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### Original Article

## Parental Social Status and Intrasexual Competitiveness among Adolescents

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**Abstract:** A study among 1,881 adolescents (52.3% girls) with a mean age of 19.1 years examined the effects of parental social status upon intrasexual competitiveness. Whereas females were consistently more intrasexually competitive the higher the socio-economic status of their parents, males with parents of the lowest socio-economic status tended to be more intrasexually competitive than those with parents of medium socio-economic status, and nearly as intrasexually competitive as those with parents of high socio-economic status. Only among adolescents with parents of low socio-economic status were males more intrasexually competitive than females. Among males and females, higher levels of intrasexual competitiveness were related to a higher family income, to a higher occupational status of the father as well as of the mother, and to a higher educational level of the mother. Only among females were higher levels of intrasexual competitiveness associated with a higher educational level of the father. Males whose fathers had only elementary education had a relatively high level of intrasexual competitiveness. The results are discussed in the context of the multifaceted nature of human status, and the potential relevance of intrasexual competitiveness for individuals of high versus low social status.

**Keywords:** intrasexual competition, adolescents, sex differences, socio-economic status

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### Introduction

Although it has often been assumed that, in most species, males are more intrasexually competitive and physically aggressive than females (e.g., Archer, 2006), it has become evident that intrasexual competition among females is prevalent in many species (e.g., Cheney, Silk and Seyfarth, 2012; Clutton-Brock, 2009; Rosvall, 2011). In some mammals, where females are the primary caregivers, intrasexual competition is even more

intense among females than among males, particularly among cooperative breeders where one female monopolizes reproduction. For example, in a 12-year study of wild meerkats, Clutton-Brock et al. (2006) found that, among females, reproductive success was more skewed than among males and, concurrently, more aggression occurred among females than among males. With respect to humans, evidence is increasing that women may be intrasexually quite competitive and even aggressive (e.g., Bettencourt and Miller, 1996; Campbell, 2002; Frodi, Macaulay, and Thome, 1977; Geary, 2010). According to Benenson (2009), women rely heavily on the investment of one partner for provision and for protection of themselves and their offspring. Therefore, they have to compete continuously to attract and keep a male partner. Among men, on the other hand, intrasexual competition is to some extent dampened by the importance of collaborating with other men in groups. In line with this rationale, Benenson et al. (2009) found that women tend to accept stresses and strains in their peer relationships less easily than men.

Intrasexual competition among women is not limited to monogamous mating systems. In a cross-cultural examination, Burbank (1987) found that in polygynous societies co-wives often compete intrasexually over food and money, over paternal care for their offspring, and over their offspring's inheritance. In 61% of the 137 cultures Burbank analyzed, women engaged in physical aggression, typically fighting with other women over men.

Even though both sexes may be intrasexually competitive, male and female intrasexual competition differs in various ways. First, reviewing many species, including humans, Rosvall (2011) concluded that females tend to compete more over high quality mates than males do. Second, among humans, males tend to be more physically aggressive, whereas females tend to be more verbally aggressive and ostracizing (e.g., Benenson, 2009; Campbell, 2002; Cashdan, 1998). Third, among humans, males and females compete—in part—in different domains, i.e., in the traits that are most preferred by the opposite-sex (see also Andersson, 1994; Buunk, Massar, and Dijkstra 2007; Dijkstra and Buunk, 2002). While throughout human history men have competed more in the domains of status and dominance, women have probably competed more in the domain of physical attractiveness (e.g., Cashdan, 1998). Overall, when confronted with rivals in romantic as well as professional situations, women tend to respond with higher levels of jealousy to attractive rivals, whereas men respond to socially dominant rivals (e.g., Buunk, aan 't Goor, and Castro Solano, 2010; Dijkstra and Buunk, 2002; Massar, Buunk, and Dechesne, 2009).

Intrasexual competition is quite salient among adolescents, who tend to be very sensitive to hierarchies and pay close attention to indicators of their own place in the hierarchy (e.g., Fournier, 2009; Hibbard and Buhrmester, 2010). Whereas individuals may become more certain about their actual and potential status as they age, young men are particularly uncertain about their current status and their possibilities of obtaining a high status in the future. As noted by Barkow (1989) in his seminal book *Darwin, Sex and Status*, adolescents are seeking to determine the actual and symbolic groups in which they may attain a high position. Whereas young women may receive attention from the opposite sex on the basis of being physically attractive alone, young men are more likely to need some type of status (e.g., having money to spend, driving a nice car, playing in a rock band, studying for a high status job) to receive such attention. Intrasexual competition may have serious consequences for young people, and may explain the higher rate of criminal activities among young men (e.g., when they realize that they can easily obtain resources in

this way) and the higher rate of school drop-out among boys (e.g., when they perceive that they won't be able to attain high status through education). Some have even argued that intrasexual competition is associated with the occurrence of eating disorders among young women, as they aim to be thinner and less fat than other young women (see, e.g., Campbell, 2002; Dabbs, 1992; Mealey, 2000). Indeed, Faer, Hendriks, Abed, and Figueredo (2005) showed that competition with other women for mates was related to both anorexia and bulimia.

In the present research, we examined in a large sample of adolescents how intrasexual competitiveness was related to the social status of the parents. The research was part of the TRacking Adolescents' Individual Lives Survey (TRAILS) prospective cohort study, which focuses on the determinants of psychopathology. The current research was primarily exploratory, as different predictions can be made for the effect of parental status on intrasexual competitiveness depending on the theoretical framework adopted. If, as is often assumed, intrasexual competition revolves in part around competition over mates, one would expect women to show higher levels of intrasexual competitiveness with increasing status of their parents. Whereas men are more willing to "marry down," (i.e., marry with someone of lower social status), women tend to prefer partners of at least their own social status. Therefore, among women with a high social status, there is potentially a stronger competition over mates than among women with a low social status. An extreme example of this is found in societies with strongly patrilineal and patrifocal marriage and inheritance systems, where the marriage prospects of women of the highest socio-economic levels are relatively poor because it is considered unacceptable for women to marry into a lower socio-economic class, whereas men can marry women of lower socio-economic levels (Low, 2007).

We did not examine the various *types* of intrasexual competition that may differ dramatically between lower-class and upper-class women. For example, research by Campbell (2002) has shown that extreme manifestations of female intrasexual competition, such as thefts, assaults, and homicides, are more common in lower and working-class women than in middle-class or upper-class women. In contrast, discrete, indirect forms of intrasexual competition may be more common among middle-class or upper-class women. We focused on intrasexual *competitiveness* (i.e., the extent to which one views the relationships with same-sex peers in competitive terms). The predicted higher intrasexual competitiveness among women from higher socio-economic levels would be in line with the observation that anorexia nervosa is more prevalent among women from these levels, assuming that, as Mealey (2000) suggested, anorexia is at least partly the result of intrasexual competition. Although an early review concluded that there is no consistent relationship between anorexia nervosa and socio-economic status (Gard and Freeman, 1996), a number of recent, well-designed studies in countries with quite divergent cultures, including Sweden and Brazil, do show that the risk of anorexia is higher among girls from the higher socio-economic levels (McClelland and Crisp, 2001; Moya, Fleitlich-Bilyk, and Goodman, 2006; Nevenon and Norring, 2004). In contrast, men with a low social status will face competition not only from men within their own social stratum, but also from men of higher status levels. Therefore, whereas women with a low social status may show a relatively low level of intrasexual competitiveness because of their options of marrying up, men with a low social status may show relatively enhanced levels of intrasexual competitiveness (e.g., Campbell, 2002).

One may also argue that for both sexes there will be an overall effect of parental socio-economic status on intrasexual competitiveness. That is, on the one hand, one might expect that there will be more competition in a context of scarce resources (i.e., in the lower socio-economic classes). Indeed, in a experiment among 3- and 4-year-olds, McKee and Leader (1955) found that, when paired with someone of one's own sex and socio-economic level for a building task, children from lower socio-economic levels exhibited relatively high levels of competition in a play situation (i.e., behavior of which the intent seemed to be to increase or to communicate one's superiority). On the other hand, one may argue that the higher the parental social status, the more one has to lose in terms of access to well-paying jobs, prestige, and respect when, for example, one is not able to finish a higher education. Because losing one's status (in this case the status one had because of one's parents) is generally an extremely painful experience (cf. Gilbert and Allan, 1998), intrasexual competition (and probably competition in general) might be more, not less, prevalent among young men from high socio-economic levels than among young men from low socio-economic levels. Indeed, in a longitudinal study of adolescents, Faris and Felmlee (2011) found that among those of higher social status—assessed with network centrality—the more aggression occurred to same-sex as well as to opposite-sex others, although those at the very top of the hierarchy showed relatively low levels of aggression.

In human societies, and especially in current modern societies, social status is a complex phenomenon, and status in one domain, such as intelligence, creative ability, or prestige may be far from perfectly correlated with status in another domain, such as income, resources, or occupational level. For example, as noted by Christ et al. (2012), a fire-fighter or university professor may have high prestige without actually having a high income or (in the case of fire fighters) a high education. Conversely, bankers these days have low prestige even though they tend to earn high salaries. In their recent analysis of data from a nationally representative sample of over 380,000 U.S. workers, Christ et al. (2012) found that lower occupational prestige was, independent of income and educational attainment, associated with higher mortality from various causes including cancer, cardiovascular disease, and respiratory disorders. Although we did not have a direct measure of occupational prestige, we could examine the relationship between intrasexual competitiveness and three different dimensions of parental social status: occupational level of both the father and the mother, educational level of both the father and the mother, and family income. We first examined how intrasexual competitiveness was related to a composite measure of social status that was based on all aforementioned aspects (see Veenstra et al., 2005). Next, we assessed which of the three dimensions drives the effects of the composite measure.

As noted previously, to assess the levels of intrasexual competitiveness, we did not examine various intrasexual competitive behaviors and strategies. Instead, we examined intrasexual competitiveness by using a scale that assessed intrasexual competition as an *attitude* (Buunk and Fisher, 2009). This scale was constructed to be gender-neutral and assesses the degree to which one views the confrontation with same-sex individuals, especially in the context of contact with the opposite-sex, in competitive terms. This competitiveness implicates a number of phenomena that have been well-described in the psychological literature—albeit not in a mating context—including the desire to beat others rather than to perform well (cf. Van Yperen, 2003); the desire to view oneself as better than others (cf. self-enhancement; Zuckerman and O'Loughlin, 2006); envy and frustration

when others are better off and negative feelings towards such others (cf. Smith and Kim, 2007; and malicious pleasure when high achievers (“tall poppies”) lose face (cf., Feather, 1994). In the scale used here, these phenomena were operationalized on dimensions relevant to mating, or formulated in mating contexts. There is increasing evidence that the scale is related to other variables in theoretically meaningful ways. First, overall, the scale correlates with sibling rivalry, and among women with a lack of agreeableness, and among men with a high level of neuroticism and extraversion (Buunk and Fisher, 2009). Second, in a within-subjects design, Cobey, Klipping, and Buunk (2013) found that pair-bonded women reported significantly lower levels of intrasexual competitiveness (as measured with the present scale) while using hormonal contraceptives than while regularly cycling at either fertile or non-fertile cycle stages. This effect remained significant when controlling for age, length of relationship, and relationship satisfaction. Third, intrasexual competitiveness as measured with the present scale was found to be lowest among women of medium height—i.e., women who tend to be most preferred as partners and who tend to experience the lowest levels of jealousy (e.g., Buunk, Pollet, Klavina, Figueredo, and Dijkstra, 2009; Stulp, Buunk, Kurzban, and Verhulst, 2013). Finally, Buunk et al. (2010) found that in work situations, intrasexual competitiveness (as measured with the present scale) was related to jealousy among men in response to socially dominant rivals, and among women in response to physically attractive rivals.

To summarize, in a large, representative sample of adolescents we examined to what extent intrasexual competitiveness of adolescents was related to the socioeconomic status of their parents, including the occupational and educational levels of both parents as well as the family income. Although the study was primarily exploratory, we expected that intrasexual competitiveness would be relatively more elevated among female adolescents from higher socio-economic levels and among male adolescents from lower socio-economic levels. However, we reasoned that it is possible that, overall, intrasexual competitiveness would be more elevated among those from the higher socio-economic levels.

## **Materials and Methods**

### *Procedure*

The TRacking Adolescents’ Individual Lives Survey (TRAILS) is a prospective cohort study of Dutch adolescents with the aim of charting and explaining the development of mental health from preadolescence into adulthood (Huisman et al., 2008). The present article involves data from the first and fourth assessment waves, which ran from March 2001 to July 2002 (T1), and from October 2008 to September 2010 (T4), respectively. The study was approved by the Dutch Central Committee on Research Involving Human Subjects. For recent extensive information on the sampling and procedure, see, e.g., Ormel et al. (2012) and Nederhof et al. (2012). The following procedure is based on these last two publications. Participants were selected from five municipalities in the North of the Netherlands, including both urban and rural areas. Children born between October 1, 1989 and September 30, 1991 were eligible for inclusion provided that their schools were willing to cooperate and that they met the study’s inclusion criteria (de Winter et al., 2005). Over 90% of the schools, accommodating 2,935 eligible children, agreed to participate in the study. Through extended efforts, the final response rate of the parents was 76% ( $n = 2,230$ ,

mean age of the children when recruited = 11.09 years,  $SD = 0.56$ , 50.8% girls). Teacher reports, which were available for 40.7% of the non-responders, revealed that the non-responders were more likely to be boys, to have a low socio-economic background, and to perform poorly at school. Non-responders did not differ from responders regarding associations between socio-demographic variables and mental health outcomes (Huisman et al., 2008).

At the first wave, the interviewers were university graduates extensively trained in interviewing skills, in the study background, and in the content of the interview. At T4 the adolescents had reached the age of 18 or 19, and parental consent was no longer needed for participation. At this wave, a custom research company (CRC) was hired to recruit and assess all respondents that had participated at T1 and at T2 or T3 and had not refused further participation. After participants had given informed consent, the CRC sent login information for a web-based questionnaire. A gift certificate of €10 was included. Adolescents who did not respond to the questionnaire within 2–3 weeks were contacted by telephone with the request to participate. When they still did not respond after several reminders, or when adolescents could not be reached by telephone, a CRC employee paid one or two home visits, both announced and unannounced. This resulted in a response rate of 72% ( $n = 1,610$ ). Participants who had not completed any assessments with the CRC were contacted by the research team. These extensive recruitment efforts led to the inclusion of 271 additional participants, resulting in a response rate of 84.3% at T4.

### *Sample*

The final sample included a total of 1,881 respondents, with a mean age of 19.1 ( $SD = 0.60$ ), with 52.3% girls and 47.7% boys) (see, e.g., Nederhof et al., 2012; Ormel et al., 2012).

### *Measures*

In the TRAILS project, biological, psychological, and social information has been collected from multiple sources: adolescents, their parents, their teachers, and their peers. Huisman et al. (2008) provide an overview of all measurements of the first three waves. The fourth wave was comparable to the earlier waves, with a few adaptations.

*Status indicators.* These variables were assessed at T1. *Occupational status* of both parents was assessed using the International Standard Classification of Occupations (ISCO; Ganzeboom and Treiman, 1996), which distinguishes the following nine levels: (1) elementary occupations; (2) plant and machine operators and assemblers; (3) craft and related trades workers; (4) skilled agricultural and fisheries workers; (5) service workers, shop and market sales workers; (6) clerks; (7) technicians and associated professionals; (8) professionals; and (9) legislators, senior officials, and managers. As there were no mothers who were skilled agricultural and fisheries workers, and few fathers (1.2%) in this category, this category was combined with that of service workers, shop and market sales workers.

*Educational level* consisted of five levels corresponding to the Dutch educational system: (1) elementary education, (2) lower tracts of secondary education, (3) higher tracts of secondary education, (4) senior vocational education, and (5) university education. *Monthly family income* (minus tax) consisted of nine categories. As the lowest category

contained only a few individuals, this category was combined with the second-to-lowest category, resulting in eight categories.

Next, we used the aggregate measure of *socio-economic status* that was developed in the TRAILS project (Veenstra et al., 2005) by averaging the five indicators of status: family income divided into three categories (i.e., low income: less than €2,500; intermediate income: €2,500 to €5,500; high income: greater than €5,500), educational level of both parents, and occupational level of both parents after standardization. The lowest 25%, intermediate 50%, and highest 25% of the scores were considered to represent low, intermediate, and high socio-economic status, respectively. The aggregate socio-economic status index captured 61.2% of the variance in the five items, with a Cronbach's alpha of 0.84. Missing values (e.g., when there was only one parent in the family) did not affect the association between the socio-economic status measure and other variables (see Veenstra et al., 2005).

*Intrasexual competitiveness.* This variable was assessed at T4 and consisted of a slightly adapted version of the scale for intrasexual competition developed by Buunk and Fisher (2009). The original scale consists of 12 items such as "When I go out, I can't stand it when women/men pay more attention to a same-sex friend of mine than to me," "I tend to look for negative characteristics in attractive men/women," and "I just don't like very ambitious men/women." Because this was a sample of adolescents, we omitted the two items of the scale that would only be relevant for adults (i.e., the items that referred to hiring an attractive or competent colleague at work). Each item has seven possible answers varying from 1 = "not at all applicable" to 7 = "completely applicable." Cronbach's alpha for the current ten item scale was very high ( $\alpha = .89$ ).

## **Results**

We first examined to what extent the intrasexual competitiveness of adolescents was related to overall socio-economic status of their parents, and next the relationship to occupational level as well as the educational level of both parents, and to the family income.

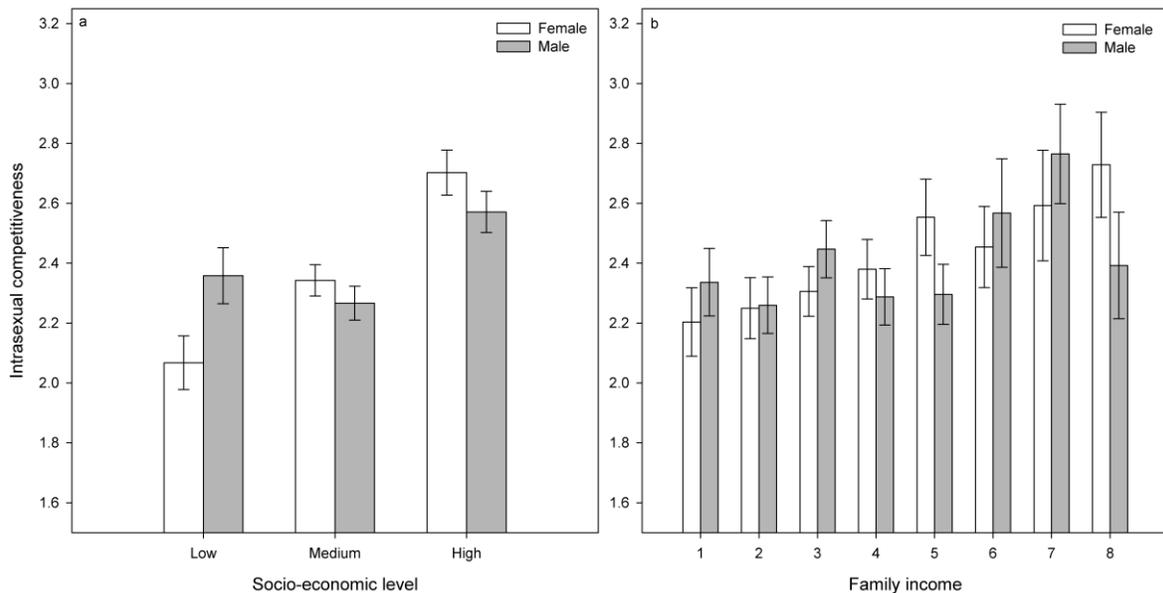
*Socio-economic status.* An ANOVA with socio-economic level and sex as independent variables and intrasexual competitiveness as the dependent variable showed a highly significant main effect of socio-economic status,  $F(2,1629) = 17.96$ ,  $p < .001$ , partial  $\eta^2 = .022$ , no effect of sex,  $F(1,1629) = .21$ ,  $p = .64$ , partial  $\eta^2 = .0001$ , and a significant interaction between sex and socio-economic status,  $F(2,1629) = 3.92$ ,  $p = .02$ , partial  $\eta^2 = .005$ . As shown in Figure 1a, overall the level of intrasexual competitiveness was higher as the socio-economic level of the family in which one grew up was higher, but this applied particularly to women: The post-hoc LSD tests among women showed that all three levels differed significantly from each other ( $ps < .008$ ). However, among men, the post-hoc LSD tests showed that only the highest and medium level of socio-economic status differed significantly from each other ( $p < .001$ ), but that the medium socio-economic level did not differ significantly from the lowest level ( $p = .39$ ), and the high socio-economic level only marginally differed from the lowest level ( $p = .06$ ). Thus, both men and women who came from families with a higher socio-economic status were the most intrasexually competitive. However, whereas women were consistently more intrasexually competitive the higher the socio-economic status of their parents, men who

came from families with the lowest socio-economic status tended to be as intrasexually competitive as those who came from families with a medium socio-economic status. Nevertheless, they were still somewhat less intrasexually competitive as those who came from families with a high socio-economic status. Put differently, whereas men and women did not differ from each other in their levels of intrasexual competitiveness, in the medium socio-economic levels,  $t(824) = .98$ ,  $p = .33$ ,  $d = 0.07$ , as well as in high socio-economic levels  $t(481) = 1.29$ ,  $p = .20$ ,  $d = 0.12$ , among individuals from the lowest socio-economic level, men displayed a higher level of intrasexual competitiveness than women,  $t(324) = 2.22$ ,  $p = .03$ ,  $d = -0.25$ .

After these global analyses of the effects of socio-economic level, we did additional analyses to examine which aspects of socio-economic level were in particular responsible for the effects (i.e., family income, educational level and occupational status of both parents).

*Income.* An ANOVA with family income and sex as independent variables and intrasexual competitiveness as the dependent variable showed a significant main effect of income,  $F(7,1496) = 2.13$ ,  $p = .04$ , partial  $\eta^2 = .01$ , whereas there was no effect of sex,  $F(1,1496) = 0.01$ ,  $p = .97$ , partial  $\eta^2 = < .0001$ . There was no significant interaction effect between sex and income,  $F(7,1489) = 1.00$ ,  $p = .43$ , partial  $\eta^2 = .005$ , and this interaction was dropped from the model. As shown in Figure 1b, the higher the income, the higher the level of intrasexual competitiveness. Although it would seem that among men there is a drop in intrasexual competitiveness from the second-to-highest to the highest income category, a post hoc LSD test showed that this drop was not significant,  $p = .17$ .

**Figure 1.** Intrasexual competitiveness as related to (a) overall socio-economic level and (b) income of the parents



*Educational level.* In the next series of analyses, we examined the effects of educational level of the parents. These analyses showed that the effects of fathers' educational levels were quite different from the effects of mothers' educational levels. An ANOVA with the educational level of the mother and sex as independent variables and

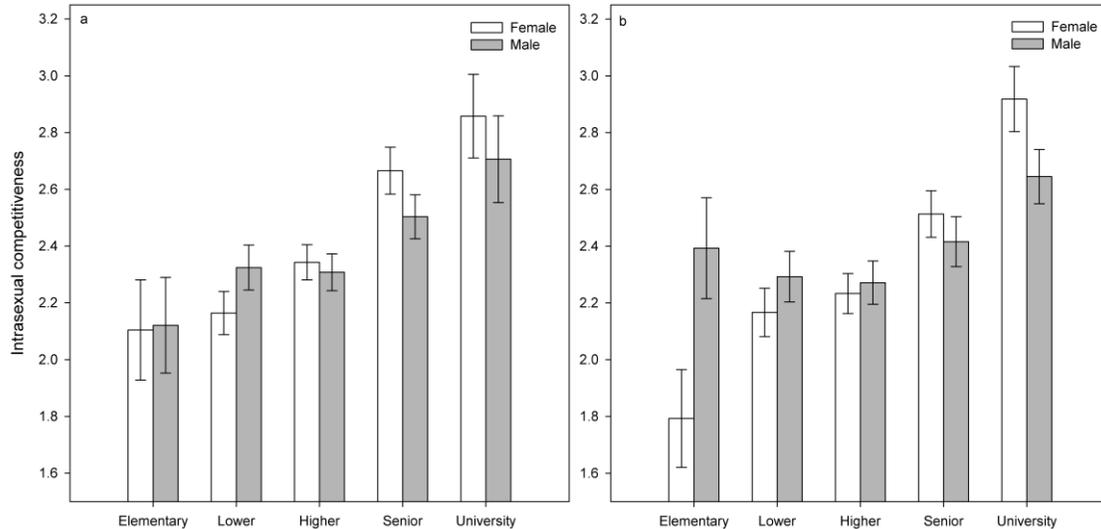
intrasexual competitiveness as the dependent variable showed a highly significant main effect of educational level of the mother,  $F(4,1610) = 10.68$ ,  $p < .001$ , partial  $\eta^2 = .026$ , but again there was no effect of sex,  $F(1,1610) = .09$ ,  $p = .77$ , partial  $\eta^2 = .0001$ . There was no significant interaction between sex and educational level,  $F(4,1606) = 1.18$ ,  $p = .32$ , partial  $\eta^2 = .003$ , and this interaction was therefore dropped from the model. As shown in Figure 2a, the higher the educational level of the mother, the higher the level of intrasexual competitiveness among both men and women. Thus, the educational level of the mother did not seem to drive the different effects of socio-economic level for men and women.

An ANOVA with educational level of the father and sex as independent variables and intrasexual competition as the dependent variable also showed a highly significant main effect of educational level,  $F(4,1422) = 11.91$ ,  $p < .0001$ , partial  $\eta^2 = .032$ , no effect of sex,  $F(1,1422) = 1.04$ ,  $p = .31$ , partial  $\eta^2 = .0007$ , and a significant interaction effect between sex and educational level,  $F(4,1422) = 2.36$ ,  $p = .05$ , partial  $\eta^2 = .007$ . This interaction effect (see Figure 2b) was in part similar to that of overall socio-economic level (see Figure 1a), suggesting that the educational level of the father in particular drove the effects of socio-economic level. That is, the effect of fathers' educational level was considerably weaker among men than among women. A separate ANOVA among women showed a highly significant effect of fathers' educational level,  $F(4,773) = 11.60$ ,  $p < .0001$ , partial  $\eta^2 = .057$ , and 8 out of 10 post hoc LSD contrasts were significant ( $ps \leq 0.5$ ). As shown in Figure 2b, among women there was a clear linear and steep effect of educational level of the father: The higher the father's educational level, the higher his daughter's level of intrasexual competitiveness. In contrast, a separate ANOVA among men showed a significant, but not very strong effect of fathers' educational level,  $F(4,649) = 2.55$ ,  $p = .04$ , partial  $\eta^2 = .015$ . Only 2 out of 10 post hoc LSD contrasts were significant—the contrast of university education with the two tracks of high school education ( $ps < .01$ )—whereas the contrast between university education and elementary education was not significant. Thus, men with a father who had a high school education had a lower level of intrasexual competitiveness than men whose father had a university education, but men whose father had only elementary education did not differ in intrasexual competitiveness from men whose father had a university education.

Next, we examined whether the effects of fathers' and mothers' educational levels were independent of each other. Assortative mating with respect to education was evident from the positive correlation between the education of the mother and the education of the father (Spearman  $r = .58$ ;  $n = 1844$ ;  $p < .0001$ ). An ANOVA examining the effects of both fathers' and mothers' educational level on the level of intrasexual competitiveness among men showed that neither the educational level of the mother,  $F(4,636) = 0.71$ ,  $p = .59$ , partial  $\eta^2 = .004$ , nor that of the father,  $F(4,636) = 1.05$ ,  $p = .38$ , partial  $\eta^2 = .007$ , had a significant effect, in part due to the high correlation between the two variables. In contrast, when examining female intrasexual competitiveness, we found a significant effect of fathers' educational level,  $F(4,759) = 4.78$ ,  $p = .001$ , partial  $\eta^2 = .025$ , but not of mothers' educational level,  $F(4,759) = 1.29$ ,  $p = .27$ , partial  $\eta^2 = .007$ , confirming again the important effect of one's father's education on intrasexual competitiveness among women.

**Figure 2.** Intrasexual competitiveness as related to educational level of (a) the mother and (b) the father

## Parental social status and intrasexual competitiveness among adolescents



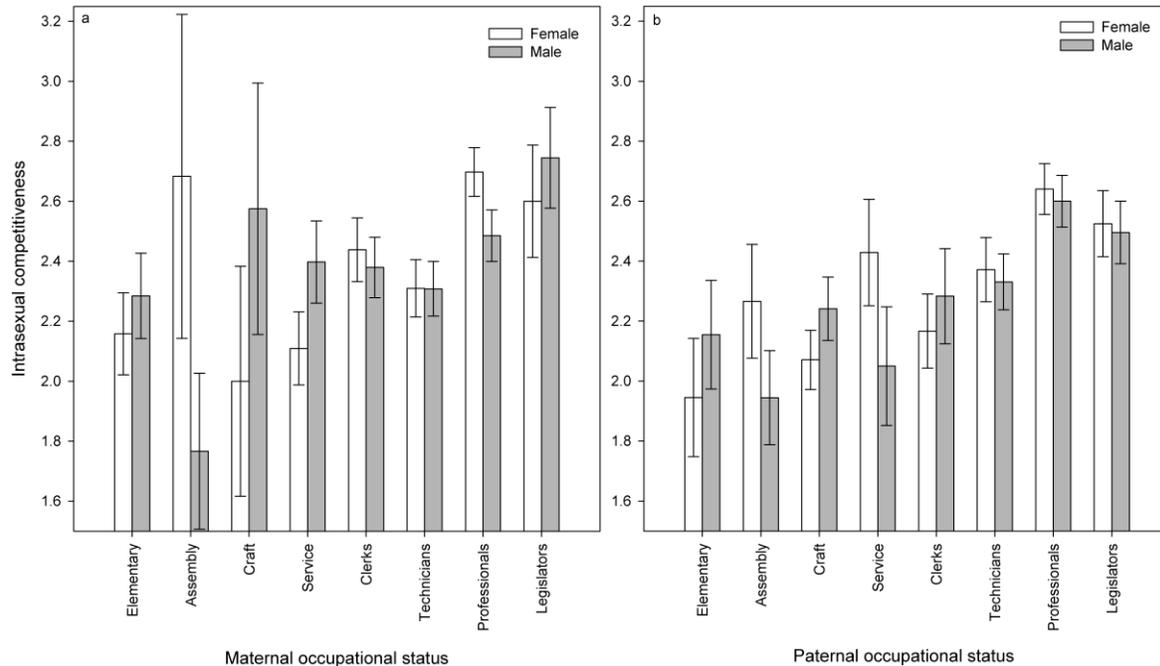
*Occupational status.* Finally, we performed a series of similar analyses for the role of occupational status. These analyses showed that the effects of fathers' occupational status were quite similar to the effects of mothers' occupational status. An ANOVA with occupational status of the mother and sex as independent variables and intrasexual competitiveness as the dependent variable showed a significant main effect of occupational status of the mother,  $F(7,1258) = 3.63$ ,  $p = .001$ , partial  $\eta^2 = .02$ , and no effect of sex,  $F(1,1258) = .001$ ,  $p = .91$ , partial  $\eta^2 < .0001$ . The interaction effect between sex and occupational status was not significant either,  $F(7,1251) = 1.28$ ,  $p = .26$ , partial  $\eta^2 = .007$ , and this interaction was therefore dropped from the model. Thus, the occupational status of the mother affected men and women to a similar degree. As shown in Figure 3a, the higher the occupational status of the mother, the higher the level of intrasexual competitiveness.

An ANOVA with occupational status of the father and sex as independent variables and intrasexual competitiveness as the dependent variable showed a highly significant main effect of occupational status,  $F(7,1358) = 5.81$ ,  $p < .0001$ , partial  $\eta^2 = .029$ , with no effect of sex,  $F(1,1358) = .02$ ,  $p = .90$ , partial  $\eta^2 < .0001$ . Again, the interaction effect between sex and occupational status was not significant,  $F(7,1351) = .81$ ,  $p = .58$ , partial  $\eta^2 = .004$ , and this interaction was therefore dropped from the model. Thus, also the father's occupational status affected men and women to a similar degree. As shown in Figure 3b, the higher the occupational status of the father, the higher the level of intrasexual competitiveness was.

Next, we examined to what extent the effects of fathers' and mothers' occupational status were independent of each other. Again, assortative pairing was observed, this time with respect to the occupational status of the mother and of the father (Spearman  $r = .43$ ;  $n = 1392$ ;  $p < .0001$ ). A single ANOVA simultaneously examining the effect of fathers' and mothers' occupational status on the level of intrasexual competitiveness among women showed that neither the occupational status of the mother,  $F(7,564) = 1.86$ ,  $p = .073$ , partial  $\eta^2 = .023$ , nor that of the father,  $F(7,564) = 1.12$ ,  $p = .35$ , partial  $\eta^2 = .014$ , had a significant effect (although the maternal effect was marginally significant), in part due, of course, to the high correlation between the two variables. In contrast, when examining male intrasexual competitiveness, we found a significant effect of fathers' occupational status,

$F(7,483) = 2.16, p = .036, \text{partial } \eta^2 = .030$ , but not of mothers' occupational status,  $F(7,483) = 0.86, p = .54, \text{partial } \eta^2 = .012$ .

**Figure 3.** Intrasexual competitiveness as related to occupational status of (a) the mother and (b) the father



## Discussion

In the present exploratory research among Dutch adolescents, we examined the effect of parental socio-economic status on intrasexual competitiveness, assessed as the tendency to view same-sex others as competitors in the realm of mating, resources, and status. We expected that this tendency would be relatively more elevated among male adolescents from lower socio-economic levels and among female adolescents from higher socio-economic levels, but we argued that it is possible that, overall, intrasexual competitiveness might be more elevated among those from the higher socio-economic levels. In fact, for men we found evidence for both seemingly contradictory effects, whereas for women we found only support for our last prediction. In general, the findings provide clear evidence that intrasexual competitiveness among adolescents is directly related to the socio-economic status of the parents, and seem to suggest two distinct effects. Firstly, there tends to be a higher level of intrasexual competitiveness among adolescents as their parents have a higher social status. That is, among both men and women, higher levels of intrasexual competitiveness were (with some deviations) associated with a higher family income, to a higher occupational status of the father as well as of the mother, and to a higher educational level of the mother. This can be interpreted as a *status maintenance* effect: Adolescents who grow up in a family with a high social status have more to lose than adolescents who grow up in a family with a low social status, and may therefore be more competitive towards same sex others to maintain their high status (cf., Faris and Felmlee, 2011). Secondly, we found, in line with our predictions, evidence for a number of

sex differences: Whereas among women higher levels of intrasexual competitiveness were linearly and rather strongly related to overall parental socio-economic status, among men those with parents with the lowest socio-economic status tended to be equally intrasexually competitive as those with parents with a medium socio-economic status, and slightly less intrasexually competitive than those with parents with a high socio-economic status. In fact, although there was no overall sex difference in intrasexual competitiveness, men were more intrasexually competitive than women among adolescents with parents of a low socio-economic status. This sex difference seemed to be mainly due to the educational level of the father, which had a similar effect as the overall socio-economic level. That is, among women, the higher the educational level of their fathers, the more intrasexually competitive they were. In contrast, among men, those with a father who had only elementary education were nearly as intrasexually competitive as those with a father who had a university education, whereas those with a father who had an intermediate level of education were the least intrasexually competitive. This sex difference may be interpreted as a *differential status striving* effect, and is in line with our suggestion that because men are more willing to marry with someone of a lower social status, social status will affect male and female intrasexual competitiveness differently. That is, men with the lowest social status not only have to compete for mates (and for the status and resources that give access to mates) with men of their own level of social status, but also with men of higher status levels (of course, the need to maintain one's status will still result in a high level of intrasexual competitiveness in this group). In contrast, women of a low social status have more options of marrying up, and may therefore show less intrasexual competitiveness than men of a low social status. At the same time, because women tend to prefer partners of at least their own social status, among women with a high social status there will be a stronger competition over mates than among women with a low social status. Thus, the curvilinear effect of social status on intrasexual competitiveness observed in men may be a consequence of a *status maintenance* effect in combination with a *differential status striving* effect.

It is not directly obvious why the educational level of the father and not of the mother had this differential effect on men and women. A possible explanation is that the father's educational level still determines the societal status of a family more than the mother's educational level. Furthermore, the issue arises as to why it was *educational level*, and not income or professional status that drove the effects. It may be that, in Western societies, educational level is the most unequivocal indicator of prestige and is least likely to be subject to negative societal evaluations in comparison to, for example, income, as illustrated by the low prestige of bankers these days. Even more so, in Western societies, educational level may affect the culture in the family more than income or professional status. Moreover, attaining a higher educational level requires intelligence and persistence; therefore, a male with a father with a low education may respond rather negatively to men who are doing better in this respect. It must be noted though that among men, but not among women, the occupational status of the father had a stronger effect on intrasexual competitiveness than the occupational status of the mother. This may be due to the fact that men identify more with their father than with their mother, and that the profession of one's father is a more observable characteristic than income or education.

The present research has a number of strong points as well as limitations. To begin with the latter, the sex differences were relatively minor given the large sample size, and we can only speculate about the processes responsible for the observed effects. In addition,

we did not examine here the behavioral manifestations of intrasexual competition such as physical aggression, submission, or derogating one's rivals. For example, Buss and Dedden (1990) identified numerous strategies of the latter, including derogating a competitor's intelligence, calling a competitor promiscuous, or dominating a competitor. As noted by Campbell (2002), forms of intrasexual competition such as violence and thefts are more prevalent among women from lower socio-economic levels. Furthermore, this research cannot demonstrate that parental social status has direct causal effects on intrasexual competitiveness. As we assume that intrasexual competitiveness is a trait, it may follow the same pattern as many other psychological traits, and be moderately heritable.

Despite these limitations, strong points of our research include the use of a large sample representative of Dutch adolescents, as well as differentiated measures of social status. Moreover, this research is the first to systematically study the effects of socio-economic status on intrasexual competitiveness and suggests that competitiveness with same-sex others is a robust phenomenon, despite the fact that currently, in the labor market, men and women compete more with one another than ever before. Whereas male adolescents from the lowest socio-economic levels may be as competitive as those from the highest levels, such competition is overall more, not less, prevalent among female adolescents from higher socio-economic levels. These findings may help in explaining a variety of processes, including the relative high prevalence of criminal behavior among boys with low educational levels—assumedly a way to attain status and resources that boys with higher educational levels may attain through education—as well as the assumed higher prevalence of anorexia nervosa among girls from the higher socio-economic levels (e. g., McClelland and Crisp, 2001; Moya et al., 2006; Nevenon and Norring, 2004).

The present research may also have practical implications. It may sensitize professionals working with adolescents and their families to the important role intrasexual competition may play, especially among female adolescents from high socio-economic levels and among male adolescents from low socio-economic levels. Addressing and moderating intrasexual competitiveness in these groups may help in preventing a variety of deviant behaviors, from criminal acts to anorexia (cf., Campbell, 2002; Mealey, 2000). In general, the present research may add to a better understanding of why and how social stratification in society is maintained, and thus links evolutionary thinking to classic sociological and social psychological issues.

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