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Intrasexual competitiveness and personality traits: A study in Uruguay

Abraham P. Buunk^{a,*}, Adriana Fornari Bucksath^b, Soldedad Cordero^b

^a University of Curaçao and University of Groningen, The Netherlands

^b Universidad Católica del Uruguay, Uruguay

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ABSTRACT

Intrasexual competitiveness refers to a competitive attitude towards same-sex others. The present study examined the relation between intrasexual competitiveness as measured with the scale developed by Buunk and Fisher (2009) and the Big Five personality traits. A sample of 140 adults (age $M = 36.62$, $SD = 11.04$) from the community of Montevideo, Uruguay completed the scale for intrasexual competitiveness and the NEO-FFI. The intrasexual competitiveness scale was found to be reliable and sex neutral, and had a coefficient of congruence of 0.97, suggesting that the Dutch and Spanish versions can be considered as equal. In line with the findings of Buunk and Fisher, regression analyses showed that among women, intrasexual competitiveness was predicted by a lack of agreeableness and a high level of neuroticism, and among men by high levels of neuroticism and extraversion. The possible evolutionary background of these sex differences is discussed.

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1. Introduction

From an evolutionary perspective, intrasexual competitiveness can be defined as competitiveness among members of the same sex with the ultimate goal to enhance one's access to, and retention of, mates (Anderson, 1994). According to Trivers (1972), given their lower level of parental effort, in many species it is particularly the males who engage in competition with other males. However, among humans, as in a number of other primate species, both sexes may engage in competition with same sex conspecifics. Indeed, there is considerable evidence that females may be intrasexually quite competitive and aggressive, especially over males (e.g., Campbell, 2013; Frodi, Macaulay, & Thome, 1977; Van Brummen-Girigori & Buunk, 2016). Already three decades ago, Burbank (1987) showed that in polygynous societies, co-wives may intrasexually compete for food and money, paternal care for their offspring, and for the inheritance of their offspring. In a related vein, Buunk, Stulp, and Ormel (2014) found that young women were consistently more intrasexually competitive the higher the socio-economic status of their parents, assumedly because young women are nowadays on average more highly educated than young men, intensifying female competition over highly educated males. In contrast, males with parents with the lowest socio-economic status tended to be more intrasexually competitive than those with parents with a medium socio-economic status, assumedly because females can "marry up", and lowly educated males have not only to compete with other males with a low education, but also with males with a higher education.

It must be noted that among humans there are important differences between men and women in the nature of intrasexual competitiveness. For example, when competing with others of the same sex, men tend to exhibit more physically aggressive behavior, whereas women tend to exhibit more verbally aggressive behavior (e.g. Buunk & Fisher, 2009; Campbell, 2013; Cashdan, 1998). In addition, men tend to compete primarily in the domain of social status and dominance to obtain and retain physically attractive mates, while women tend to compete more in the domain of physical attractiveness to obtain and retain mates that can provide sufficient resources and protection for themselves and their offspring (see also for example Anderson, 1994; Buunk, Massar, & Dijkstra, 2007; Van Brummen-Girigori & Buunk, 2016). For example, there is evidence that, when confronted with highly attractive rivals, women tend to derogate such a rival, especially when she makes intrasexual competition salient, for instance when she conversing with a male (Baenninger, Baenninger, & Houle, 1993). However, also among males, physical attractiveness may play an important role in their reproductive strategy. For instance, men high in physical attractiveness tend to spend relatively more time in mating effort and less time with kin (e.g., Waynforth, 1999), most likely because attractive men are preferred as sex partners, and therefore have to offer less parental investment and commitment in exchange for sexual opportunities (Gangestad & Simpson, 2000).

As noted by Buunk and Fisher (2009), evolutionary psychologists have focussed particularly on universal human adaptations, and have sometimes argued that individual differences in such adaptations are merely noise. According to Tooby and Cosmides (1992), "Heritable variation in a trait generally signals a lack of adaptive significance" (p. 38, *italics in original*). However, other authors have suggested that such heritable variation may continue to exist *because* individual differences

* Corresponding author at: Rozenstraat 74a, 1016 NX Amsterdam, The Netherlands.
E-mail address: a.p.buunk@rug.nl (A.P. Buunk).

may reflect equally adaptive strategies (e.g., Buss, 1991; Gangestad & Simpson, 1990). According to Figueredo et al. (2005) personality differences are characteristic of social species, and may be adaptive in social competition because of the operation of frequency dependent selection. For example, in a population with predominantly cooperative individuals, there would be a niche for competitive individuals (and vice versa). Nettle (2006) argued that individual differences in basic personality characteristics may have adaptive significance under different conditions. Being strongly intrasexually competitive may be adaptive under certain conditions, yet maladaptive under other conditions. Such other conditions might include a low life expectancy, a low perceived chance of attaining a high status in the long run, and a low mate value. In line with this, Van Brummen-Girigori and Buunk (2016) found that girls who had grown up without their biological father were intrasexually more competitive than girls who had grown up in intact families.

In a preliminary and exploratory set of studies with a total of 706 participants, Buunk and Fisher (2009) developed simultaneously in Canada and in the Netherlands a scale to assess individual differences in intrasexual competitiveness, the Intrasexual Competition Scale. This instrument measures the responses to confrontation with individuals of the same sex, including the desire to triumph over others, the desire to perceive oneself as better than others, envy and frustration when others are successful and a feeling of malicious pleasure when the most successful lose confidence and hope.

Buunk and Fisher (2009) assessed the relationship between intrasexual competitiveness and the Big Five personality traits in a Canadian sample, using Costa and McCrae (1992) scales. The Five Factor Model of personality has in the past decades become the most widely agreed upon and validated classification of personality traits (Goldberg, 1993), and assumes the existence of five broad personality traits: neuroticism, extraversion, openness, agreeableness, and conscientiousness. These traits have been recognized in many species (see also Anderson, 1994; Buss, 1991). Buunk and Fisher (2009) found that intrasexual competitiveness was among men more strongly, and differently, related to the Big Five traits than among women. Among women intrasexual competitiveness was associated with a lack of agreeableness and neuroticism (although in a regression neuroticism was only marginally significant), and among men with a high level of neuroticism and extraversion, with neuroticism making the strongest contribution. The theoretical explanation for this was that among males these are the traits that were the first individual differences to evolve in freely moving species (Figueredo et al., 2005), and that intrasexual competition among males has a longer evolutionary history than among females, due to which the adaptive value of different levels of the same trait may have had more time to evolve (cf. Nettle, 2006).

The present research is a replication and extension in Uruguay of Buunk and Fisher's (2009) research. There were three major reasons to conduct this study. First, there is an increasing emphasis within psychology on the necessity of replication, and an increasing awareness of the necessity to be cautious with attaching too much value to the results of a single study (see e.g., Pashler & Wagenmakers, 2012). Second, the study by Buunk and Fisher (2009) was conducted among college students, who may be particularly intrasexually competitive. There has been for long much criticism of the overrepresentation of undergraduate students in psychological research (Gallander, North, & Sugar, 2001), and this applies particularly to issues like intrasexual competitiveness that are likely to be affected by the stage of life history. Therefore, it is important to examine if similar results are found in adult populations. Third, in a similar vein, as still most psychological research is conducted in North America, it is relevant to examine if the findings can be generalized to other cultures. While the present Spanish version has been used in some other Spanish speaking countries, including Argentina and Spain (Buunk, aan't Goor, & Castro-Solano, 2010), the association with personality characteristics has not yet been examined outside Canada. Therefore, the first goal of this study was to perform a preliminary psychometric analysis of the Spanish version of the Intrasexual Competition Scale in Uruguay. The

second, and major, goal of this study was to examine the relationship between intrasexual competitiveness and the Big Five personality traits. On the basis of the research by Buunk and Fisher (2009), we hypothesized (1) that among men intrasexual competitiveness would be especially prevalent among men high in neuroticism and extraversion, while (2) among women it would be more prevalent among those high in neuroticism and low in agreeableness.

2. Method

2.1. Participants and procedure

The sample consisted of 140 adults (age $M = 36.62$, $SD = 11.04$; range = 18–61 years) from Montevideo with a secondary educational level or higher. Of these, 70 were male (age = 35.87, $SD = 10.81$) and 70 female (age $M = 37.37$, $SD = 11.30$). The majority of the participants was married or cohabiting (84, 60%); 32.1% (45) single, and 7.8% ($n = 11$) divorced or separated. The majority was currently employed (122, 87.1%), 2.9% ($n = 4$) unemployed and 10% ($n = 14$) marked the option "other". The participants were volunteers approached through snowball sampling who completed the questionnaires individually, using a paper-and-pencil format. The questionnaires were administered in Spanish. The Ethics Board of the Universidad Católica del Uruguay approved the study. After providing instructions and informed consent, all respondents completed a series of forms in the order presented below.

2.2. Measures

2.2.1. Intrasexual Competition Scale (ICS)

In order to assess intrasexual competitiveness, the Spanish version of the Intrasexual Competition Scale (Buunk & Fisher, 2009) developed by Buunk et al. (2010) was used. The instrument measures the competitive responses to confrontation with individuals of the same sex, especially in, but not restricted to, mating contexts (see Table 1 for the items). The version for men and for women is exactly the same, but, of course, in the version for men the 'others' are specified as 'other men' and in the version for women as 'other women'. The scale has 12 items. Each item has 7 possible answers (Likert format) varying from 1 = "not at all applicable" to 7 = "completely applicable". Scores for the scale are obtained by summing up the items. The Dutch and Canadian scales both had Cronbach's alpha's higher than 0.80, that could not be enhanced by deleting an item. There was no difference between the sexes. There was considerable evidence for the construct validity of the scale.

2.2.2. Neo Five Factory Inventory

Personality characteristics were assessed with the validated Spanish version of the NEO Five Factory Inventory (Aluja, Blanch, Sole, Dolcet, & Gallart, 2009), a short form of the revised NEO Personality Inventory (Costa & McCrae, 1992). The NEO-FFI has a total of 60 items for measuring the Big Five principal personality factors, with a scale of 12 items for each factor. The items were scored on a five-point Likert scale ranging from 1 = "almost never" to 5 = "almost always". The instrument's psychometric properties were satisfactory in the present sample. The reliability of neuroticism in this study was 0.78 ($M = 19.16$, $SD = 6.86$), extroversion 0.78 ($M = 26.67$, $SD = 6.57$), openness 0.79 ($M = 27.90$, $SD = 8.06$), agreeableness 0.69 ($M = 28.81$, $SD = 6.61$), and conscientiousness 0.76 ($M = 31.33$, $SD = 6.66$).

3. Results

3.1. Psychometric qualities of the Intrasexual Competition Scale

The Spanish version of the scale had a high reliability ($\alpha = 0.88$, $M = 2.70$, $SD = 1.28$) in this sample, which could not be enhanced by

Table 1
Psychometric properties of the Intrasexual Competition Scale items for the Spanish version.

Items	<i>M</i>	<i>SD</i>	<i>As</i>	<i>r</i>	α
1. I can't stand it when I meet another man/woman who is more attractive than I am.	2.18	1.79	1.40	0.58	0.87
2. 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.	2.91	1.97	0.76	0.55	0.87
3. I tend to look for negative characteristics in attractive men/women.	2.66	1.89	0.81	0.74	0.86
4. When I'm at a party, I enjoy it when women/men pay more attention to me than other men/women.	3.54	2.22	0.22	0.61	0.87
5. I wouldn't hire a very attractive man/woman as a colleague.	2.43	1.84	1.06	0.62	0.87
6. I just don't like very ambitious men/women.	2.86	2.03	0.73	0.36	0.88
7. I tend to look for negative characteristics in men/women who are very successful.	2.53	1.86	1.01	0.70	0.87
8. I wouldn't hire a highly competent man/woman as a colleague.	2.19	1.85	1.49	0.37	0.88
9. I like to be funnier and more quick witted than other men/women.	3.31	2.21	0.38	0.51	0.88
10. I want to be just a little better than other men/women.	3.15	2.05	0.41	0.63	0.87
11. I always want to beat other men/women.	2.78	1.99	0.78	0.72	0.86
12. I don't like seeing other men/women with a nicer house or a nicer car than mine.	1.91	1.63	1.76	0.59	0.87
Total	2.70	1.28	0.61		0.88

Note: *M* = Mean; *SD* = Standard deviation; *As* = Asymmetry; *r* = item-rest correlation; α = alpha estimate when the item would be deleted.

deleting an item (the highest alpha if item deleted was the same as the original value), even when using four decimals. The values for kurtosis (−0.03) and skewness (0.62) were within an acceptable range.

A confirmatory factor analysis (CFA) was not possible as Buunk and Fisher (2009) only reported the results for the preliminary scales that contained 15 items, and only presented the explained variance and eigenvalues of the factors. We therefore conducted a principal component analysis (PCA). The Kaiser-Meyer-Olkin test (KMO) of sampling adequacy yielded a score of 0.883, exceeding the recommended threshold. Bartlett's test of sphericity was also significant ($\chi^2(66) = 696.73$; $p < 0.001$). In line with the results of Buunk and Fisher (2009), the PCA resulted in a dominant first factor (eigenvalue 5.38) that explained a considerable amount of variance (44.85%), and two minor factors that were hardly higher than 1, and can therefore be ignored (eigenvalues 1.14 and 1.07, explained variance 9.48% and 8.89%). The psychometric properties of the items of the Spanish version of the Intrasexual Competition Scale are presented in Table 1. Following the criteria for item retention recommended by Streiner and Norman (1995), the means, standard deviations, asymmetry, item-rest correlations, and the alpha's when an item was deleted were calculated. Most coefficients of asymmetry of the items were lower than 1. None of the items contained an item-rest correlation below the critical threshold of 0.30. Thus, all items satisfied the criteria and could be retained.

The *t*-test for independent samples was used to examine if there was a gender difference in the total score of the ICS. That proved not to be the case, $t(138) = 1.51$, $p = 0.14$ ($M = 2.54$, $SD = 1.28$ for women and $M = 2.87$, $SD = 1.27$ for men).

We calculated the coefficient of congruence ϕ to assess the metric equivalence of the scale, i.e., the equivalence in the psychometric properties of the Dutch and Spanish versions of the scales (Tucker, 1951). This coefficient was 0.97, which indicates the highest level of congruence according to Tucker (1951). On the basis of an empirical analysis of the perceived similarity of factors, Lorenzo-Seva and ten Berge (2006) suggested that a range between 0.85 and 0.94 corresponds to a fair similarity, while a value higher than 0.95 implies that both scales can be considered equal. Thus, the congruence between the Dutch and Spanish version of the scale can be considered as high.

3.2. Relationship between intrasexual competitiveness and personality

Next, the relationship of intrasexual competitiveness with the Big Five was assessed. In Table 2, the correlations between the five personality variables and intrasexual competitiveness are presented for men and women separately. For the predicted correlations, we examined if the correlations were significant on a one-tailed level. In line with Buunk and Fisher (2009), and as predicted in hypothesis 1, among men, neuroticism ($r = 0.35$, $p < 0.01$) as well as extraversion ($r = 0.21$, $p < 0.05$, one-tailed) were positively correlated with intrasexual competitiveness. As predicted in hypothesis 2, for women, neuroticism

($r = 0.49$, $p < 0.01$) was positively and agreeableness ($r = -0.36$, $p < 0.01$) was negatively correlated with intrasexual competitiveness. None of the other correlations between personality and intrasexual competitiveness were significant.

Hierarchical multiple regression with all Big Five factors included as predictors and intrasexual competitiveness as outcome variable confirmed this picture. For men, in line with hypothesis 1, both neuroticism ($\beta = 0.45$, $p < 0.001$), and extraversion ($\beta = 0.29$, $p < 0.05$) made an independent contribution ($\beta = 0.29$, $p < 0.05$). For the total equation, $F(5, 64) = 4.16$, $p < 0.01$, $R = 0.50$, $R^2 = 0.25$, adjusted $R^2 = 0.19$. The difference between the two R^2 's was not significant, $F(3, 64) = 1.13$, $p = 0.34$. For women, in line with hypothesis 2, neuroticism ($\beta = 0.37$, $p < 0.01$) made a positive, and, agreeableness made a negative contribution ($\beta = -0.23$, $p < 0.05$, one-tailed). For the total equation, $F(5, 64) = 5.40$, $p < 0.001$, $R = 0.55$, $R^2 = 0.30$, adjusted $R^2 = 0.24$. The difference between the two R^2 's was not significant, $F(3, 64) = 0.41$, $p = 0.75$. Thus, intrasexual competitiveness is particularly characteristic of neurotic and less agreeable women, and of neurotic and extraverted men.

4. Discussion

This research was a replication and expansion in Uruguay of Buunk and Fisher's (2009) studies. The Spanish version of the Intrasexual Competition Scale showed good psychometric properties similar to the original version. It had a high reliability and proved to be sex neutral. A factor analysis a clear one-factor structure. The percentage of variance explained by this single factor was over 40%, which is high. All the items followed the criteria for item retention recommended by Streiner and Norman (1995). Finally, the congruence between the Dutch and Spanish versions was high, making it possible to compare scores between both cultures.

With respect to the relationship between intrasexual competitiveness and personality traits, the results of our study largely replicated Buunk and Fisher's (2009) findings: among men, intrasexual

Table 2
Correlations between personality factors and intrasexual competitiveness.

	1	2	3	4	5	6
1. Neuroticism	X	−0.19	0.19	−0.29**	−0.29**	0.50***
2. Extraversion	−0.19	X	0.34**	0.19	0.23	−0.11
3. Openness	0.14	0.33***	X	0.21	0.19	0.07
4. Agreeableness	−0.06	0.09	0.15	X	0.09	−0.36***
5. Conscientiousness	−0.38***	0.22	−0.09	0.05	X	−0.23
6. Intrasexual competitiveness	0.35***	0.21*	0.11	−0.16	0.02	X

Women above, men below the diagonal. For all correlations, $n = 70$.

** $p < 0.01$

*** $p < 0.001$

* $p < 0.05$ (one-tailed, because specific prediction).

competitiveness was independently predicted by high levels of neuroticism and extraversion. These findings underline the observation of Buunk and Fisher that the two traits that are related to male intrasexual competition are precisely those that might, according to Figueredo et al. (2005), have been the first individual differences to have evolved in freely moving species. In fact, the present study found an even stronger association between neuroticism and intrasexual competitiveness among men than the study by Buunk and Fisher (2009) did. However, as in the latter study, the bivariate relation between extraversion and intrasexual competitiveness among men was not very strong, and also in the present study neuroticism seemed to function in part as a suppressor variable. Apparently, in general, especially when controlling for neuroticism, extraversion is related to intrasexual competitiveness among men.

As in the study by Buunk and Fisher, in addition to neuroticism, a lack of agreeableness stands out as an important predictor of intrasexual competitiveness among women. As noted by Costa and McCrae (1992), the disagreeable or antagonistic person is egocentric, skeptical of others' intentions and competitive rather than cooperative. It is not immediately obvious why a lack of agreeableness would be related to intrasexual competitiveness of women and not of men. One explanation may be that, given their longer evolutionary history of intrasexual competition, men find agreeing with statements reflecting negative attitudes to other men relatively normal, whereas it takes for women to have a disagreeable personality to agree with such statements. Indeed, more than women, men seem to consider competition with same sex others a more normal fact of life, which is for them not incompatible with maintaining collaborative relationships (cf. Buunk & Massar, 2014; Campbell, 2013).

To conclude, the present research is a next step in remedying the lack of documented associations between personality and intrasexual competition (Figueredo et al., 2005), and suggests that these associations may be stable across cultures, and are not just typical for students who are in stage in their life in which intrasexual competition may be very salient. Overall, the present results were even somewhat stronger than the results of Buunk and Fisher (2009) obtained in Canada, particularly among women. In this latter study, among women the total amount of variance in intrasexual competitiveness explained by the Big Five traits was only 9% (with agreeableness making the strongest contribution), as opposed to 30% in the present study, whereas among men the amount of explained variance was similar to that in Canada.

There are a number of potential limitations of the present research. First, the sample was not representative of the Uruguayan population. Nevertheless, our findings suggest that, similar to the original English and Dutch versions, the Spanish version of Intrasexual Competition Scale is a reliable and valid instrument for assessing intrasexual competitiveness. Second, there is in research in different cultures always the issue if the items have the same meaning for individuals with different cultural backgrounds. However, the scale has a high level of congruence with the Dutch version, and seems therefore suitable for cross-cultural comparisons. Third, there was an unexpectedly high correlation between neuroticism and intrasexual competitiveness among women. It is not clear why this correlation was much higher in the present research and not by Buunk and Fisher (2009). While it may be due to cultural differences, we think it is more likely that it is due to the life stage. Probably, while among adolescents, although occurring especially among less agreeable women, intrasexual competitiveness is relatively common, it may be that later in life especially neurotic women who have problems with finding a suitable mate are still intrasexually competitive. This is clearly an issue for future research. Finally, we have in this study not related intrasexual competitiveness to other potentially relevant variables from an evolutionary perspective like life history strategy, mate value or mating behaviors. However, there is increasing

evidence for the relevance of intrasexual competitiveness as measured in the present research for real life mating behaviors (see Van Brummen-Girigori & Buunk, 2016). Overall, the present research suggests that individuals *do* differ in their tendency to be competitive towards same sex others, and that such individual differences constitute a basic phenomenon that may occur in a variety of cultures, and needs much more attention in future research.

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