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CAN CIGARETTE SMOKING MAKE A MAN APPEAR SEXIER AND STRONGER TO WOMEN?

This paper focuses on naïve theories, illusions, and misconceptions regarding the outcome of men's cigarette smoking on female impressions. Beliefs about those outcomes were examined in a correlational study and their content was compared with the results of previous experimental verification. Male and female participants (N = 396) responded to an advertisement placed on an online general-interest forum and completed a questionnaire concerning their beliefs about the impact of cigarette smoking in men on their self-presentation to women. This included impressions of attractiveness, intelligence, strength, sexiness, and other male qualities. Results show that people believe that smoking decreases a man's perceived aptitude for being a woman's long-term partner. The belief that smoking enhances a man's attractiveness to a woman as a short-term partner was limited to female smokers. Non-smokers believed that smoking in men signals poor impulse-control. Gender, age, smoking status (smoker vs non-smoker), and number of cigarettes smoked daily appeared to play an important role in predicting expressed beliefs. Young female smokers were indicated as the subgroup bearing the most optimistic illusions.

Keywords: cigarette; smoking; belief, illusion; self-presentation;

Despite widespread knowledge of the dangerous effects of tobacco use and introduction of anti-tobacco use legislation, Poland remains a country with one of the highest cigarette consumption rates in the world over the last 25 years (Balczewska, 2004; WHO Regional Office for Europe, 2009). Smoking prevalence has decreased among males in Poland since the 1970s when it was 64% (while it slightly increased among females from 21% in 1970s to 25% in 2011), but death rates attributed to smoking have remained relatively constant and high, representing 18-19% of all deaths in Poland (29% of deaths within the male population) according to World Health Organization. This means that almost every fifth Polish person (and almost every third Polish man) dies of smoking-related diseases (Szczuka & Roszkowski-Sliz, 2008; WHO Regional Office for Europe, 2009).

Both smokers and non-smokers believe that smoking is detrimental to good health (Biasco & Hartnett, 2002; Hines, Fretz, & Nollen, 1998; Kuznar-Kaminska, Brajer, Batura-Gabryel, & Kaminski, 2008). In order to help provide public information and anti-tobacco advocacy, there are Great Polish Smoke-out campaigns organized in November every year since 1992 (lasting for at least one month). Poland also participates in the annual World No Tobacco Day and introduced law which prohibits smoking in public spaces in 2010. In spite of such efforts, and a complete prohibition of advertising and promotion of tobacco products in Poland since 1999, many people (including students in health-

related fields) still take up smoking (Kanicka, Szpak, Drygas, Rzeźnicki, & Kowalska, 2007). What makes people start smoking cigarettes even though they are aware of its dangerous effects? One of determinants of this paradoxical phenomenon might be self-presentation. It is possible that a strong factor underlying the initiation of addictive behaviours is the widespread misconceptions of their positive impact on attractiveness (LaBrie, Cail, Hummer, & Lac, 2009; Martin & Leary, 2001); the objective of this study was to indicate such misconceptions and illusions in Polish people.

Scientists have proposed a possible mechanism through which smoking might enhance attractiveness. There is strong evidence that both men and women prefer brave and risk-taking individuals as partners and friends, with women showing a gradual increase in desirability with increasing risk (Bassett & Moss, 2004; Kelly & Dunbar, 2001). Only women expressed a preference for risk-takers in their long-term romantic partners. These results are partially congruent with predictions based on the perspective of evolutionary psychology, particularly the parental investment theory (Trivers, 1972) which states that the sex which bears the greatest cost of reproduction (women in the case of *homo sapiens*) will be the most selective when choosing a mate. There are at least two candidate explanations as to why ancestral women would have preferred mates who engaged in dangerous and potentially self-destructive behaviours: one states that such behaviours help acquire higher status and resources or demonstrate the abilities necessary for resource acquisition. The other explanation is that risk-taking might work as an honest cue or signal for "good genes", just as it was proposed by Zahavi (1975), formalized by Grafen (1990) and Godfray (1991), and elaborated and popularized by Diamond (1992).

Zahavi's Truthful Signalling Hypothesis (TSH), known also as the Handicap Principle, predicts that the more costly the feature, the more honest the signal. The argument, originally formulated by the biologist Amotz Zahavi, runs as follows: in a population in which males vary in their quality, some of the males possess a handicap - a costly or deleterious character which reduces survival. If only males with high quality genes can survive possessing a handicap, a female who mates preferentially with handicapped males will only mate with males who survived a test and have the best genotypes of the male population.

Since its formulation over 30 years ago the Handicap Principle has been offered to explain a number of different human features and behaviours, including reckless driving among young men (Nell, 2002) and addictive behaviours like tobacco and cigarette smoking (Diamond, 1992). It has been suggested that just like a peacocks' tail, they might serve as fitness cues and should therefore enhance a man's attractiveness by paradoxically signalling health and immunity. Claims that the Handicap Principle can be successfully applied to such a large number of phenomena, ranging from suicide, potlatch, sex, and menstruation to having breasts and beards (Zahavi, 1997), met severe criticism. The review of Zahavis' book *The handicap principle: A missing piece of Darwin's puzzle* (1997) was entitled *Jumping to Bold Conclusions* (Bullock, 1999) and it accused the work of informality, lack of empirical support, and theoretical consistency. The reviewer expressed doubt that human behaviours claimed by Zahavis to be "handicaps", such as cigarette smoking, actually satisfy the criteria of a handicap. To consider such a possibility, there should be evidence that: 1) evolution has selected for a tendency to smoke; that is, those of our ancestors who tended to smoke enjoyed increased reproductive success (if we assume that smoking "has been around" long enough to acquire any evolutionary significance) and 2) it should be demonstrated what smoking actually signals and that it serves only as a signal and has no other functions.

Existing literature on smoking provides answers to some of these considerations. First of all, smoking has many functions outside of signalling, and in fact these other functions seem to be primary (Berlin et al., 2003). Second, smoking is not a simple unequivocal attractiveness-enhancer, nevertheless smokers might believe so (Norman & Tedeschi, 1989; Roth & Gammage, 2006). Martin and Leary (2001) proved that out of 10 health-risk behaviours, smoking was one of only two (along with unprotected sex) behaviours performed in order to create the impression of being attractive. Indeed, few people sneak off alone for their first experiences with tobacco, alcohol, or other drugs (Friedman, Lichtenstein & Biglan, 1985; Leary, Tchividjian, & Kraxberger, 1994). Yet studies do not provide consistent results about impressions created from cigarette smoking. Smoking has been associated with images of toughness, independence, and maturity (Camp, Klesges, & Relyea, 1993; Chassin, Presson, Sherman, Corty, & Olshavsky, 1981; Covington & Omelich, 1988), as well as adventurousness, sociability, openness, flexibility, emotional deepness, and being unrepressed (Hines et al., 1998; Shute, 1975). Biasco and Hartnett (2002), who examined college students' attitudes toward smoking, indicated that 69% of participants agreed with the statement "smoking is unattractive". However, in other studies it was associated with being less attractive, less feminine or masculine, and less refined. In those studies both smokers and non-smokers preferred dating non-smokers and found them more attractive than smokers (Biasco & Hartnett, 2002; Hines et al., 1998). It is possible that research methodology might have been of crucial significance here: studies by Hines and colleagues (1998) and Biasco and Hartnett (2002) used only self-reported aware attitudes of their subjects, so they might have failed to capture the possibly unaware influence that smoking has on observers' impressions. In an experimental investigation by Jones and Carroll (1998) using video presentations with hypothesis-blind and manipulation-blind subjects, a smoking female model was rated as more outgoing, more sophisticated, not as easy to manipulate, and less emotional about breaking up with her boyfriend than her non-smoking counterpart. Yet no differences in ratings of her popularity or attractiveness were found. In another experiment by Lee (1989) a female smoker was perceived as less healthy but more independent, modern, and hard-working than her non-smoking counterpart. To summarize, empirical evidence is mixed and contradictory with no clear evidence that smoking enhances perceptions of attractiveness.

In order to fill this gap, we formed an experiment which directly tested the applicability of Zahavi's Handicap principle to male cigarette smoking on hypothesis and manipulation blind participants (Czarna & van Leeuwen, under review). We found that cigarette smoking does not translate directly to increased attractiveness. Instead, it seems to make a man appear slightly less attractive and might also lower the degree to which women simply like the man. Smoking may enhance typical masculine characteristics of a man, contributing to a more "macho" image by making men seem more impulsive, potentially aggressive, socially leading, bolder, and also better short-term romantic partners. Even if smoking does not signal increased attractiveness, but only higher aptitude for being a short-term partner, it would still be a valid clue for considering smoking to be an honest signal in terms of the TSH (as it could enhance men's reproductive success). However, we found that the effects (the perceptions) were partly dependent on the smoking status of a perceiver. For example: only female smokers found male smokers to be better possible short-term partners (for a more detailed description of the results see: Czarna, van Leeuwen, under review). Such moderation effects have not been theorized by Handicap Principle and are not in line with it. According to TSH, all females attend to honest signalling and none

would advantageously deviate from preferring high-signalling males (Hausken & Hirshleifer, 2004). We therefore argue that the results of our experimental investigation do not support the applicability of the Handicap Principle to smoking. To summarize, 1) smoking does not signal increased attractiveness nor generally higher aptitude for mating, 2) smoking has functions other than signalling and those functions are primary, 3) there is no basis to claim that smoking has been around long enough to gain any evolutionary significance. Based on these findings, we propose to reject the hypothesis that smoking is an honest signal in terms of the Handicap Principle.

Having dismissed Truthful Signalling Hypothesis as a plausible explanation of smoking as an honest signal, we present a study which is partly atheoretical. As the smoking rates in Poland and in particular among Polish women are on the rise (in 2011 alone the smoking rate among Polish women grew by four percent), we believe that it is an important social issue and searching for possible explanations of why people start smoking is a worthy enterprise. This time we want to focus on more proximate "reasons" that Poles have for entering a smoking habit, namely explicit beliefs about the impact of cigarette smoking on self-presentation. Research findings consistently show that cigarette smoking is one factor involved in image portrayals (Mermelstein & The Tobacco Control Network Writing Group, 1999). Yet for some people the 'right image' may include smoking while for others not smoking may be the key, and explicit beliefs as well as a cultural and social backgrounds might have crucial significance here. Thus an important step towards explaining self-presentational reasons that Polish people have for smoking is to find their current specific beliefs about the image gains of smoking. We found that on a more implicit level female smokers found male smokers to be more appealing than non-smokers in the short-run. We want to know whether they are aware of their implicit tendencies in that regard.

The present study is therefore complementary to the described experimental explorations of more implicit associations between cigarette smoking and attractiveness as well as other features (Czarna & van Leeuwen, under review). This time we want to provide insights into smokers' and non-smokers' explicit beliefs about the impact that the smoking status of an observed man has on female judgement of his attributes. The study has two objectives: one is to find beliefs about the impact of a man's smoking on female perceptions of him and to explore a possible role of age, gender, and perceiver's smoking status in those cognitions; the other is to identify illusions and misconceptions about this impact held by smokers and non-smokers by comparing current results with the results of our aforementioned experimental investigation.

The role of a perceiver's smoking status in cognitions involving smoking has long been debated. Some studies (Fishbein, 1982; Jones & Carroll, 1998, Lee, 1989) suggest that the smoking status of participants does not affect their view of a smoker, while others indicate an important role of the status for explicit associations (Maison, 2004; Swanson, Rudman, & Greenwald, 2001). Similarly, early studies using implicit measures like the Implicit Association Test (IAT) found that both smokers and non-smokers associate smoking slightly more with negative than positive valence (Maison, 2004; Swanson et al., 2001). Greenwald (2003) suggested that implicit measures such as the IAT should be able to play a useful role, complementing self-report measures, in assessing cognitions that relate to risky health behaviour. Nevertheless, the affect involved in maintaining smoking for habitual smokers was not observed at the level of associations that could be measured by the IAT. According to Greenwald, it could conceivably require yet another new measure type to gauge the involvement of affect in the regulation of smoking behaviour. However, a more recent investigation utilizing a further personalized version of IAT

showed a significant difference in valence of associations, dependent on participants' smoking status (De Houwer, Custers, & De Clercq, 2006). It was similar to that found on a more explicit level: positive implicit attitudes toward smoking in smokers and more negative in non-smokers. Though limited in scope (to beliefs concerning female perceptions of male smokers), the current study further investigates the role of a perceiver's smoking status and provides insight into the specific content of explicit smoking-related beliefs in Polish participants. It also shows to what extent the implicit and explicit effects are congruent.

Gender is an important factor in cognitions related to risky, potentially addictive behaviours, especially when they are driven by self-presentational or mating motives (Hill, Durante, 2011). It influences risk perception: women show on average lower comparative and absolute risk perceptions than men, indicating greater unrealistic optimism. One reason for this finding might be a tendency of female smokers to use a male smoker's stereotype as a comparison standard for estimating their own risk (Dohnke, 2006). A similar phenomenon likely underlies the misperceptions of opposite-sex 'reflective' normative preferences found in drinking standards among college women (LaBrie et al., 2009). A simple reason why women are closing the gender gap in drinking and smoking rates might be their impression management strategies and their convictions. As one recent study suggests, women who drink like men do not do so because they want to *be like* a man (in terms of male power), but rather because they want to *be liked* by men. There is more evidence indicating that factors driving female smoking are different from the ones fueling male tobacco use (Thege, Stauder, & Kopp, 2009),for example, life meaning proved to be a significant negative predictor of smoking intensity for women, while it had no significance for men.

Age might also play an important role in determining cognitions related to smoking. As

other studies have suggested (Friedman et al., 1985; Chassin et al, 1981; Leary et al., 1994), tobacco use seems to be perceived as attractive particularly by young people.

In general, beliefs are important: positive reasons for smoking, rationalizations or justifications to continue smoking, as well as disengagement beliefs may discourage quitting (Chapman, Wong, & Smith, 1993; Fidler & West, 2009; Kleinjan, van den Eijnden, & Engels, 2009; Martin & Leary, 2001; Yong & Borland, 2008). Impact of personality variables and media exposure on smoking are mediated through cognitions (Conner, Grogan, Fry, Gough, & Higgins, in press; Islam & Johnson, 2007). Certain beliefs about smoking are associated with a smoking status (Parkinson, Hammond, Fong, Borland, Omar, Sirirassamee et al., 2009), certain explicit convictions help predict non-smokers' transition to a smoking status with time (Grogan, Conner, Fry, Gough, & Higgins, 2009), while others are helpful in predicting smokers' shift to abstinence (Tipton, 1988).

The current study has two objectives. One is to identify beliefs concerning the impact of man's smoking on female perceptions of him and to explore a possible role of age, gender, and perceiver's smoking status in those cognitions. The other goal is to indicate particular illusions and misconceptions about positive outcomes of cigarette smoking on male self-presentation in the eyes of a female, which might encourage smoking among Polish people. It is important to understand what we refer to as an "illusion" or a "misconception" in this research – it is a belief about the impact of cigarette smoking which is incongruent in direction with the impact observed in our earlier experiment, specifically the overall sample of hypothesis-blind and manipulation-blind participants. Illusions are identified by researching beliefs about the impact of smoking and comparing their content with the results of our previous experimental verification.

We hypothesize that beliefs about the influence of cigarette smoking on male self-

presentation will be dependent both on gender and on smoking status, with women and smokers expressing more positive beliefs about the impact of cigarette smoking on male self-presentation. We also hypothesize that the more people smoke, the more positive beliefs about the impact they will express. Based on the cognitive dissonance theory (Festinger, 1957), we also expect that there will be discrepancies not only between smokers' and non-smokers' beliefs but also between beliefs about the effects and the observed effects that we found in our earlier experimental examination. In other words, we expect that people are partly unaware of the real impact of cigarette smoking on men's self-presentation in the eyes of a female, with smokers in particular underestimating its negative effect. However, we do not have any specific hypotheses about which beliefs in particular should show these discrepancies.

METHOD

PARTICIPANTS

The sample was composed of 396 volunteers from unique IP addresses (198 female and 198 male; age M = 28.1, min = 17, max = 53, SD = 6.0) who responded to an online advertisement post placed for free in the Polish general-interest forum "po godzinach", or the "forum for people who want to relax and chill out" in late 2007 and early 2008. They completed an online survey providing their opinions on the impact of cigarette smoking on male self-presentation in the eyes of a female. They then reported their sex, age, and selected their smoking status as "never-smoker", "former smoker", or "current smoker". For the purposes of statistical analysis, data from former smokers and non-smokers were collapsed into one category as their results did not differ significantly. Current smokers also provided an approximate number of cigarettes smoked per day. No payment was offered for participation.

Within the sample, 27% smoked cigarettes and 73% were non-smokers (of those 29% admitted that they had been smokers in the past) – these results matched well with the data of a 2007 survey (Kanicka, Szpak, Drygas, Rzeźnicki, & Kowalska, 2007) which showed a 30.8% prevalence of smoking among Polish public health students (26.4% among women) and with several other studies (Brzostek, Kulig, Kózka, & Malinowska; 2003; Public Opinion Research Center, 2011; Krzych, 2004; Kuźnar, Batura-Gabryel, & Młynarczyk, 2002; Pietryka-Michałowska, Wdowiak, & Dreher, 2004). These numbers also matched well with the estimated number of Polish smokers provided by the Public Opinion Research Center (PORC, 2011) and World Health Organization (WHO Regional Office for Europe, 2009): 31% in 2007 and 32% in 2009 for the total population, respectively. The percentage of smokers among Polish males in 2011 is estimated as 35% and has been decreasing since 1970s when it was 64%, while among women it was 25% and has remained relatively constant . In the present sample, 30% of men and 24% of women indicated that they were currently smokers. The fact that male smokers might seem to be slightly underrepresented in the current sample may be due to age: the mean age in our sample was 28 (with median = 27 the distribution was very slightly positively skewed, g_1 = 1.62, and the majority of our sample was 20-30 years old) and according to the PORC younger males tend to smoke less. Proportions of male smokers in their subgroup of 18-34 year old men was about 33% (PORC, 2011). The proportions in our sample match well with the ones found in a large sample (N > 1189) examined by Public Opinion Research Center (2011) and they generally support representativeness of the sample.

Of those who smoked, 48% indicated that they smoked 20 or more cigarettes per day. This number is also close to the estimated number of heavy smokers (people who smoke 20 or more cigarettes a day) provided by the WHO.

MEASURES

The participants read an open-ended sentence: 'I think that a man smoking cigarettes is perceived by women as………in comparison with the same man but not smoking cigarettes.' In the blank space they gave their ratings of the impact of smoking on a man's features listed below. The features were identical to the previous experimental study (Czarna & van Leeuwen, under review) and were presented as follows: potential aggressiveness (with 1 = *not potentially aggressive* to 7 = *potentially aggressive*), capability to hit a woman, kindness, physical health, strength, impulsiveness, self-confidence, intelligence, being respected by friends, leadership, popularity among women, women's willingness to date the man, the man's aptitude for being a good long-term romantic partner/husband, his aptitude for being a good short-term romantic partner, and sexiness. These were all single item measures of the` characteristics with the same seven answer options. All the features referred to the impressions made by a smoker on women generally, not oneself.

RESULTS

Overview of the Analyses

The study had two goals. The first goal was to describe people's beliefs about the impact of male cigarette smoking on female perceptions and to explore roles of gender, age, and smoking status in those cognitions. In order to achieve this, we first reported the most general differences in the tested beliefs between smoking and non-smoking participants. We then submitted the tested belief items to a factor analysis and checked whether the perceptions of participants are organized along any specific dimensions. The results of our factor analyses were then used to build composite scales. In a series of regression analyses of these composite scales, we wanted to verify the hypothesis that the number of cigarettes smoked daily as well as gender, age,

and possible interactive terms of them can be successfully used in predicting the extent to which participants expressed certain beliefs.

The second goal was to identify illusions and misconceptions from among beliefs expressed by participants. In order to do this, we returned to the original belief scales and first determined the content (the actual directions) of beliefs by conducting t-tests against a reference mean indicating "no impact" belief. Then, in a final analysis, we compare the results of the current study with the results of previous experimental investigations and identify actual illusions and misconceptions.

Beliefs of Smokers versus Non-smokers

Smokers and non-smokers differed significantly in the extent to which they fostered almost all of the tested beliefs (see Table 1), with smokers expressing more optimistic beliefs in all researched dimensions except for three: beliefs that a male smoker appears to a woman as more self-confident, more respected by colleagues, and more socially leading than a non-smoker. The latter ("socially leading") was only marginally insignificant.

Belief Dimensions

We sought to determine whether the participants' perceptions were organized along any specific dimensions. We conducted a principal components factor analysis of all the belief items with a varimax rotation. It yielded a three-factor solution (based on examination of the scree plot as well as on Kaiser's rule that only factors with eigenvalues greater than 1 are extracted). The eigenvalue for Factor 1 was 5.65, Factor 2 – 2.8 and Factor 3 – 1.4. The first factor accounted for approximately 35%, second 18%, and third 9% of the variance in these items. Items loading positively on the first factor above .68" included: self-confident, respected by colleagues, socially leading, popular with woman, wanted by women as a date, apt for being a good short-term ro-

Table 1. Descriptive statistics and results of t-tests of means in smokers' and non-smokers subgroups. Additionally, means significantly different from the value indicating the opinion "smoking has no impact" (value four) are marked with an asterisk. (Means smaller than four imply belief that smoking decreases the rated quality; means higher than four indicate the belief that smoking enhances the rated quality.)

Belief that a man's smoking makes him seem more:	Non-smokers		Smokers		t	P	Cohen's d
	M	(SD)	M	(SD)			
Attractive	2.93***	1.91	3.50***	1.11	-2.90	0.004	0.33
Kind	3.20***	1.38	3.77**	0.80	-4.03	0.000	0.46
Physically healthy	2.29***	1.78	2.86***	1.52	-2.95	0.003	0.33
Aggressive	4.64***	1.35	4.21*	0.99	3.04	0.003	0.34
Capable of hitting a woman	4.42***	1.20	4.05	0.84	2.93	0.004	0.33
Intelligent	3.56***	1.15	4.12	0.82	-4.59	0.000	0.52
Strong	3.90	1.32	4.22*	0.99	-2.32	0.021	0.26
Impulsive	4.84***	1.28	4.35***	1.00	3.59	0.000	0.41
Self-confident	4.35***	1.25	4.36***	1.00	-0.02	0.987	0.00
Respected by friends	4.04	0.89	4.18**	0.64	-1.49	0.137	0.17
Socially leading	4.13*	1.05	4.32***	0.88	-1.66	0.098	0.19
Popular among women	3.48***	1.35	3.82*	0.79	-2.49	0.013	0.28
Wanted by women as a date	3.29***	1.36	3.70***	0.85	-2.93	0.004	0.33
Apt for being a good long-term Romantic partner or a husband	2.68***	1.46	3.59***	0.92	-5.99	0.000	0.68
Apt for being a good short-term Romantic partner	3.99	1.47	4.40***	0.92	-2.68	0.008	0.30
Sexy	3.26***	1.78	4.21*	0.96	-5.24	0.000	0.59

mantic partner, and sexy. Items loading negatively on the second factor were potentially aggressive, capable to hit a woman, and impulsive (all above .82"). The third factor was loaded by attractive, kind, physically healthy, intelligent, strong, and good possible long-term partner or husband (all above .47"). The resulting factors were examined for similarity in content and were offered descriptors believed to reflect their overall theme: 1) "Cad" (borrowed from Kruger, Fisher, & Jobling, 2003 to describe a competitive, dominant, brave, and promiscuous "dark hero"), 2) Poor impulse-control, 3) "Dad" ("compassionate, industrious, monogamous, proper hero", Kruger, Fisher, & Jobling, 2003) aspects of a man. The items loading each factor were summed to form composite measures representing those aspects. The alpha coefficients for the composite measures were .87, .83, and .79 respectively.

Predictors of the Beliefs

We then addressed the question whether the extent to which participant embraced each of the three belief dimensions (the composite measures) could be predicted from the Number of cigarettes smoked daily and the socio-demographic variables of Gender and Age. We assumed it was possible for influence of the independent variables to be moderated, and therefore also entered all interactive terms produced with these variables into our analyses: Gender × Age, Gender × Number of cigarettes, Age × Number of cigarettes, and Gender × Age × Number of cigarettes. We then ran three multiple regression analyses in which all independent variables were entered simultaneously. In Table 2, standardized regression coefficients and standard errors for the coefficients of each predictor are reported. We found that all three composite dimensions could be directly predicted from the Number of cigarettes smoked daily. Namely, the extent to which people cherished the beliefs that a man's smoking makes him appear to women as possessing more "Cad" features, as well as the extent to which they believed that smoking enhanced his "Dad" features. Finally, the Number of cigarettes smoked daily was a significant negative predictor of the belief that smoking makes a man appear as having Poor impulse-control. The more cigarettes people smoked per day the stronger the beliefs about the positive

Table 2. Standardized regression coefficients for predictors of composite measures of beliefs.

Dependent variable	Independent variables						
Belief that a man's smoking makes him seem more:	Number of cigarettes smoked daily	Gender	Age	Gender × Age	Gender × Number of cigarettes	Age × Number of cigarettes	Gender × Age × Number of cigarettes
Cad	.15**(.05)	.09† (.32)	-.25*** (.06)	.04 (.06)	-.12* (.05)	.01 (.01)	.05 (.01)
Poor impulse-control	-.19**(.02)	-.05) (.16)	.01 (.03)	.03 (.03)	.03 (.02)	.07 (.00)	.00 (.00)
Dad	.23***(.04)	.05 (.26)	-.07 (.04)	.02 (.04)	-.08 (.04)	-.07 (.00)	.02 (.00)

Note: $N = 396$. Values in the table are standardized coefficients (i.e., beta weights) from a multiple regression analysis in which tested independent variables were entered simultaneously. Standard errors for standardized regression coefficients are presented in parentheses. Gender was coded as: -1 for women and 1 for men. ***$p < .001$; ** $p < .01$; * $p < .05$; †$p < .10$

self-presentational impact of cigarette smoking they held.

We also found that for the belief that smoking enhanced the "Cad" dimension of a man in female perception was predicted by Age and that influence of Number of smoked cigarettes was moderated by Gender. Using the MODPROBE macro (Hayes & Matthes, 2009), we calculated simple slopes (see Figure 1) for men and women and found that the Number of cigarettes smoked daily predicted the belief that smoking enhanced a man's "Cad" features only in women ($ß = .255$, SE = .082, $t = 3.106$, $p = .002$), while in men it had no significant influence ($ß = .046$, SE = .061, $t = .748$, $p = .455$). These results indicate that those who most strongly cultivate the belief that smoking enhances Cad features are younger female smokers.

The Number of cigarettes smoked daily variable used in the regression analyses was skewed ($M = 3.63$, $SD = 7.41$, min = 0, max = 40, $g_1 = 2.36$) and any transformations of it (including Cox-Box transformation) did not yield a normally distributed variable. Accordingly, we also tested
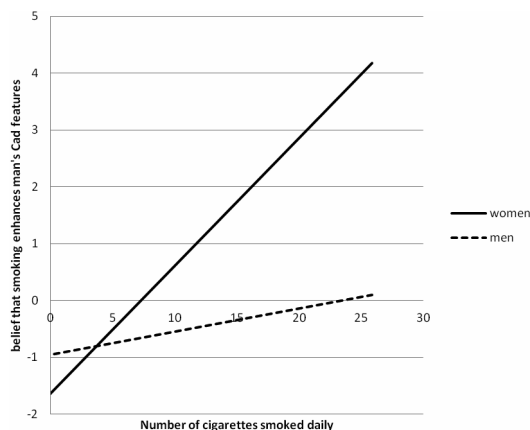

Figure 1. Simple slopes of the belief that smoking enhances a man's Cad features for men and women on Number of cigarettes smoked daily

the current associations using two alternative strategies. In the first, we replaced the Number of cigarettes variable with a dichotomized variable – Smoking status of the participant (participants who smoked zero cigarettes had a score of zero on this variable and participants who smoked at least one cigarette per day had a score of one). The results were perfectly congruent with those reported above obtained using regression with the original Number of cigarettes smoked daily variable - we detected the same effects.

The second alternative strategy consisted in a robust method based on an MM-type estimator (Yohai, 1987). Results were exactly the same as the results of ordinary linear regression analysis in the case of the Cad variable, while in the case of Dad features, apart from the reported effects, we also found significant interaction effects of participant's Gender with Number of cigarettes smoked daily ($ß = -.125$, SE = .0415, $t = -3.013$, $p = .003$) and Age with Number of cigarettes smoked daily ($ß = -.060$, SE = .022, $t = -2.776$, $p = .003$). Further inspection of the interaction effects and simple slopes indicated that the Number of cigarettes smoked daily had a stronger effect on female beliefs that smoking enhances Dad aspects of a man ($ß = .432$, SE = .069, $t = -6.297$, p < .001) than on respective male beliefs ($ß = .182$, SE = .045, $t = 4.015$, p < .001). Independently, an increase in Age served to decrease the effect created by the Number of cigarettes smoked[1].

Similarly, analysis of Poor impulse control variable also yielded one additional interaction effect apart from the one found in our ordinary regression analysis: Age with Number of cigarettes smoked daily, ($ß = .057$, SE = .024, $t = 2.353$, $p = .019$). The older the participant, the weaker the (negative) effect of Number of cigarettes smoked daily on their belief that smoking impacts impulse control.

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[1] We also founded that Age moderated the effect of Number of cigarettes smoked daily on Dad variable slightly more strongly in women (ß = -.077, SE = .036, t = -2.139, p = .033), than in men (ß =- .044, SE = .025, t = -1.746, p = .082).

In order to better illustrate the effects of our tested predictors on the three uncovered dimensions of female perception, we conducted a supplementary MANOVA of three composite measures as repeated measures in a 2 (Gender) × 2 (Participant's smoking status) design, with Age controlled as a covariate. The analysis yielded significant main effects of Age, $F(1,391) = 10.365$, $p = .001$, $\eta_p^2 = .026$, Smoking status, $F(1,391) = 16.257$, $p < .001$, $\eta_p^2 = .040$, significant effect of repeated measures, $F(2,782) = 13.333$, $p < .001$, $\eta_p^2 = .033$, and significant interactive effects of Gender with Smoking status,

$F(1,391) = 4.562$, $p = .033$, $\eta_p^2 = .012$, Age with repeated measures, $F(2,782) = 9.028$, $p < .001$, $\eta_p^2 = .023$, and Smoking status with repeated measures $F(2,782) = 20.920$, $p < .001$, $\eta_p^2 = .051$. Smokers held significantly more positive beliefs about the impact of smoking on all aspects of a man than non-smokers. Closer examination of a marginally insignificant ($p = .08$) interactive effect of Gender × Smoking status × repeated measures showed that women's views were significantly more polarized than men due to their smoking status, especially on the Cad and Dad dimensions. For means and significant contrasts see Figure 2.
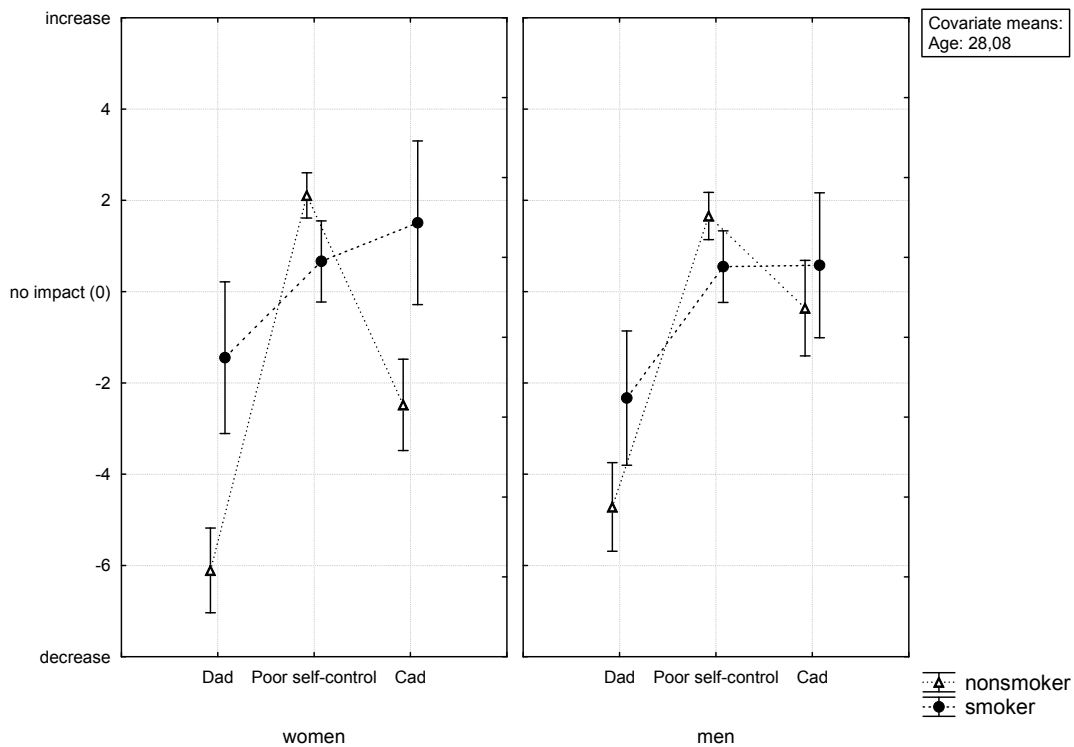

Figure 2. The belief that smoking impacts Cad, Dad, and Poor impulse-control aspects of a man as a function of gender and own smoking status. [Zero is a value indicating the opinion "smoking has no impact", less than zero indicates the opinion "smoking decreases the impression", more than zero indicates the opinion "smoking increases the impression"]

Note: Means are presented with markers instead of bars and are connected with lines for the sake of presentation clarity. In fact, there are no middle points between estimated means of each repeated measure. Means marked with different letters differ significantly at p < .05.

Table 3. Descriptive statistics and results of t-tests of means against the reference constant (value four) in all subgroups.

Belief that a man's smoking makes him seem more:	Non-smokers		Smokers	
	Women M (SD)	Men M (SD)	Women M (SD)	Men M (SD)
Attractive	2.69***(1.88)	3.19***(1.92)	3.74†(0.97)	3.30*** (1.18)
Kind	3.15*** (1.34)	3.25***(1.42)	3.81*(0.54)	3.73* (.95)
Physically healthy	2.20***(1.77)	2.38***(1.79)	3.06*** (1.59)	2.70***(1.45)
Aggressive	4.70***(1.34)	4.57***(1.37)	4.28†(0.99)	4.15 (0.99)
Capable of hitting a woman	4.54***(1.11)	4.28*(1.28)	4.13 (0.54)	3.98(1.02)
Intelligent	3.61***(1.02)	3.51***(1.29)	4.04 (0.72)	4.18 (0.89)
Strong	3.77*(1.20)	4.04(1.42)	4.13 (0.97)	4.30*(1.01)
Impulsive	4.87***(1.20)	4.80***(1.36)	4.26†(0.92)	4.42**(1.06)
Self-confident	4.29**(1.14)	4.42***(1.36)	4.51***(0.98)	4.23† (1.01)
Respected by friends	4.05 (0.71)	4.03 (1.36)	4.23* (0.67)	4.13 (0.62)
Socially leading	4.17* (0.96)	4.08(1.15)	4.47***(0.78)	4.20 (0.94)
Popular among women	3.32*** (1.33)	3.64**(1.36)	3.96 (0.78)	3.72** (0.78)
Wanted by women as a date	3.11***(1.33)	3.49***(1.37)	3.87 (0.95)	3.57***(0.74)
Apt for being a good long-term Romantic partner or a husband	2.50***(1.48)	2.88***(1.42)	3.81 (0.90)	3.41***(0.91)
Apt for being a good short-term romantic partner	3.80 (1.53)	4.20† (1.38)	4.30** (0.72)	4.48***(1.05)
Sexy	2.87***(1.82)	3.67*(1.64)	4.36* (2.07)	4.08 (0.85)

Note: Four is a value indicating the opinion "smoking has no impact", values smaller than four imply belief that smoking decreases the rated quality; values higher than four indicate the belief that smoking enhances the rated quality. ***p<.001; ** p<.01 ; * p<.05; †p <.10

Actual Beliefs about Influence of Smoking on Self-Presentation

The second goal of our study was to identify illusions and misconceptions present among beliefs expressed by participants. To do this, we first needed to know the absolute mean values of ratings within each subgroup of participants. The reason for this is that in order to identify actual beliefs we needed to test whether mean values of the rated beliefs in the subgroups diverged significantly from value "4", which indicated a belief that "smoking has no influence" on rated qualities.

We therefore ran a parallel series of t-tests of means against the reference constant - value "4" - on all beliefs in all subgroups. We found that several means differed significantly from the value indicating "no influence" belief in all subgroups (see Table 3). Non-smoking women revealed the most negative and female smokers the most positive beliefs about outcomes of smoking on self-presentation. The latter did not believe (all $ps > .05$) in a negative impact of smoking on impressions of potential aggressiveness, capability to hit a woman, intelligence, impulsiveness, popularity among woman, and women's willingness to date the man or marry him. They believed that male smokers were perceived as significantly sexier and more respected by their friends, more socially leading and self-confident, as well as being more desirable short-term partners than their abstinent counterparts (all $ps < .03$).

Similarly, male smokers failed to believe that smoking enhanced impressions of aggressiveness or capability to use violence against women, and that it decreased the impressions of their intelligence or sexiness. They believed that they were perceived as stronger, more impulsive, and more desired for short-term mating than non-smokers ($ps < .03$).

Illusions Identified

Eventually, we compared the beliefs expressed by each of the investigated subgroups with findings from earlier preliminary experimental investigation with hypothesis and manipulation-blind female participants ($N = 154$; Czarna & van Leeuwen). The results of that experiment showed that smoking can make a man seem significantly more impulsive, more aggressive, more capable of hitting a woman, more self-confident, possessing more leadership skills, and a better possible short-term romantic partner but also marginally less attractive, less nice, less healthy, slightly less desired as a date, less intelligent, and a worse candidate for a long-term romantic partner than his non-smoking counterpart (all $ps \leq .05$). It did not significantly impact ratings of perceived strength, being respected by colleagues, popularity with women, and sexiness.

Comparison of those results with the results of the present study enables us to identify illusions among beliefs expressed by subgroups. Female smokers' beliefs that smoking does not affect general impressions of man's intelligence and his apparent aptitude for being a good long-term romantic partner seem to be illusions. So are their beliefs that cigarette smoking enhances impressions of a man's sexiness (for an illustration of gender and smoking status effects on sexiness – see Figure 3). Similarly, male smokers' convictions that smoking has no influence on their image in terms of potential aggressiveness or intelligence as well as their belief that smoking enhances the impression of their strength, are illusions par excellence.

On the other hand, non-smoking women and men also expressed a few inaccurate beliefs. Convictions that smoking damages impressions of a man's strength, sexiness, his popularity with women or aptitude for being a good short-term romantic partner, and failure to recognize that smoking enhances female impressions of leadership skills seem to be errors of excessive criticism.

DISCUSSION

The first objective of the current study was to describe people's beliefs about the impact of

male cigarette smoking on female perceptions and to explore roles of gender, age, and smoking status in those cognitions. The second objective was to indicate particular beliefs, illusions, and misconceptions about positive self-presentational outcomes of cigarette smoking. This was done by researching beliefs about those outcomes and comparing their content with the results of previous experimental verification.

The results show that people (men and women, smokers and non-smokers) generally tend to believe that smoking decreases a man's perceived aptitude for being a good long-term partner or husband of a woman. The conviction that smoking enhances a man's attractiveness as a short-term partner to women was dependent on perceiver's smoking status and gender, with female smokers expressing the most optimistic beliefs and female non-smokers the most pessimistic. Results show that the extent to which people engage in the positive beliefs was predicted from the number of cigarettes smoked by them daily, which is in line with hypotheses based on the cognitive dissonance theory. We also found an effect of growing criticism regarding the impact of smoking with increasing age (slightly more so in women).

Concerning the second objective of this study, it appears that despite the fact that in many respects Polish people are rather accurate, they, and particularly smokers, maintain beliefs about the self-presentational impact of cigarette smoking that are not only biased but virtually illusory (as is indicated by contrasting the content of their beliefs with the results of experimental study with hypothesis-blind participants). This finding goes in line with previous studies that showed positive explicit attitudes toward smoking while implicit associations were mainly negative in smokers (Maison, 2004; Swanson et al., 2001). In the current study, particular illusions of smokers in an overall sample are the beliefs in strength, sexiness, and respect-enhancing influence of smoking status on a man's self-presentation. The

illusions appear to be gender-specific: Polish female smokers believe that smoking enhances man's perceived sexiness and that it does not damage his perceived intelligence and aptitude for being a long-term partner (as well as generally boosting his Cad qualities: Casanova-like or alpha-male features like self-confidence, respect by colleagues, socially leadership, popularity with woman, being wanted by women as a date, and aptitude for being good short-term romantic partner). Polish male smokers believe that smoking makes them appear stronger to women. These beliefs are relatively stronger linked to women's intensity of smoking (measured with the number of cigarettes smoked per day), possibly motivating their smoking. However, the current research does not enable determination of the direction of the relationships: the beliefs could fuel smoking as well as be a product of rationalization needed to justify own smoking.

Overestimation of the negative effects of smoking on self-presentation found particularly in female non-smokers might indicate growing prejudice against smoking. In fact, due to introduction of several anti-tobacco laws smoking has been becoming less and less socially supported and acceptable (Champan & Freeman, 2008). It is also noteworthy that age emerged as an important predictor of the belief in enhancement of a man's "Cad" features in the eyes of a female. Nowadays, with the negative influences of smoking on health being so widely known and smoking increasingly socially discouraged, smokers might feel "oppressed" and prejudiced against. Our results might suggest that smoking is becoming a means of resistance against social norms among younger people. However, this hypothesis is highly speculative and requires further verification.

Polish women expressed stronger, more radical, and polarized views on male self-presentational impact of smoking. One possible reason for this could be that the survey asked for opinions about the impact of smoking in men on

their (women's) perceptions. Female non-smokers overestimated the negative effects of smoking on self-presentation while female smokers appeared to be the most optimistic group in that regard, expressing more optimistic beliefs than male smokers and appearing most prone to certain illusions. The latter believed that male smokers were perceived as sexier and more respected by their colleagues than their non-smoking counterparts. This finding is complementary to and in line with recent findings of Hill and Durante (2011) who showed that in self-presentational, courtship, and mating contexts women tend to strongly underestimate health risks linked to certain hazardous behaviours. It is also possible that female smokers compare themselves to a typical male smoker, thereby mistaking illusory self-presentational gains attributed to men for their own. Such a mechanism has been previously suggested by Dohnke (2006), who showed that female smokers may underestimate their smoking-related risks more than male smokers because they compare their risk to the risk faced by a typical male smoker. A similar interpretation was offered by LaBrie and colleagues (2009) in their study on the role of reflective opposite-sex normative preferences in alcohol use among college women. However, this explanation is highly speculative and would require empirical verification.

Most of the discussed results have small to medium effect sizes, and are therefore difficult to detect. Such is the nature of the studied phenomena. Despite the small magnitude of effects, the large sample size used in this research enhanced the statistical power of tools applied in analyses and is a particular strength of the presented study. The study was limited in scope as it concerned people's beliefs about the impact that smoking in men has on female impressions of men. Complementary research of relevant effects in the opposite sex would be needed to obtain a fuller picture of the relations.

Smoking status, gender, and age all turned out to affect naďve theories about influence of smoking on male self-presentation among Polish people. Female smokers, especially younger ones, appeared to hold the strongest misconceptions in comparison with all other groups and those misconceptions were stronger related to their smoking behaviour. This result is somewhat similar to that found in the Grogan, Conner, Fry, Gough, and Higgins (2009) study, though an older sample was utilized. It undoubtedly supports their suggestion that there is a need for belief-based preventative interventions that are age and gender relevant. This is especially important as the results of the latest PORC survey (PORC, 2011) show that in Poland smoking is on the rise exclusively in females.

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