, 2012), is congruent with the behavior displayed by the man in the scenario used for the present study. However, the assertive behavior displayed by the woman in the scenario is non-congruent with the female stereotype. The fact that the woman displayed assertive, and to a certain extent physically aggressive behavior, may have contributed to the intoxicated participants’ comparatively more evenly distributed guilt. Previous research on sober witnesses has shown that female victims to IPV and rape have been perceived as more guilty when displaying stereotypically non-congruent behavior (Hammock & Richardson, 1993; Richardson & Campbell, 1982; Whatley, 1996). Specifically, female victims not fitting the stereotype of a passive victim (fearful, fragile, and vulnerable) did not elicit third-part sympathy to the same extent as did stereotypical victims, which in turn affected credibility and case verdict (Ask & Landström, 2010; Davies, 2007; Hoyle, 2007; Lindholm & Yourstone Cederwall, 2010; Schult & Schneider, 1991; Sperry & Siegel, 2011; Wiener, 1980; Wrede & Ask, in press). The woman in the present scenario exhibited stereotypically incongruent behavior, and research has shown that such behavior is viewed as more informative, especially under high cognitive load (Jones & Davies, 1965; Kahneman, 2011; Skowronski & Carlston, 1989). Such circumstances increase the probability that the issue of guilt (in a scenario similar to the present one) will be processed according to gender stereotypical standards of appropriate behavior, resulting in the perception of an active/violent male perpetrator as less guilty and an active/violent female victim as more guilty (Ask & Landström, 2010; Kliippenstine & Schuller, 2012).
These results highlight the importance of educating professionals who interview witnesses to IPV, such as investigating police officers and clinical personnel, to be attentive to potential alterations in witnesses’ perception due to intoxication. It is important for these professionals to know that in a moderately intoxicated state (at least when BAC > 0.07), witnesses may risk using “easier” or “coarse grained” cognitive processing and experience less anxiety. These professionals need to consider alcohol’s anxiety-dampening effect which may have caused intoxicated witnesses to report neutral behavior as more aggressive and physically aggressive behavior as less severe compared with sober witnesses. Also, professionals should note that heuristic processing (due to high cognitive load generated by intoxication) may have increased a witness’s use of stereotypical notions when perceiving male and female guilt in IPV. Professionals may control the presence of such a tendency, at least to some extent, by reviewing witness’ statements for recurrent stereotypical formulations regarding male/female behavior and, if many are present, take this factor into consideration when evaluating the validity of the statement.

Limitations and Future Directions

The aim of the present study was to examine the effects of intoxication on witnesses’ perception of IPV in an applied context. The results in this study are limited to alcohol’s impact on perception of the kind of IPV interaction used here. Hence, a more exclusively single-sided male/female physical aggression or a mutual combat with an evenly distributed offensive aggression may induce other effects of alcohol on perception of IPV. Another limitation is that the IPV event took place in an apartment during the day with no other people present/no music playing, and so on, which is not matched to the reality where intoxicated persons may witness IPV (such as a home party, bar, or restaurant). However, the setting in the film was chosen for four reasons: (a) to isolate the effect of intoxication on perception and appraisal of social information, (b) to make it simple to realize that the two persons were a relatively long-term romantic couple, (c) to ascertain that the witnesses perceived a neutral interaction between the parts, which is hard to do in a party/bar setting, and was necessary for creating a baseline to compare verbal/physical aggression with, and (d) to create a sense of accordance between the environment in the laboratory and the setting of the film to make it easier for the witnesses to engage in the scenario. Furthermore, we examined to what extent alcohol affected the perception of IPV in witnesses who knowingly drank alcohol in a social setting in groups of two to five persons. Therefore, expectancy and group effects could not be controlled for. Furthermore, the respective factors of cognitive and emotional effects of alcohol were not controlled for. In order to further theoretical developments in the field, it is important to isolate the effects of
expectancy, of being in a group vs. being alone, and of cognitive and emotional effects pertaining to alcohol intoxication in future studies. However, because all these effects of alcohol are intimately connected in a real life drinking setting, it could be argued that it is of little practical importance to try to isolate the effect of each factor. Witnesses almost always know whether they have been drinking alcohol or not, and in most instances they drink among other people and their thoughts and feelings simultaneously influence their perceptions. In conclusion, it is important to note that these results needs to be replicated to be able to give well-founded guidelines to legal and/or clinical practice, and future research should include these basic theoretical areas.

Conclusion

The present study is the first to show that in an applied context, a 0.7 g/kg dose of alcohol may alter witnesses’ perceptions concerning neutral interaction, physical aggression, and guilt in an IPV situation. Reduced capacity for maintaining attention and a dampening of anxiety/inhibitions (all effects inherent to the appraisal-disruption model) are plausible reasons for why alcohol intoxicated witnesses perceived neutral interaction as comparatively more hostile and physical aggression as comparatively less severe. Concerning the comparatively more even distribution of guilt among intoxicated witnesses, our study highlights a possible relationship between increased cognitive load (due to intoxication) and an increased propensity to use stereotypes of IPV-victim behavior when assessing perpetrator and the victim guilt. Based on these results, alcohol intoxication should be considered in witnesses’ statements of how aggressive and guilty they perceived the involved parts in IPV cases.

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