Female Cigarette and Alcohol Consumption as a Short-Term Mating Strategy

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Abstract
In developed countries, the traditional gender gap in youth smoking and drinking is closing. As tobacco and alcohol are more harmful to women than to men, this is an alarming trend. As men are generally more short-term oriented in their sexuality than women, and given that cigarette and alcohol use are still considered masculine behaviors, we explored if female smoking and drinking can function as a short-term mating strategy. By means of a between-subjects experiment (N = 218), men's perceptions of female smoking and drinking were studied. The experiment showed that young men perceive women who use cigarettes and alcohol as being more sexually unrestricted. Furthermore, tobacco and (especially) alcohol use brought some short-term attractiveness benefits to women. In short-term mating contexts, drinking enhanced women's attractiveness, whereas occasional smoking was found equally desirable as not smoking. However, in long-term mating contexts, frequent drinking and all smoking behavior harmed women's desirability. A follow-up study (N = 202) confirmed men's perceptions, showing that female users of tobacco and alcohol are indeed more short-term oriented in their sexuality. Overall, results indicate that female smoking and drinking can operate as a short-term mating strategy.

Keywords
smoking cigarettes, drinking alcohol, short-term mating strategy, signaling, attractiveness, young women

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In young adulthood, smoking cigarettes and drinking alcohol are widespread (Hammond, 2005; Substance Abuse and Mental Health Services Administration [SAMHSA], 2014; U.S. Department of Health and Human Services [DHHS], 2012). Generally, males engage most in these behaviors. Yet, a high number of women also smokes and drinks (Ahlström & Östberg, 2005; DHHS, 2012; SAMHSA, 2014). Even more, research shows that the traditional gender gap in youth smoking and drinking is closing, particularly in the well-developed European and American regions (Amos, Greaves, Nichter, & Bloch, 2012; Flandorfer, Wegner, & Buber, 2010; Hitchman & Fong, 2011; Holmila & Raitasalo, 2005; World Health Organization [WHO], 2005, 2008).

Given the detrimental physical, social, and behavioral effects of early smoking and drinking (Doll, Peto, Boreham, & Sutherland, 2004; Ellickson, Tucker, & Klein, 2003; Jha et al., 2013; WHO, 2014), this is a worrisome trend. Especially since female users are more susceptible to the negative health effects due to physiological differences (Huxley & Woodward, 2011; Mancinelli, Vitali, & Ceccanti, 2009; Neugut & Jacobson, 2006; Nolen-Hoeksema, 2004; Steliga & Dresler, 2011). As women have higher levels of body fat and estrogen, combined with lower levels of metabolizing enzymes, women absorb and retain alcohol more than men. This leads to higher alcohol concentrations in women’s blood and a greater toxicity (Holmila & Raitasalo, 2005; Mumenthaler, Taylor, O’Hara, & Yesavage, 1999; WHO, 2005). In addition, women are more vulnerable to cardiovascular and lung diseases due to a higher genetic susceptibility to tobacco carcinogens (Bennett et al., 1999; Shriver et al., 2000).

In order to halt this alarming trend, more insight is necessary in why young women increasingly engage in cigarette and alcohol consumption.

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Due to asymmetries in fertility and minimum level of parental investment (Buss & Schmitt, 1993; Trivers, 1972), men and women benefit from engaging in different sexual strategies. Men often follow a more short-term oriented, unrestricted mating strategy, approaching a higher number of women. Women, on the other hand, are generally more long-term oriented and restricted. However, both the sexual strategies theory (Buss & Schmitt, 1993) and the strategic pluralism model (Gangestad & Simpson, 2000) point out that men and women follow both mating strategies depending on environmental circumstances (e.g., harshness, uncertainty) and personal characteristics (e.g., attractiveness).

As women are generally more sexually restricted than men (Schmitt, 2005), they are often demanding of a costly courtship before consenting to sexual encounters. Therefore, to avoid high mating efforts, cues of sexual availability in women are beneficial for men following a short-term mating strategy. Accordingly, women engage in behaviors to signal their short-term mating orientation (STMO) to men (Buss & Schmitt, 1993; Regan, Levin, Sprecher, Christopher, & Cate, 2000). Research suggests that women often use signaling strategies analogous to men, to indicate that they are also more manlike and unrestricted in their sexual strategy (Sylwester & Pawlowski, 2011).

Male Short-Term Mating

Several studies indicate that physical risk-taking is used by men in short-term mating situations. Not only does the proximity of attractive women stimulate physically risky behavior (Frankenhuis, Dotsch, Karremans, & Wijgildus, 2010; Pawlowski, Atwal, & Dunbar, 2008; Ronay & Hippel, 2010), physical risk-taking is also found most attractive in short-term mating situations (Bassett & Moss, 2004; Kelly & Dunbar, 2001; Sylwester & Pawlowski, 2011). Also, smoking cigarettes and drinking alcohol—being physically risky behaviors—appear to function as a short-term mating strategy. Young men with high mating motivations engage more in drinking games and smoking behavior (Hone, Carter, & McCullough, 2013; Hone & McCullough, 2015; Jones & Figueredo, 2007), whereas women perceive male cigarette and alcohol users to be more sexually unrestricted and more desirable as a short-term partner than nonusers (Vincze, 2016).

Female Short-Term Mating

Also in women, risk-taking functions as a cue in short-term mating situations. Both physical and social risk-taking (i.e., engaging in nonconformist behavior that can damage one’s reputation) enhance female attractiveness in short-term mating contexts (Bassett & Moss, 2004; Sylwester & Pawlowski, 2011). In long-term mating situations, on the other hand, men prefer risk avoiders (Bassett & Moss, 2004; Sylwester & Pawlowski, 2011), unless the risky activities are moderate (Farthing, 2007).

In line with risk-taking literature and male signaling, research also indicates that female cigarette and alcohol consumption are related to short-term mating. Indeed, and similar to men, women with high mating efforts participate more in drinking games (Hone & McCullough, 2015; Hone et al., 2013). In addition, both young men and women who are actively dating drink more alcohol compared to youngsters who are not dating or who are in a committed relationship (Devos-Comby, Daniel, & Lange, 2013; Pedersen, Lee, Laramier, & Neighbors, 2009). Moreover, the study of Clark (2004) suggests that the amount of money spent on alcohol is a very strong predictor of women’s level of sexual unrestrictedness. Women even indicate considering drinking as a means to indicate sexual willingness to others (Lindgren, Pantalone, Lewis, & George, 2009; Lindgren, Parkhill, George, & Hendershot, 2008), whereas men perceive women who drink alcohol as being more sexually available and willing (Abby, 2002; Garcia & Kushner, 1987; Koukounas, Djokic, & Miller, 2014; Lindgren et al., 2008; Parks & Scheidt, 2000).

In women, smoking behavior is also linked to higher mating efforts and an unrestricted sexual approach (Jones & Figueredo, 2007; Längström & Hanson, 2006). Female adolescent girls with a liberal sexual approach are up to 8 times more likely to smoke (Li, King, & Winter, 2010), while—more so for girls than boys—early dating is a strong predictor of smoking later in life (Fidler, West, Jarvis, & Wardle, 2006). Smoking also appears to be the best predictor of sexual risky behavior in both male and female adolescents (Farid, Rus, Dahlui, Al-Sadat, & Aziz, 2014).

Given the harmful health consequences of smoking and drinking, both behaviors can be considered physically risky for women. In addition, cigarette and alcohol use is still perceived as masculine behavior (de Visser & McDonnell, 2012; de Visser & Smith, 2007; Holmila & Raitasalo, 2005; Rolfe, Orford, & Dalton, 2009), leading to a “manly” impression of women who engage in smoking and drinking (C. Jackson & Tinkler, 2007; Rolfe et al., 2009). As a consequence, smoking and drinking can also be considered social risk-taking, used by women to oppose to traditional gender roles.

Current Research

As women engage in male signaling strategies to indicate a short-term mating orientation to others, we hypothesize that female cigarette and alcohol use can function as a short-term mating strategy. Accordingly, we expect that a woman’s smoking and drinking behavior will operate as a perceivable cue that affects men’s perception. As smoking cigarettes and drinking alcohol can be considered physically and socially risky for women, we believe that a higher cigarette and alcohol consumption will lead to a more unhealthy and risky impression of a young woman’s overall behavior (Hypothesis 1). Moreover, we expect that men will perceive women who engage in cigarette and alcohol use as being more unrestricted in their sexuality (Hypothesis 2). Also, smoking and drinking will bring attractiveness advantages to young women (Hypothesis 3). Corresponding with risk-taking
literature, occasional smoking and drinking behavior—being moderate risky behaviors—will enhance women’s attractiveness in both short-term and long-term mating contexts (Hypothesis 3a). Heavy smoking and drinking, on the other hand, will bring attractiveness benefits only in short-term mating situations (Hypothesis 3b). Additionally, if cigarette and alcohol use function as a short-term mating strategy because of their physical or social riskiness, we also believe that the perceived overall behavioral unhealthiness and riskiness will mediate men’s assessment of women (Hypothesis 4).

Furthermore, for smoking and drinking to operate as a short-term mating strategy, men’s perceptions must correspond with young women’s actual behavior. Therefore, female smokers and drinkers must be more short-term oriented in their sexuality compared to nonusers (Hypothesis 5). Moreover, we believe to find a correlation between users’ level of sexual unrestrictedness and their average cigarette and alcohol consumption that matches with the results of Hypothesis 2 (Hypothesis 6). To answer these hypotheses, two studies were conducted.

**Study 1: The Perception of Female Smoking and Drinking Behavior**

**Design**

To investigate how young men assess women’s sexual strategy and attractiveness as a function of their smoking and drinking behavior, an online between-subjects experiment was conducted. More specifically, a factorial survey approach was used, in which participants evaluated vignettes (descriptions), varying (an) experimental factor(s) (Auspurg & Hinz, 2015). This research approach has already proven successful in the study of risky behavior (Bassett & Moss, 2004; Kelly & Dunbar, 2001; Sylwester & Pawłowski, 2011) and conspicuous signaling behavior (Sundie et al., 2011).

**Participants**

In total, 233 young men started the online experiment. Because of the attractiveness-related questions of Hypothesis 3, participants with a homosexual orientation as well as participants outside the young adult age range and participants with largely incomplete questionnaires were excluded from the data set. The final sample consisted of 218 men, between the age of 18 and 30 (\(M = 21.77, SD = 2.37\)). All participants were Flemish, living in the Dutch-speaking part of Belgium. In Belgium, it is legal to sell alcohol to youngsters from 16 years on. Only when buying liquor, youngsters need to be 18 years. The 16-year-old age limit also counts for buying cigarettes (www.belgium.be), making all participants legal consumers of both substances.

**Materials and Measures**

In this first study, behavioral profiles (vignettes) were created, describing the hobbies of typical young women in circa 70 words. In total, two behavioral profile sets were created, focusing respectively on smoking and drinking behavior. Each profile set consisted of three versions, varying the women’s smoking or drinking frequency. All three versions were identical, except for the last sentence, stating that the person did not use, used occasionally, or used frequently (see Appendix). All participants rated one version of each behavioral profile set, that is, one smoking behavioral profile and one drinking behavioral profile.

To distribute these profiles, three online links were created via the program “Thesistools,” each containing two profiles. All three links first showed a smoking profile followed by a drinking profile, yet varied the behavioral frequencies. For instance, when opening the first link, participants were asked to read a behavioral profile in which the target individual smoked occasionally and one in which she drank alcohol frequently.

To assess the attractiveness of the main character as a function of her smoking/drinking frequency, participants were asked the following: “Based on the profile you just read, how attractive would you find this person as a potential partner in the following situations? (a) a short-term relationship (a date, one-night stand, casual relationship, etc.) and (b) a long-term relationship (loyal, committed relationship, marriage).” Both questions were followed by a 7-point Likert-type scale, ranging from 1 (not at all attractive) to 7 (very attractive).

To gain insight into the perceived sexual strategy, participants were asked to fill in the three attitudinal items of the Sociosexual Orientation Inventory (e.g., Sex without love is OK.), assessing the level of sexual unrestrictedness (Simpson & Gangestad, 1991). However, participants were asked to fill in these questions from the perspective of the main character in the profile (Sundie et al., 2011): “To what extent do you think the person in the profile would agree with the following statements? Answer this question as you think the main character from the profile would reply.” Here also, a 7-point Likert-type scale was used, ranging from 1 (I strongly disagree) to 7 (I strongly agree). A new variable computed the mean score of the three questions, for both the smoking and drinking profiles (\(t_{\text{smoking}} = .81, t_{\text{drinking}} = .79\)). A higher score indicated a more short-term oriented, unrestricted sexual orientation.

Finally, participants also indicated on a 7-point Likert-type scale how unhealthy and risky they considered the overall behavior of the target individual to be: “Based on the profile you just read, to what extent do you agree with the following statements (a) This person behaves in an unhealthy manner and (b) This person behaves in a risky manner.”

Participants agreeing to take part in the experiment randomly received one of the online links to the different vignette sets. Participants were first informed that they would be taking part in an experiment focusing on behavioral perceptions, in which evaluations of others needed to be made. After confirming participants’ confidentiality and anonymity, all participants read and rated the behavioral profiles.

**Statistical Analysis**

In the first study, mixed analyses of variance (mixed ANOVAs) were conducted to verify Hypotheses 1 and 3. Significant main effects were reported via pairwise comparisons. Simple effects
analyses via the SPSS syntax (Field, 2013) were used to discuss significant interaction effects. To study Hypothesis 2, univariate ANOVAs were conducted, followed by Tukey post hoc testing. Finally, for Hypothesis 4, mediation analyses were performed, using Model 4 of the PROCESS procedure of Hayes (2013; http://www.afhayes.com). Because of the high correlation between the two potential mediators unhealthiness and riskiness in both profile sets \( r_{\text{smoking}} = .58, p < .001; r_{\text{drinking}} = .56, p < .001 \), separate mediation analyses were preferred over parallel mediation with two mediators (Kenny, Kashy, & Bolger, 1998). In addition, three dummy variables were created to compare the conditions of the independent variable “profile version”: occasional usage versus no usage, frequent usage versus no usage, and frequent usage versus occasional usage. Bias-corrected bootstrapping (with 5,000 bootstrap samples) was used to generate 95% confidence intervals around the indirect effects of perceived unhealthiness and riskiness on the SOI and attractiveness ratings. Mediation is present when the confidence intervals exclude zero.

**Results**

**The Impact of Smoking and Drinking on Perceived Behavioral Unhealthiness and Riskiness**

To investigate Hypothesis 1, two mixed ANOVAs were conducted: one for the smoking profiles and one for the drinking profiles. Perceived unhealthiness and riskiness served as dependent variables in the within-subjects factor “harmfulness.” Profile version functioned as between-subjects factor, with the three behavioral frequencies: never, occasional, and frequent. For both the smoking, \( F(2, 212) = 15.14, p < .001, \eta^2 = .125 \), and drinking profiles, \( F(2, 214) = 7.95, p < .001, \eta^2 = .069 \), results showed a significant interaction effect between perceived riskiness and unhealthiness as a function of usage frequency. Additionally, there was also a significant main effect of profile version, \( F_{\text{smoking}}(2, 212) = 57.72, p < .001, \eta^2_p = .353; F_{\text{drinking}}(2, 214) = 63.08, p < .001, \eta^2_p = .371 \).

For the smoking profiles, the profile version main effect showed that the vignettes were perceived to be more harmful as the smoking frequency rose \( (M_{\text{frequently}} = 5.01, SD_{\text{frequently}} = 1.11; M_{\text{occasionally}} = 3.84, SD_{\text{occasionally}} = 1.36; M_{\text{never}} = 2.92, SD_{\text{never}} = 1.09; \) all \( p < .001 \)). Simple effects analyses of the interaction effect (see Figure 1) confirmed that this was the case for both perceived behavioral riskiness \( (p < .030) \) and unhealthiness \( (p < .001) \).

For the drinking profiles, the main effect of profile version also showed a higher perceived harmfulness as the drinking frequency rose \( (M_{\text{frequently}} = 4.19, SD_{\text{frequently}} = 1.43; M_{\text{occasionally}} = 2.69, SD_{\text{occasionally}} = 0.92; M_{\text{never}} = 2.16, SD_{\text{never}} = 0.96; p < .005) \). However, the interaction effect clarified that this was only the case for perceived behavioral riskiness \( (p < .002) \). The occasional drinking profile was not perceived to be more unhealthy than the nondrinking profile \( (p = .110) \), whereas the frequent drinking profile did score significantly higher compared to the occasional drinker \( (p < .001) \) and nondrinker \( (p < .001) \).

**Perceived Sexual Strategy as a Function of Smoking and Drinking Behavior**

To study if men actually use women’s smoking and drinking behavior as a cue to infer sexual strategies (Hypothesis 2), two ANOVAs were conducted (one for smoking behavior and one for drinking behavior). The mean SOI score served as dependent variable, whereas profile version—varying between the three behavioral frequencies never, occasional, and frequent—was used as independent variable.

Results indicated that women’s perceived sexual strategy was affected by their smoking behavior, \( F(2, 215) = 8.43, p < .001, \eta^2_p = .073 \), and drinking behavior, \( F(2, 215) = 21.17, p < .001, \eta^2_p = .165 \). More specifically, post hoc analyses (see Figure 2) showed that both an occasional \( (p = .012) \) and frequent smoker \( (p < .001) \) were perceived as significantly more short-term oriented in their sexuality compared to a non-smoker. However, there were no significant differences between the two smoking frequencies \( (p = .599) \). Similarly, frequent \( (p < .001) \) and occasional drinkers \( (p = .010) \) were perceived as significantly more sexually unrestricted compared to a nondrinker. Additionally, a frequent alcohol user was also regarded as having a more short-term-oriented mating tactic compared to an occasional drinker \( (p = .001) \).

**Attractiveness as a Function of Smoking and Drinking Behavior**

Two mixed ANOVAs were conducted (one for smoking behavior and one for drinking behavior) to verify if women’s short-term and long-term attractiveness is affected differently depending on their smoking and drinking frequency. Short-term and long-term attractiveness functioned as the dependent variables in the within-subjects factor “attractiveness.” Profile version (i.e., the three behavioral frequencies) was used as between-subjects factor.
these findings for short-term attractiveness, with no significant short-term attractiveness (factor showed that overall, the smoking profiles received higher (occasional smoking being more attractive than frequent smoking (no differences between a nonsmoker and occasional smoker attractive than a frequent smoker (interaction effect between short-term and long-term attractiveness and the drinking frequency, $F(2, 215) = 17.08, p < .001, \eta^2_p = .137$). The profile version main effect showed that occasional drinking ($M = 5.35, SD = 1.03$) was perceived as more attractive than both not drinking ($M = 4.50, SD = 1.48, p < .001$) and drinking frequently ($M = 4.90, SD = 1.08, p = .034$). Drinking frequently was considered slightly more attractive than not drinking ($p = .048$). However, when looking at the interaction effect (see Figure 3), this pattern differed for short-term and long-term attractiveness. More specifically, both an occasional ($p = .003$) and frequent drinker ($p < .001$) were perceived as more desirable for short-term mating than a nondrinker, with no significant differences between the two alcohol using profiles ($p = .276$). Yet, the attractiveness benefits of heavy drinking faded in a long-term mating context. Only occasional drinking enhanced a woman’s long-term attractiveness compared to not drinking ($p < .001$) and frequent drinking ($p < .001$). Not drinking and drinking frequently did not differ ($p = .432$). Additional follow-up analyses of the interaction effect showed that there were no differences between a woman’s short-term and long-term desirability in the nondrinking condition ($p = .144$). An occasional drinker, on the other hand, was more attractive as a long-term partner ($p = .006$), whereas a frequent drinker was more desirable as a short-term than a long-term partner ($p < .001$).

The Influence of Perceived Riskiness and Unhealthiness on Male Impressions

To investigate if men’s perceptions are affected by the perceived behavioral riskiness (Hypothesis 4), mediation analyses were conducted. The SOI scores, short-term attractiveness, and long-term attractiveness were used separately as outcome variables ($Y$). The three dummy variables of the profile versions served as independent variables ($X$) and covariates, with perceived unhealthiness and riskiness as the two (separate) mediators ($M$).

Results (see Table 1) showed significant positive indirect effects of the smoking and drinking frequency on the perceived level of sexual unrestrictedness, through unhealthiness and riskiness perceptions. These findings indicate that as the smoking and drinking frequency increased, the perceived behavioral unhealthiness and riskiness rose, leading to a more sexually unrestricted impression of the young woman. Only for occasional drinking, no mediation via perceived unhealthiness was found. In addition, in the smoking profiles, no significant indirect effects were present for short-term and long-term attractiveness. However, for drinking alcohol, perceived behavioral riskiness did mediate women’s short-term and long-term
desirability in a positive manner. Accordingly, a higher drinking frequency led to a more risky impression, enhancing a woman’s attractiveness.

Discussion

The findings of the first experimental study showed that both smoking and drinking could be considered unhealthy and risky behaviors that influence men’s perceptions. First of all, both behaviors functioned as a cue for women’s short-term sexual strategy. Additionally, frequent drinking brought short-term attractiveness benefits to women, whereas a similar trend was visible for occasional smoking. These results indicate that cigarette and (especially) alcohol use could function as a female short-term mating strategy. However, for this mating strategy to work, women’s behavior must correspond with men’s perceptions. Therefore, a second survey study was conducted.

The Sexual Strategy of Young Female Smokers and Drinkers

Design

The aim of the second study was to investigate if young women who use cigarettes and alcohol are more unrestricted in their sexuality compared to nonusers (Hypothesis 5) and to verify if there is a correlation between the level of sexual unrestrictedness and the behavioral frequency of users, similar to men’s perceptions (Hypothesis 6). To answer these hypotheses, an online survey was carried out assessing young women’s

| Table 1. Indirect Effects of the Overall Behavioral Perception on Women’s Impressions. |
|-----------------------------------------------|-----------------|
| Smoking Profiles                             | Drinking Profiles |
| Sexual unrestrictedness                      |                   |
| Unhealthiness                                |                   |
| OS vs. NS*                                   | .186 / .095      |
| FS vs. NS*                                   | .381 / .176      |
| FS vs. OC*                                   | .195 / .090      |
| OS vs. NS*                                   | .079 / .056      |
| FS vs. NS*                                   | .533 / .183      |
| FS vs. OC*                                   | .454 / .154      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .077 / .053      |
| FS vs. NS*                                   | .221 / .113      |
| FS vs. OC*                                   | .144 / .081      |
| OS vs. NS*                                   | .161 / .064      |
| FS vs. NS*                                   | .392 / .121      |
| FS vs. OC*                                   | .231 / .085      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .013 / .044      |
| FS vs. NS*                                   | .037 / .114      |
| FS vs. OC*                                   | .024 / .076      |
| OS vs. NS*                                   | .123 / .064      |
| FS vs. NS*                                   | .299 / .144      |
| FS vs. OC*                                   | .176 / .095      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .013 / .044      |
| FS vs. NS*                                   | .037 / .114      |
| FS vs. OC*                                   | .024 / .076      |
| OS vs. NS*                                   | .125 / .064      |
| FS vs. NS*                                   | .299 / .144      |
| FS vs. OC*                                   | .176 / .095      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .013 / .044      |
| FS vs. NS*                                   | .037 / .114      |
| FS vs. OC*                                   | .024 / .076      |
| OS vs. NS*                                   | .125 / .064      |
| FS vs. NS*                                   | .299 / .144      |
| FS vs. OC*                                   | .176 / .095      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .013 / .044      |
| FS vs. NS*                                   | .037 / .114      |
| FS vs. OC*                                   | .024 / .076      |
| OS vs. NS*                                   | .125 / .064      |
| FS vs. NS*                                   | .299 / .144      |
| FS vs. OC*                                   | .176 / .095      |
| Riskiness                                    |                   |
| OS vs. NS*                                   | .013 / .044      |
| FS vs. NS*                                   | .037 / .114      |
| FS vs. OC*                                   | .024 / .076      |
| OS vs. NS*                                   | .125 / .064      |
| FS vs. NS*                                   | .299 / .144      |
| FS vs. OC*                                   | .176 / .095      |

Note. LLCI = lower level confidence interval; ULCI = upper level confidence interval; NS = no smoking; OS = occasional smoking; FS = frequent smoking; ND = no drinking; OD = occasional drinking; FD = frequent drinking; a × b = indirect effect of X on Y through M.

*Significant indirect effect.
smoking and drinking behavior as well as their mating strategy. Corresponding with large surveys on substance use, (Johnston, O’Malley, Bachman, Schulenberg, & Miech, 2014; Steketee, Jonkman, Berten, & Vettenburg, 2013), both the frequency and average consumption of cigarettes and alcohol were measured.

Respondents

The final sample consisted of 202 Flemish young women between the age of 18 and 30 years old ($M = 21.39$, $SD = 2.5$). Of this sample, 16.8% smoked cigarettes ($n = 34$). Almost all women indicated drinking alcohol (91.1%), with only a small group never drinking any alcohol ($n = 18$).

Measures

The questionnaire started by asking the respondents if they sometimes smoked or drank alcohol. Additionally, the smoking and drinking frequency of users was measured by questioning on how many days in the previous month they had smoked cigarettes or drank alcohol. Answers were given on a 7-point scale with fixed categories (not a single day, 1–2 days, 3–5 days, 6–9 days, 10–19 days, 20–29 days, and all days). Subsequently, average weekly consumption was assessed by asking how often respondents smoked cigarettes or drank alcohol on average per week. This was measured with an 8-point scale (less than 1 cigarette a week, 1–3 cigarettes a week, 4–10 cigarettes a week, 11–20 cigarettes a week, 1–3 cigarettes a day, 4–10 cigarettes a day, 11–20 cigarettes a day, and more than 20 cigarettes a day). The same frequency categories were used for alcoholic drinks.

To assess young women’s level of sexual unrestrictedness, the Revised Sociosexual Inventory (Sociosexual Orientation Inventory (SOI)-R; Penke & Asendorpf, 2008) was used. This inventory consists of nine questions, addressing a person’s attitude toward casual sex (e.g., Sex without love is OK), their sexual desires (e.g., How often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?), and past behavioral experiences (e.g., With how many different partners have you had sex within the past 12 months?). Additionally, the Short-Term Mating Orientation (STMO) Scale and Long-Term Mating Orientation (LTMO) Scale were added, measuring both short-term and long-term mating tendencies separately via statements (Jackson & Kirkpatrick, 2007). The STMO contains 10 statements (e.g., Sometimes I would rather have sex with someone I do not care about), whereas the LTMO consists of seven questions (e.g., I hope to have a romantic relationship that lasts the rest of my life). All scales had sufficient internal consistency ($\alpha_{\text{SOI-R}} = .83$, $\alpha_{\text{STMO}} = .89$, $\alpha_{\text{LTMO}} = .75$).

Statistical Analyses

Mann–Whitney tests were used to verify if the mating strategy of smokers and drinkers differs from nonusers (Hypothesis 5). This nonparametric variant for testing two groups was chosen because of the large differences in sample sizes between users and nonusers, combined with a violation of the normality assumption for some groups. Second, one-tailed correlations were conducted to verify if users’ level of sexual unrestrictedness rises with their smoking and drinking frequency (Hypothesis 6). As respondents indicated their frequency and average alcohol and cigarette consumption on a scale with fixed answer categories, the nonparametric correlation measure “Spearman rho,” suited for ordinal variables, was opted for.

Results

Three Mann–Whitney tests were conducted for both smokers and drinkers, with being a user/nonuser as independent variable and the SOI-R, STMO, and LTMO as dependent variables. Results showed that smokers ($Mdn = 3.56$) scored significantly higher on the SOI-R compared to nonsmokers ($Mdn = 2.67$), indicating a higher level of sexual unrestrictedness ($U = 2,097$, $z = -2.44$, $p = .015$, $r = -.17$). No significant differences were found for the STMO ($U = 2,451$, $z = -1.21$, $p = .227$, $r = -.09$) and LTMO Scales ($U = 2,696.5$, $z = -0.41$, $p = .682$, $r = -.03$). For drinking alcohol, the STMO Scale showed that drinkers ($Mdn = 3.10$) were more short-term oriented in their sexuality than nondrinkers ($Mdn = 2.40$), $U = 1,045$, $z = -2.53$, $p = .011$, $r = -.18$. A similar nonsignificant trend was found via the SOI-R ($U = 1,246.5$, $z = -1.73$, $p = .083$, $r = -.12$), with a higher level of sexual unrestrictedness for drinkers ($Mdn = 2.78$) than nondrinkers ($Mdn = 2.39$). Finally, also the LTMO Scale indicated a trend in which nondrinkers ($Mdn = 4.64$) were more long-term oriented in their sexuality than drinkers ($Mdn = 4.57$), $U = 1,182$, $z = -1.95$, $p = .051$, $r = -.14$.

In addition, Spearman one-tailed correlations between the usage of smokers and drinkers (frequency and average consumption) and their level of sexual unrestrictedness were conducted. Results found no clear correlation between users’ smoking frequency and their level of sexual unrestrictedness, measured by the SOI-R, STMO, or LTMO. Only the average smoking behavior correlated significantly with the SOI-R Scale, showing a medium positive relation ($r_s = .34$, $p = .025$). For alcohol use, on the other hand, results showed that women who drank more frequently and who had a higher average consumption also had higher scores on the SOI-R and vice versa ($r_s$ frequency $=.38$, $p < .001$; $r_s$ average $=.36$, $p < .001$). This medium positive correlation was also found when looking at the STMO Scale ($r_s$ frequency $=.36$, $p < .001$; $r_s$ average $=.28$, $p < .001$). Finally, also the small negative correlation between alcohol consumption and the LTMO indicated that drinking regularly is linked to being less long-term oriented sexually ($r_s$ frequency $=-.11$, $p = .065$; $r_s$ average $=-.139$, $p = .031$).

Discussion: Study 2

Results of this follow-up study confirmed that young women who smoke and drink are more unrestricted in their sexuality compared to nonusers. Additionally, a higher alcohol
consumption was positively correlated with a higher level of sexual unrestrictedness. Young women’s cigarette consumption, on the other hand, was associated less with their level of sexual unrestrictedness. These findings correspond with men’s perceptions, making no distinction between the sexual strategy of occasional and frequent smokers, although perceiving heavy and occasional drinkers differently.

**General Discussion**

Despite the more harmful health effects of cigarette and alcohol use for women, the traditional gender gap in smoking and drinking behavior is closing in well-developed countries. Therefore, this article explored if female smoking and drinking can operate as a short-term mating strategy. By means of an experiment, we studied if cigarette and alcohol use affected the perceived overall unhealthiness and riskiness of women’s behavior (Hypothesis 1), if men perceived young female smokers and drinkers as more sexually unrestricted (Hypothesis 2), if smoking and drinking brought attractiveness benefits (Hypothesis 3), and if men’s perceptions were mediated by the perceived behavioral unhealthiness and riskiness (Hypothesis 4). A follow-up study verified if men’s perceptions corresponded with women’s actual behavior and sexual strategy (Hypotheses 5 and 6).

Consistent with Hypothesis 2 and previous literature (Koukounas et al., 2014; Lindgren et al., 2008; Parks & Scheidt, 2000), the experiment confirmed that women who smoke and drink were actually perceived as being more unrestricted in their sexuality compared to nonusers. However, the extent to which women smoke did not affect their impression, whereas a frequent drinker was perceived as more short-term oriented compared to an occasional drinker.

In addition, drinking enhanced women’s attractiveness. As stated in Hypothesis 3α, drinking occasionally was considered more desirable in a woman than not drinking, both in a short-term and long-term mating context. Moreover, confirming Hypothesis 3b, frequent drinking was also perceived as more attractive than not drinking but only for short-term mating. For smoking, only a trend was visible, in which short-term attractiveness benefits were limited to not harming women’s desirability. More specifically, an occasional female smoker was considered equally attractive by men as a nonsmoker but only in short-term mating contexts. A woman’s long-term attractiveness, on the other hand, was negatively affected when smoking occasionally. Smoking frequently was found the least appealing in both mating contexts.

These attractiveness findings of drinking alcohol correspond with general risk-taking literature showing that heavy physical and social risk-taking are attractive only in short-term mating contexts (Bassett & Moss, 2004; Sylwester & Pawlowski, 2011), whereas moderate risk-taking can also be advantageous for long-term mating (Farthing, 2007). Moreover, as moderate drinking is often driven by social motivations and used for bonding with others (de Visser, Wheeler, Abraham, & Smith, 2013; Kuntsche, Knibbe, Gmel, & Engels, 2005), this might also be a preferred characteristic in a long-term romantic partner, explaining the high attractiveness of occasional drinking. Finally, similar results were found in a recent study, showing that a person’s general (i.e., long-term) attractiveness increased when drinking a moderate amount of alcohol, yet decreased when drinking more (Van Den Abbeele, Penton-Voak, Attwood, Stephen, & Munafo, 2015).

The second study confirmed the male perceptions of Study 1 (Hypothesis 5), showing that users of cigarettes and alcohol were more short-term oriented in their mating strategy than nonusers. These results also agree with studies linking higher mating efforts to smoking and drinking behavior, in both men and women (Hone & McCullough, 2015; Hone et al., 2013; Jones & Figueredo, 2007). Furthermore, the survey revealed that female users’ level of sexual unrestrictedness was not consistently correlated with their smoking frequency, yet was clearly related to their alcohol consumption. This also matches with the male impressions of Study 1, in which female smokers were perceived as being more short-term oriented independent of their smoking frequency, whereas their impression was affected by the drinking frequency.

These findings show that female smoking and drinking behavior are perceivable short-term mating cues, affecting a woman’s attractiveness. In addition, there appears to be a clear link between a woman’s sexual orientation and her cigarette and alcohol consumption. Yet, the question remains why. On the one hand, results indicated that smoking and drinking can be considered unhealthy and risky behaviors, affecting the overall behavioral impression of women. On the other hand, Hypothesis 4, verifying if men’s perceptions are actually mediated by the perceived behavioral unhealthiness and riskiness, was only partially confirmed. As expected, the perceived sexual strategy was mediated in a positive manner. Accordingly, a higher smoking and drinking frequency led to a more sexually unrestricted impression through a higher perceived unhealthiness and riskiness. However, perceived riskiness only mediated the short-term and long-term attractiveness of the alcohol profiles, with no significant mediating effects on the attractiveness ratings of the smoking profiles. The fact that a higher perceived riskiness of drinking alcohol enhanced a woman’s short-term desirability corresponds with scientific literature, showing that drinking alcohol can be considered socially risky behavior in women (cf. supra), increasing women’s short-term desirability (Sylwester & Pawlowski, 2011). Moreover, it could also indicate a higher willingness to take sexual risks. The finding that a higher perceived riskiness also raised a woman’s long-term attractiveness was rather unexpected. Possibly, this could point out that the perceived riskiness of drinking behavior remained rather moderate.

In the theoretical part, we mentioned that smoking and drinking might function as a short-term mating strategy because of its’ masculine connotation (Sylwester & Pawlowski, 2011). According to the social role theory, male and female gender roles are learned through cultural transmission and socialization. Consequently, women would also be socialized through these gender roles to find unhealthy
consumption behaviors masculine (Eagly & Wood, 1999; Valkdron, 1997). Although we agree with this cultural approach in that women can use masculine behavior to signal information about themselves to others, we believe that it is not cultural transmission that makes smoking, drinking, and other risk-taking typically male behavior. All over the world, young men engage most in risk-taking behavior (Kruger & Nesse, 2004). Moreover, as testosterone levels correlate with these risky behaviors, there appear to be biological determinants present (Ronay & Hippel, 2010; Saad & Vongas, 2009; Stenstrom, Saad, Nepomuceno, & Mendenhall, 2011; Sylvester & Pawlowski, 2011). Furthermore, these biological determinants are also found in women. For instance, unrestricted women appear more masculine in body, behavior, and mind (Campbell et al., 2009; Clark, 2004; Mikach & Bailey, 1999), while having higher testosterone levels (Edelstein, Chopik, & Kean, 2011; van Anders, Hamilton, & Watson, 2007). However, we do believe that cultural transmission affects which behaviors are considered suitable signaling behavior. Applied to this research, we believe that the positive perception of drinkers and drinking and the more negative discourse about smoking partly explain why alcohol confirms our expectations more than using cigarettes.

Due to alterations in the brain chemistry, low levels of alcohol reduce stress, create a positive mood, and make people less inhibited. Consequently, moderate drinkers are often more socially unrestricted and pleasant (Mitchell et al., 2012; National Institute on Alcohol Abuse and Alcoholism, 2010). In addition, moderate alcohol consumption is often perceived as positive, due to studies indicating that occasional, moderate drinking can have positive effects on one’s health (Di Castelnuovo et al., 2006; Ellison, 2007; Gutjahr, Gmel, & Rehm, 2001; Koppes et al., 2005). Although recent research contradicts these health improving qualities of moderate alcohol consumption (Chikritzhs et al., 2015; Fekjær, 2013; Stockwell et al., 2016), the idea is still present among many consumers. Also, youngsters are confronted with a large amount of advertisements, in which attractive people promote alcoholic beverages (Gunter, Hansen, & Touri, 2008; Snyder, Milici, Slater, Sun, & Strizhakova, 2006). Accordingly, drinking alcohol is widely accepted, with more than 90% of Flemish college and university students using alcohol (Lorant, Nicaise, Soto, & d’Hoore, 2013; Rosiers et al., 2014).

The discourse on smoking, on the other hand, is much more negative, as the dangers of cigarette use are stressed in many communications (e.g., in Belgium, every package of cigarettes contains a warning) and cigarette advertising is often no longer allowed. Additionally, although smoking briefly stimulates the smoker’s mind (National Institute on Drug Abuse, 2016), it does not have the same inhibiting effects as alcohol on the user’s behavior. Consequently, smoking is not always regarded in a positive manner (Chassin, Presson, Sherman, & Kim, 2003; Piko, Bak, & Gibbons, 2007), leading to “only” 30% of the Flemish university and college students smoking cigarettes (Rosiers et al., 2014).

### Future Research and Limitations

First of all, the first study did not take into account the smoking and drinking behavior of the participants. Consequently, in a future study, it would be relevant to find out if users and non-users perceive smokers and drinkers differently. Furthermore, the first study measured the perceived unhealthiness and riskiness of the behavioral profiles, yet did not explicitly focus on social riskiness. Also, the behavioral profiles of the first study described an active lifestyle. Future research could verify if men’s perception of young women as a function of their smoking and drinking behavior differs when other characteristics are described. Moreover, we would also propose future studies to focus on the quantity of smoking and drinking behavior, next to the frequency. After all, the amount of alcohol and cigarettes used on one occasion could also have a high impact on people’s impression, especially when considering a short-term sexual relationship. In our second survey study, we only had a limited number of young women who abstained from drinking or who choose to smoke. Although the lower amount of nondrinkers and smokers corresponds with recent studies (Lorant et al., 2013; Rosiers et al., 2014), and special care was given to the statistical assumptions, future studies should verify if the same results are present in larger samples.

Finally, the findings indicate that female smoking and drinking can operate as a short-term mating strategy. However, the studies in this article are limited to exploring this hypothesis, showing that female smoking and drinking functions as a perceivable cue, affecting women’s attractiveness. Moreover, it also shows that women’s smoking and drinking behavior corresponds with this cue. However, more research is necessary to find out if this link between cigarette/alcohol use and short-term mating is an actual signaling system, in which the cues are meant to indicate a short-term mating orientation (STMO) (Donath, 2007). Corresponding with research on luxury consumption as a signaling system (Hudders, De Backer, Fisher, & Vyncke, 2014; Wang & Griskevicius, 2014), studies verifying if short-term mating motivations stimulate smoking and drinking behavior in women are necessary. In addition, more research is necessary to clarify if smoking and drinking is rather intentional than unintentional, rather implicit than explicit communicative signaling strategy. However, women’s smoking and drinking does not have to be conscious and deliberate for these behaviors to function as a sexually strategic signal.

### Conclusion and Implications

In conclusion, findings showed that smoking and (especially) drinking can operate as a short-term mating strategy, functioning as a mating cue and bringing attractiveness benefits in short-term mating contexts. As the traditional gender gap in youth smoking and drinking is closing, and given the harmfulness of both behaviors to women, these findings are of interest to social marketing professionals and institutions addressing youth cigarette and alcohol use. Not only do these findings give
insight into less obvious female behavioral motivations, it also show that emphasizing physical or social risks (e.g., in social marketing campaigns) in order to prevent smoking and drinking might not always have the desired effect. Even more, it may turn out to be contra productive.

Appendix

Example of Vignettes

Sophie likes to play tennis and follows weekly lessons. She especially enjoys playing a friendly game of tennis but is less interested in winning. She also has a regular cooking evening with friends, in which they each take turns trying out a recipe. Sophie’s favorite food is pasta, and she likes trying out surprising combinations. Sophie does not drink alcohol. You will never see her taking a sip of an alcoholic beverage.

Sophie likes to play tennis and follows weekly lessons. She especially enjoys playing a friendly game of tennis but is less interested in winning. She also has a regular cooking evening with friends, in which they each take turns trying out a recipe. Sophie’s favorite food is pasta, and she likes trying out surprising combinations. Occasionally, Sophie likes to drink alcohol.

Sophie likes to play tennis and follows weekly lessons. She especially enjoys playing a friendly game of tennis but is less interested in winning. She also has a regular cooking evening with friends, in which they each take turns trying out a recipe. Sophie’s favorite food is pasta, and she likes trying out surprising combinations. Sophie drinks alcohol frequently. Both when she is alone or in company, she likes to drink alcoholic beverages.

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