A longitudinal study into the link between adolescent personality and peer-rated likeability and adjustment: Evidence of gender differences

Joseph Ciarrochi *, P.C.L. Heaven

School of Psychology, University of Wollongong, NSW 2522, Australia

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ABSTRACT

We explored the possibility that male and female adolescents respond differently to the personality traits of their male and female peers. Students (381 boys; 389 girls) completed personality measures in Grades 7 (Mean age 12.28) through 10, and completed peer-ratings of adjustment and likeability in Grades 9 and 10. Analyses indicated that girls' adjustment ratings were influenced by boys' level of agreeableness, conscientiousness, and Eysenckian psychoticism, whereas boys' ratings were relatively uninfluenced by these characteristics in girls. Girls and boys liked extraversion in the opposite-gender more than they liked it in the same gender. We discuss the implications of these findings for understanding peer relationships and gender differences.

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1. Introduction

There is a clear consensus that child and adolescent peer relationships play a vital role in human development and psychological adjustment (Newcomb, Bukowski, & Pattee, 1993; Parker & Asher, 1987; Wentzel, 2003). For example, low peer-rated acceptance has been predictive of poor academic outcomes (Wentzel, 2003), juvenile and adult criminality (Newcomb et al., 1993; Roff & Wirt, 1984), psychopathology (Parker & Asher, 1987), and externalising problems (Sandstrom & Cillessen, 2006).

Does gender influence how adolescents respond to the personality traits of same and opposite-gender peers? For instance, do boys like girls who are high in agreeableness? Do they see these girls as more adjusted? What personality traits are girls responsive to in boys?

Research has examined this question from different angles, which vary in their information source (self-report, peer-report, and performance), and in their emphasis on gender differences. Some research has focused on self-reports of what people like about others (Xie, Li, Boucher, Hutchins, & Cairns, 2006). Other research has focused on relations between peer-nominated behaviours and peer-nominated likeability (Cillessen & Borch, 2006). Relatively little research has utilised multiple information sources to examine the extent that boys and girls are responsive to differ-

ent qualities (e.g. personality) in their peers (Newcomb et al., 1993).

The present study assesses the extent that self-reported personality is related to peer-rated adjustment and likeability within the same time period and the extent that these characteristics also predict future peer ratings across 1–4 years. In order to examine gender differences, we had boys and girls rate adjustment and likeability for the same and opposite-gender peers.

1.1. Potential gender differences in peer ratings

Are there gender differences in how responsive adolescents are to personality characteristics in their peers? This question has received surprisingly little attention, despite evidence that females are more socially sensitive than males and therefore might be expected to be more responsive to traits in their peers. Riggio (1986) found that females were more socially attentive and better than males at decoding and understanding verbal communication. Other research suggests that females are better at detecting negative facial expressions (Williams et al., 2008). Concerning adolescents, research suggests that girls have higher quality and quantity of social support (Ciarrochi & Heaven, 2008), which is consistent with them having superior social skills. These previously found gender differences are one reason to explore whether gender moderates the link between personality and peer ratings.

Another reason is suggested by parental investment theory, which proposes that females and males, under some circum-

stances, prefer different characteristics in the opposite sex due to differences in reproductive demands (Buss, 1989, 1995; Feingold, 1992; Shackelford, Schmitt, & Buss, 2005). Females must be highly selective in mate selection because they can only bear and raise a limited number of children. Consequently, females search for a mate who has characteristics that are likely to promote worldly success and lead the male to commit the fruits of that success to offspring (e.g., pro-social traits). In contrast, males can father an unlimited number of children and ensure reproductive success by inseminating many females. Thus, males do not have to be as selective as females, and as sensitive at detecting pro-social girls.

The point of this paper is not to test a parental investment theory, but rather to use that theory to suggest there might be a female advantage in the detection of some aspects of personality. It should be noted that environmental theories, rather than genetic/evolutionary theories, might also predict female advantages. In most western cultures, females are often expected to give up their jobs during late pregnancy and the early years of raising children. Therefore, females are often financially dependent, and must be good at detecting males who will provide support and protection.

Based on either the evolutionary or environmental account, we would predict the following: girls will be better than boys at detecting "pro-social" qualities in the opposite sex. Specifically, girls' peer ratings of adjustment will be influenced by boys' level of pro-social traits such as conscientiousness, low psychoticism and agreeableness. In contrast, boys will show less responsiveness to these characteristics in girls.

Even if girls are able to identify well-adjusted boys, they may not actually *like* these boys. Indeed, research suggests that the simple prediction that females prefer resources and males prefer attractiveness only holds for long-term relationships like marriage. For less serious short-term relationships, good looks are at least as important for women as they are for men, especially when sexuality plays a role (e.g. Gangestad & Simpson, 2000). Resources become unimportant (Gangestad & Simpson, 2000; Penke, Todd, & Fasolo, 2007). In the present context, it is possible that young adolescents are focused on short-term relationships. If so, then a girl's likeability rating of a boy may be relatively uninfluenced by whether that boy has characteristics that indicate good, long-term prospects.

In summary, we suggest that environmental (or evolutionary/biological) factors lead females to become more skilled than males at detecting personality-related adjustment in the opposite gender. This suggestion is an extension of the idea that females are better than males at decoding and understanding verbal communication (Riggio, 1986) and better at detecting some facial expressions (Williams et al., 2008). Although we expect females to have more insight into males' personality, we do not necessarily expect them to apply that to their likeability ratings in the young adolescent context, where short-term rather than long-term relationship interests are expected to dominate.

In addition to opposite-gender ratings, we will examine same-gender ratings. We speculate that adolescents in Grades 9 and 10 have considerably more social experience with same-gender peers compared to opposite-gender peers. Past research suggests that greater experience with an individual tends to result in more accurate evaluation of that individual (Funder, 1995). We thus expect males and females to detect pro-social characteristics in same-gender peers and to therefore rate them as more adjusted. Concerning gender differences, we expect males to be able to make the "easy" social judgments (same-gender ratings), but struggle with the more difficult judgments (opposite-gender ratings). In contrast, females are expected to be good at both the easy and difficult social judgments.

1.2. What characteristics do adolescents prefer in their peers?

Peer preferences can be assessed by self-report or by peer ratings. Roscoe and colleagues (1987) conducted self-report research and found that adolescent males more frequently listed sexual activity as a reason for dating, whereas females listed intimacy. In addition, males were more concerned with the appearance and sexual activeness of dating partners, whereas females placed greater importance on personality characteristics such as dependability, tendency to set goals for the future, and respect for others (Roscoe et al., 1987). In another study involving children and adolescents, Xie et al. (2006) found no gender differences in self-reported preference for "good studentship", and found that pro-social behaviours were generally liked by both boys and girls. They did find that although males and females do not like antisocial traits in general, they are more tolerant of such traits in males than females.

A substantial research literature has examined the characteristics that are associated with peer-nominated likeability (Becker & Luthar, 2007; de Bruyn & van den Boom, 2005; Newcomb et al., 1993; Schwartz, Hopmeyer Gorman, Nakamoto, & McKay, 2006). Research has shown that likeable children tend to have higher cognitive ability, positive social traits, and lower levels of aggression (see Newcomb et al., 1993). Likeable children are also more physically attractive and athletic (Becker & Luthar, 2007). Of particular relevance to the present paper, Jensen-Campbell and colleagues (2002) examined the link between the Big Five personality dimensions and likeability in early adolescents. They found that adolescents who scored high in agreeableness had higher levels of peer acceptance and more mutual friends. Those high in agreeableness were also less likely to experience increases in social victimisation over time. In addition to being linked with agreeableness, peer acceptance was linked to higher extraversion and conscientiousness, but was not related to higher levels of neuroticism.

Some sociometric research has examined gender differences in peer nominations (Hayden-Thomson, Rubin, & Hymel, 1987). However, due to either sample size issues (sample being too small), and/or nomination procedure (not forcing people to nominate both females and males for likeability), little of this research has examined the four different rating conditions we focus on in this study (i.e., males and females rating same and opposite-gender peers; Newcomb et al., 1993). When gender differences have been examined, studies have frequently compared male and female likeability scores that are derived from a combination of male and female raters (e.g. Becker & Luthar, 2007; Lubbers, Van Der Werf, Kuyper, & Offringa, 2006), or studies have focused on same-gender ratings (e.g., Jensen-Campbell et al., 2002). Research with pre-adolescents suggests that the patterning of peer ratings may differ for same-gender vs. mixed-gender peer measures (Hayden-Thomson et al., 1987). We sought to investigate this possibility in an adolescent sample.

1.3. Personality and peer ratings

We focused on four personality traits that we thought would relate to peer-rated likeability and adjustment. These were conscientiousness, Eysenckian psychoticism, agreeableness, and extraversion. The first three traits indicate general pro-social tendencies and link to our hypothesis that female peer ratings will be more responsive than males to pro-social traits. Extraversion is associated with positive affectivity, sensitivity to reward, and generally positive, "fun" behaviour, and thus we expected it to link to peer ratings of likeability and adjustment. We now discuss each personality trait in turn.

The high C individual is reliable, dependable John (1990), and achievement-striving (Costa, McCrae, & Dye, 1991). Amongst ado-

lescents, Veage and Ciarrochi (2009) found that high C individuals valued achievement, loyalty, honesty, and protection of loved ones. Not surprisingly, C is a strong predictor of academic achievement (Heaven, Ciarrochi, & Vialle, 2007), as well as career success and marital stability (Roberts, Chernyshenko, Stark, & Goldberg, 2005).

Eysenck's P dimension has been viewed as a "…continuum from normal, through criminal, psychopathic, alcoholic, and drug addictive behaviour generally, to schizoid and finally entirely psychotic states" (Eysenck & Eysenck, 1985, p. 65). Zuckerman suggested that impulsivity, lack of socialisation, and sensation-seeking lie at the heart of the P dimension (Zuckerman, Kuhlman, & Carnac, 1988). Current evidence suggests that, although P predicts poor adjustment and personality disorders, it does not predict psychosis (Chapman, Chapman, & Kwapil, 1994). Other research has shown P to be associated with callousness and conduct disorders (Jang, Livesley, & Vernon, 1999), social anhedonia (Raine & Allbutt, 1989), sexual hostility, and the acceptance of unconventional sexual behaviours (Barnes, Malamuth, & Check, 1984). Among youth, P predicts deteriorating emotional well-being over time (Ciarrochi & Heaven, 2007) as well as later criminal convictions (Lane, 1987) and drug-taking behaviour (Kirkcaldy, Siefen, Surall, & Bischooff, 2004).

Agreeable individuals are trusting of others, generous, warm, kind, and good-natured (John, 1990). They feel comfortable when in close communion with others, find it easy to form close attachments, are concerned with the welfare of others, and are easily moved by the needs of others (Dunkley, Blankstein, Zuroff, & Hui, 2006). This pro-social nature is further illustrated in their ability to not be affected by negative cues in their social environment. Compared to disagreeable individuals, those high on A are able to self-regulate and diffuse aggressive thoughts leading to a reduction in aggressive tendencies (Meier, Robinson, & Wilkowski, 2006).

In sum, each of the pro-social traits is likely to predict social adjustment. Extraverts are also expected to be adjusted, but for different reasons than those high in pro-social traits. Extraverted adolescents do not especially value (or devalue) loyalty, honesty and friendship (Veage & Ciarrochi, 2009). Rather, extraverts appear to be more sensitive to rewards, in both social and non-social contexts (Lucas & Diener, 2001). They tend to experience positive moods, be leaders, and enjoy engaging in exciting and hedonistic activities (Costa & McCrae, 1992; Veage & Ciarrochi, 2009; Watson & Clark, 1997). They are the "life of the party". As such, we expected peers to see them as both likeable and adjusted.

2. Method

2.1. Participants and design

Participants attended five high schools in a Catholic Diocese of New South Wales, Australia. In Australia 33% of all students now attend non-government (including Catholic) schools (Australian Bureau of Statistics (ABS), 2004a). Our sample closely resembles key demographic indicators (father's occupation, Australian Bureau of Statistics, 2004b) as well as national distributions with respect to number of intact families and language other than English in the home (e.g. Australian Bureau of Statistics, 2006, chap. 5). The Diocese is centred on the city of Wollongong, but also reaches into south-western Sydney thereby ensuring that the socio-economic and cultural mix of the participants is diverse. Students were surveyed in the middle of their first year of high school (Grade 7; mean age = 12.28 years, SD = 0.49) and then at approximate twelve-month intervals for the next 3 years.

All students participated unless absent or permission was denied via passive consent. Refusals never exceeded 2–3% of the total number of possible participants. Data were collected via a confidential questionnaire conducted in class. Individual difference characteristics were measured in Grades 7–10. Sociometric ratings were taken in Grades 9 and 10 only. The number of participants for each grade was: boys$_{g7}$ = 381, girls$_{g7}$ = 389, boys$_{g8}$ = 409, girls$_{g8}$ = 390, boys$_{g9}$ = 402, girls$_{g9}$ = 380, boys$_{g10}$ = 389, girls$_{g10}$ = 385. We could not match 100% of the data from earlier years to later years, due to students leaving school, being absent on a particular day of testing, or failing to complete the questionnaire correctly. Due to time pressure in Grade 9, not all students completed the E and A scales, which were placed at the end of the questionnaire. There were no such time constraints in the other years, and completion rates were higher. Detailed sample size information is presented in the lower half of Table 1.

2.2. Measures

2.2.1. Sociometric indices

Our university ethics committee did not allow us to ask negative sociometric questions (e.g. "who do you like the least"), so we focused exclusively on positive descriptions. Students were asked to list up to three males and three females from their English class whom they liked the most. Three other items were taken from the peer-rating measure developed by Pulkkinen and colleagues to measure adjustment (Pulkkinen, Kaprio, & Rose, 1999).

Table 1
Descriptive statistics involving individual difference variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Cons 7	770	.59**	.58**	.36**	−.53**	−.38**	−.33**	−.34**	.19**	.25**	.02	.03
2. Cons 8	667	801	.63**	.42**	−.38**	−.50**	−.37**	−.39**	.15**	.32**	.04	.08*
3. Cons 9	624	675	781	.52**	−.37**	−.40**	−.52**	−.41**	.21**	.36**	.13**	.10**
4. Cons 10	600	646	663	767	−.19**	−.20**	−.25**	−.32**	.11*	.24**	.09	.04
5. Psych 7	768	665	622	599	768	.62**	.58**	.53**	−.23**	−.27**	.04	.03
6. Psych 8	666	799	675	646	664	799	.65**	.63**	−.26**	−.33**	.03	−.02
7. Psych 9	624	674	779	663	622	674	781	.68**	−.28**	−.35**	−.03	.03
8. Psych 10	606	654	671	766	605	654	671	775	−.23**	−.41**	.05	.07*
9. Agr 9	400	408	470	399	398	408	468	402	470	.46**	.17**	.06
10. Agr10	600	646	663	765	599	646	663	766	398	767	.15**	.28**
11. Ext 9	464	466	541	459	462	466	539	463	443	459	541	.49**
12. Ext 10	601	647	664	766	600	647	664	767	399	767	460	768
Mean	4.08	3.98	3.90	3.13	.15	.20	.22	.22	3.47	3.74	3.19	3.48
SD	.58	.58	.61	.62	.16	.19	.19	.19	.60	.60	.59	.71

Note: Correlations are in the upper half, sample sizes in lower half. Sample sizes varied due to variations in class attendance, and in completion of questionnaires; Cons = Conscientiousness; Psych = Psychoticism; Agr = Agreeableness; Ext = Extraversion.
* $p < .05$.
** $p < .01$.

These were "are often kind and friendly to others, "try to act reasonably even in difficult situations", and "are ready to lend a helping hand when they see someone in need of that". Students listed three males and three females from their English class for each of the three questions. For each of the peer nominated dimensions, the total number of nominations was standardised by class in order to account for variance in class sizes. The reliability and validity of this method is well documented (Becker & Luthar, 2007; Coie, Lochman, Terry, & Hyman, 1992; Graham, Taylor, & Hudley, 1998; Luthar & D'Anvanzo, 1999). Similarly, to eliminate any effects of female to male ratio in classes, the ratings were standardised within gender and class (Coie et al., 1992).

Consistent with the adjustment scale measuring one coherent factor, reliability analysis indicated that the scale was internally consistent within each year, and each rating category: females being rated: α_{9m} = .89; α_{9f} = .79; α_{10m} = .90; α_{10f} = .80; males being rated: α_{9m} = .80; α_{9f} = .89; α_{10m} = .78; α_{10f} = .80.

The percentage of students who participated in the sociometric rating was 89% for Grade 9 and 88% for Grade 10. A minimum participation rate of 70% is considered acceptable for sociometric assessment when limited nominations are used (Cillessen & Borch, 2006; Crick & Ladd, 1989).

Conscientiousness was measured in Grades 7–9 using a scale specifically designed for use with Australian high school students (Heaven et al., 2007). The adolescent measure comprises 16 items derived from self-descriptors of this personality dimension provided by John (1990) and Norman (1963) and has good internal consistency and validity (α_7 = .85; α_8 = .86; α_9 = .87). The instrument has been used to predict future academic achievement, and has been shown to be distinctive from P (Heaven et al., 2007). Sample items include "I am a well organised person"; "I give up easily," and "others can depend on me". Responses were indicated on a 5-point Likert scale from "not at all like me" (1) to "a lot like me" (5), while negative items were reverse-scored.

In the more advanced high school years (Grade 10) C was measured using the 10 item scale from the International Personality Item Pool (IPIP; Goldberg, 1999; Goldberg et al., 2006). This scale has been shown to have satisfactory internal reliability, and concurrent validity as assessed against the NEO-PI (Gow, Whiteman, Pattie, & Deary, 2005). Its internal consistency in the present sample was .76. The C measure used in Grade 10 was significantly related with moderate effect sizes to the Grade 7 measure (r = .36, p < .001), the Grade 8 measure (r = .42, p < .001), and the Grade 9 measure, r = .52, p < .001.

Psychoticism was measured in Grades 7–10 (Eysenck & Eysenck, 1975). We used Corulla's (1990) revision of the junior P scale with improved psychometric properties. This 12-item scale yielded alpha coefficients (α_7 = .66, α_8 = .73, α_9 = .74, α_{10} = .71), which compare favourably with coefficients reported by Corulla (1990) for 12 and 13 years old using the short questionnaire (alphas ranging from .62 to .73). This scale has also been found to distinguish high from low self reported delinquents in Australia (e.g., Heaven & Virgen, 2001). Example items include: "Would you enjoy practical jokes that could sometimes hurt people?", "do you seem to get into a lot of fights," and " Would it upset you a lot to see a dog or cat that has just been run over (reversed)?"

Agreeableness and Extraversion were measured in Grades 9 and 10 utilising the IPIP scales (Goldberg, 1999; Goldberg et al., 2006). These scales have been shown to have adequate internal validity, to fall onto the expected five factor structure across multiple samples, and to correlate highly with the appropriate scales of the NEO (Costa & McCrae, 1992) and the EPQ (Eysenck & Eysenck, 1975), demonstrating concurrent validity (Gow et al., 2005). The Grade 9 scales consisted of only five items and had less than desirable reliability. Consequently, we utilised the ten item scale in Grade 10. The A scale (α_9 = .52, α_{10} = .76) consists of items such

as "I sympathize with others' feelings," "I have a soft heart", and "I take time out for others". The E scale (α_9 = .53; α_{10} = .82) consists of items such as "I talk to a lot of different people at parties", and "I start conversations". Participants rated the extent each statement was accurate in describing them, ranging from (1) "Very Inaccurate" to (5) "Very Accurate".

3. Results

3.1. Preliminary analyses

Table 1 (upper half) presents the correlations between the main individual difference variables. Generally, scales of the same type (e.g., C across different years) correlated more highly with each other than they did with the other scales. Correlations across constructs tended to be significant but modest. E tended to have the smallest correlations with other constructs.

Table 2 presents the intercorrelations between the different peer ratings. There were moderate to strong relationships between ratings of likeability and ratings of adjustment within the same year, with correlations ranging from .51 (girls rating girls, Grade 10) to .82 (boys rating girls, Grade 10). Table 2 also illustrates that the test–retest correlations involving adjustment ratings and likeability ratings across years tend to show similar levels of test–retest correlation, ranging from .31 and .55. The only potential difference occurs with females rating females: the test–retest correlation was .44 for adjustment ratings but only .19 for the likeability ratings.

Table 2 also illustrates the level of agreement between males and females when they were rating the same male or female. There was moderate agreement between males and females when rating the adjustment of males (r_9 = .33, r_{10} = .29) and females (r_9 = .40, r_{10} = .45). There was significant but somewhat lower agreement between males and females when rating the likeability of males (r_9 = .22, r_{10} = .20) and females (r_9 = .14, r_{10} = .16), all ps < .05.

3.2. Correlations between personality and peer ratings

We first examined the extent that peer-rated adjustment was linked to conscientiousness, psychoticism, and agreeableness in the target (or individual being rated). Table 3 presents the findings for conscientiousness and psychoticism. Same-sex ratings (in Grades 9 and 10) consistently correlated with conscientious across Grades 7–10. The pattern was different in the opposite-sex ratings, where female ratings were consistently related to the male target's level of conscientiousness and psychoticism, but male ratings of females were never significantly related to these two personality traits.

Table 2
Intercorrelations between peer ratings of males (above diagonal) and females (below diagonal) for Grades 9 and 10.

	1	2	3	4	5	6	7	8
Male rater								
Adjustment 9	1.00	0.40	0.52	0.22	0.40	0.35	0.24	0.13
Adjustment 10	0.48	1.00	0.30	0.63	0.32	0.45	0.25	0.23
Likeable 9	0.79	0.48	1.00	0.31	0.16	0.21	0.21	0.19
Likeable 10	0.43	0.82	0.48	1.00	0.16	0.20	0.18	0.20
Female rater								
Adjustment 9	0.33	0.31	0.22	0.17	1.00	0.55	0.73	0.33
Adjustment 10	0.21	0.29	0.12	0.20	0.44	1.00	0.49	0.64
Likeable 9	0.16	0.21	0.14	0.17	0.55	0.21	1.00	0.55
Likeable 10	0.05	0.18	0.06	0.16	0.18	0.51	0.19	1.00

Note: All correlations above .12 are significant.

Table 3
The link between Grade 7 through Grade 10 conscientiousness and psychoticism and Grade 9 (G9) and Grade 10 (G10) peer ratings of adjustment.

	Grade 7	Grade 8	Grade 9	Grade 10
Conscientiousness				
Same sex				
Male rate male (G9)	0.14[**]	0.19[***]	0.17[***]	0.17[***]
Male rate male (G10)	0.17[**]	0.12[*]	0.21[***]	0.14[**]
Female rate female (G9)	0.15[**]	0.18[***]	0.30[***]	0.22[***]
Female rate female (G10)	0.11[*]	0.15[**]	0.17[**]	0.21[***]
Opposite sex				
Male rate female (G9)	−0.04	0.06	0.06	0.00
Male rate female (G10)	0.00	0.04	0.04	0.02
Female rate male (G9)	0.15[**]	0.12[*]	0.21[***]	0.14[**]
Female rate male (G10)	0.15[**]	0.09	0.17[**]	0.14[**]
Psychoticism				
Same sex				
Male rate male (G9)	−0.11[*]	−0.18[***]	−0.24[***]	−0.22[***]
Male rate male (G10)	−0.14[*]	−0.17[**]	−0.20[***]	−0.23[***]
Female rate female (G9)	−0.10	−0.14[**]	−0.21[***]	−0.14[**]
Female rate female (G10)	−0.09	−0.18[***]	−0.17[**]	−0.19[***]
Opposite sex				
Male rate female (G9)	0.03	−0.02	−0.09	−0.04
Male rate female (G10)	−0.03	0.01	−0.05	0.04
Female rate male (G9)	−0.13[*]	−0.10	−0.21[***]	−0.17[**]
Female rate male (G10)	−0.14[*]	−0.13[*]	−0.19[***]	−0.18[***]

[*] $p < .05$.
[**] $p < .01$.
[***] $p < .001$.

Table 4 suggests a similar, albeit somewhat less clear pattern with respect to agreeableness. Same-sex ratings of adjustment tended to correlate with Grades 9 and 10 agreeableness of the target. In addition, all four of the correlations involving females rating males were significant, whereas only one correlation involving males rating females was significant.

Concerning likeability ratings, there was little evidence that likeability was consistently related to any of the pro-social traits. The only exception involved agreeableness. There was some evidence that female likeability ratings in Grade 9 were correlated with male agreeableness in Grade 9 ($r = .17$) and 10 ($r = .11$), ps < .05. However this effect was not replicated for Grade 10 peer ratings. There were a few other significant correlations involving agreeableness: Grade 9 male agreeableness correlated with Grade 10 male ratings of likeability ($r = .16$), Grade 9 agreeableness in females correlated with Grade 9 male ratings of likeability

($r = .14$), and Grade 10 agreeableness in females correlated with Grade 9 female likeability ratings ($r = .22$).

We turn now to a consideration of extraversion, which we found previously to be fairly distinct from the pro-social traits (Table 1). As can be seen in Table 5, extraversion was significantly correlated with both adjustment and likeability amongst opposite-sex ratings, but not amongst same-sex ratings. Thus, girls and boys gave positive ratings to opposite-sex extraverts but were relatively neutral to same-sex extraverts.

3.2.1. Structural equation modelling

We next sought to evaluate personality–peer rating relationships in a way that (1) made use of all available waves of data in a single model, (2) accounted for measurement error in the relationships between personality and ratings, and (3) allowed us to more directly test our hypotheses that gender moderated the relationship between personality and peer-ratings. Fig. 1 presents the core structural equation model. We used a multi-group model to test our key hypothesis, which means that we tested the Fig. 1 model within males and females simultaneously. Each rating category had two indicators, corresponding to the 2 years of measurement. "Opposite sex" refers to female raters in the male model and male raters in the female model. Psychoticism and conscientiousness had 4 years of measurement and therefore four indicators. Extraversion and agreeableness had two indicators. In order to ensure identification of the model and sufficient power, indicator weights were assumed to be equal across gender groups.

We assessed four models, as illustrated in Table 6. Model 1 was the least restrictive, and assumed that none of the correlations were the same. Model 2 assessed whether sex moderated the relationship between personality and opposite-sex ratings. That is, it assessed if the link between personality and opposite-sex ratings within males (r_{om}) was equivalent to the same link within females (r_{of}). Model 3 assessed wether sex moderated both opposite and same-sex links. Finally, Model 4 assumed that all relationships were the same within and across gender.

We utilised the full information maximum likelihood (FIML) method to deal with missing data. This method is often preferred to other methods on both theoretical grounds (e.g. it makes less restrictive assumptions) and empirical grounds (the method appears to work better than its alternatives) (Bentler, 2006; Enders & Bandalos, 2001). As suggested by Hu and Bentler (1999), several goodness-of-fit measures were used to assess the models. We assumed good model fit if the root mean square error of approximation (RMSEA) was below .06, the comparative fit index (CFI) was greater than .95 (Hu & Bentler, 1999; Martens, 2005), and the χ^2/Df was two or less (Byrne, 1989).

Table 4
Correlations between Grades 9 and 10 agreeableness and Grade 9 (G9) and Grade 10 (G10) peer ratings of adjustment.

	Grade 9	Grade 10
Same sex		
Male rate male (G9)	0.18[**]	0.22[***]
Male rate male (G10)	0.25[***]	0.21[***]
Female rate female (G9)	0.19[**]	0.24[***]
Female rate female (G10)	0.04	0.20[***]
Opposite sex		
Male rate female (G9)	0.11	0.11[*]
Male rate female (G10)	0.04	0.09
Female rate male (G9)	0.16[*]	0.17[**]
Female rate male (G10)	0.20[**]	0.20[***]

[*] $p < .05$.
[**] $p < .01$.
[***] $p < .001$.

Table 5
The correlation between Grades 7 and 10 extraversion and Grade 9 (G9) and Grade 10 (G10) peer ratings of adjustment and likeability.

	Adjustment		Likeability	
	Grade 9	Grade 10	Grade 9	Grade 10
Same sex				
Male rate male (G9)	0.07	0.03	0.06	0.12[*]
Male rate male (G10)	0.06	0.00	0.04	0.04
Female rate female (G9)	0.07	0.09	0.11	0.13[*]
Female rate female (G10)	0.07	0.06	0.09	0.09
Opposite sex				
Male rate female (G9)	0.11	0.19[***]	0.18[**]	0.25[***]
Male rate female (G10)	0.16[*]	0.24[***]	0.17[**]	0.25[***]
Female rate male (G9)	0.15[*]	0.15[**]	0.21[***]	0.21[***]
Female rate male (G10)	0.14[*]	0.14[**]	0.17[**]	0.26[***]

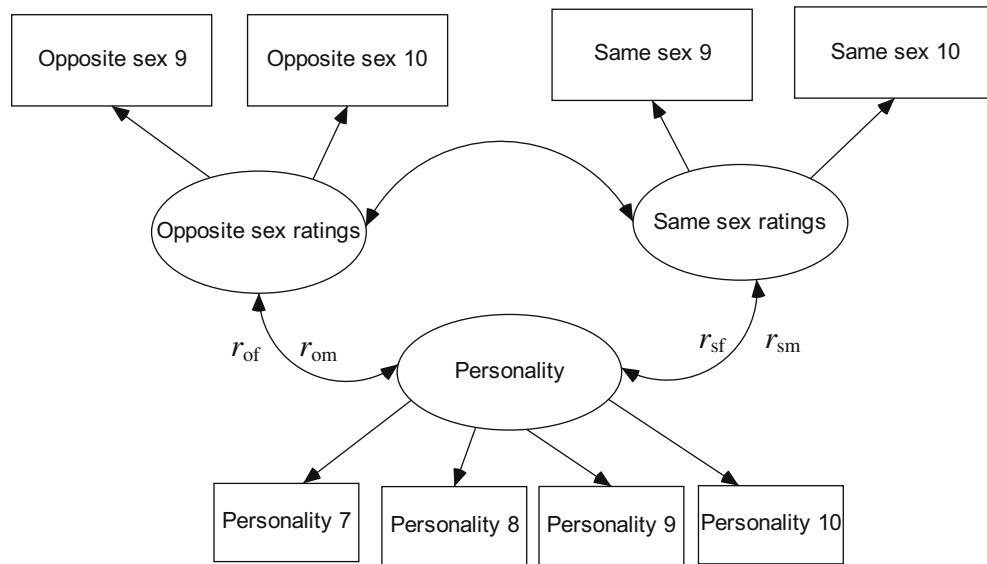[*] $p < .05$.
[**] $p < .01$.
[***] $p < .001$.

Fig. 1. Multi-group structural equation model of the relationship between personality and peer ratings within females (r_{of}, r_{sf}) and males (r_{om}, r_{sm}).

Table 6
Fit indices for four hypothesised personality-peer rating models.

Models	χ^2	Df	χ^2/Df	CFI	RMSEA	$\chi^2\Delta$
Psychoticism adjust						
M1: All $rs\neq$	75.8	39	1.94	.98	.032	–
M2: $r_{om} = r_{of}$	84.1	40	2.10	.97	.035	vs. M1: $\chi^2_1 = 8.31$**
M3: M2 + $r_{sm} = r_{sf}$	84.1	41	2.05	.98	.034	vs. M2: $\chi^2_1 = .01$
M4: All $rs=$	92.0	42	2.19	.97	.036	vs. M3: $\chi^2_1 = 7.93$**
Conscientiousness—adjust						
M1: All $rs\neq$	72.7	39	1.87	.98	.031	–
M2: $r_{om} = r_{of}$	76.6	40	1.92	.98	.032	vs. M1: $\chi^2_1 = 3.9$*
M3: M2 + $r_{sm} = r_{sf}$	80.0	41	1.95	.98	.032	vs. M2: $\chi^2_1 = 3.35$
M5: All $rs=$	88.7	42	2.11	.97	.035	vs. M3: $\chi^2_1 = 9.1$**
Extraversion—adjust						
M1: All $rs\neq$	23.4	15	1.56	.99	.025	–
M2: $r_{om} = r_{of}$	25.0	16	1.57	.99	.025	vs. M1: $\chi^2_1 = 1.68$
M3: M2 + $r_{sm} = r_{sf}$	25.1	17	1.48	.99	.023	vs. M2: $\chi^2_1 = .07$
M4: All $rs=$	41.6	18	2.31	.97	.038	vs. M3: $\chi^2_1 = 16.5$***
Extraversion—likeable						
M1: All $rs\neq$	8.7	15	.58	.99	.001	–
M2: $r_{om} = r_{of}$	8.9	16	.56	.99	.001	vs. M1: $\chi^2_1 = .2$
M3: M2 + $r_{sm} = r_{sf}$	9.2	17	.54	.99	.001	vs. M2: $\chi^2_1 = .3$
M4: All $rs=$	31.9	18	1.77	.97	.029	vs. M3: $\chi^2_1 = 22.7$***

Note: Variables were presented here only if they were highly significant in an omnibus test (M1 vs. M4), $\chi^2_{3diff} > 16.1$, $ps < .001$. r_{sm}, r_{sf}, r_{om}, r_{of} refer to the relationship between personality and same and opposite-gender ratings within males and females, respectively. M1 assumes none of the correlations involving same and opposite-gender raters are equivalent across males and females; M2 assumes that gender moderates the relationship between personality and peer ratings for opposite-gender ratings; M3 assumes that gender moderates the relationship between personality and ratings for both opposite and same-gender ratings. M4 assumes no differences in the relationships between personality and peer ratings.

* $p < .05$.
** $p < .01$.
*** $p < .001$.

and psychoticism produced similar patterns and will be discussed first. Model 2 resulted in a significant decrement in fit compared to Model 1, indicating that gender moderated the relationship between personality and peer-ratings for the opposite-sex category. This finding can be interpreted when considering Table 7 (first two rows, opposite-sex columns). The coefficients in that table indicate that there were stronger relationships involving females rating males compared to males rating females.

Returning to Table 6, Model 3 did not result in a significant decrement, indicating that gender did not moderate the link between personality and ratings for the same-sex category. Model 4 results in a significant decrement, relative to Model 3, indicating a difference between same and opposite-sex ratings, over and above that explained by Models 2 and 3. When considered with the results in Table 7, this finding suggests that male adjustment ratings where more strongly related to male personality (males rated by males) than female personality (females rated by males).

Turning now to extraversion, Table 6 indicates that gender did not moderate the relationship between extraversion and peer ratings (Models 2 and 3) for either likeability or adjustment. Only Model 4 was significant, indicating a difference between same and opposite-sex ratings. The meaning of this effect can be seen in Table 7 (last two rows). Ratings of adjustment and likeability where more highly related to extraversion in the opposite-sex

Table 7
Standardised relationships between latent variables based on structural equation modelling of all years of data.

	Male rated by		Female rated by	
	Opposite sex	Same sex	Opposite sex	Same sex
Psychoticism	−.27***	−.41***	−.04	−.32***
Conscientiousness	.27***	.36***	.08	.38***
Agreeableness	.36***	.50***	.23*	.46***
Extraversion				
Adjustment	.27***	.07	.34***	.13
Likeability	.39***	.19*	.40***	.29*

Note: Numbers refer to link between adjustment and personality, except where specified under extraversion.

* $p < .05$.
** $p < .01$.
*** $p < .001$.

The results of the structural equation modelling are presented in Table 6. Agreeableness is not included in this table because the omnibus test (Model 1 vs. Model 4) just failed to reach conventional significance, $\chi^2_3 = 6.95$, $p = .07$. Thus, for agreeableness, there was no clear evidence that sex moderated the link between personality and peer-ratings. As can be seen in Table 6, Model 1 provides a good fit to the data for all analyses. Conscientiousness

category than the same-sex category, regardless of whether a male or female was being rated.

4. Discussion

We found four clear patterns in our data. First, females rated highly conscientious (C) males as more adjusted, whereas the same effect was not observed for males rating females. Second, females rated high psychoticism (P) males as less adjusted, whereas males did not show this pattern. Structural equation modelling suggested that the significant effects tended to be of moderate size, ranging in absolute magnitude from r of .27 to .41. In contrast, the rs for males rating females' level of psychoticism and conscientiousness were close to 0.

Third, both males and females rated same-gender peers as more adjusted if they were high in C or low in P. Finally, both males and females generally preferred opposite-sex extraverts to same-sex extraverts, and rated them as more adjusted. There were less reliable patterns of relationship involving agreeableness. Females consistently rated agreeable males as more adjusted (four of four correlations significant), whereas males did not (only one of four correlations significant). However, an omnibus test revealed that the differences between males and females may not be reliable ($p = .07$). This lower reliability might have occurred because we only measured agreeableness at two time points, whereas we measured conscientiousness and psychoticism at four.

Low C females are more likely than others to be undependable, poor at school work, and to devalue loyalty and honesty (Heaven et al., 2007; Roberts et al., 2005; Veage & Ciarrochi, 2009). High P females are more likely to be callous and cruel and to get into fights and engage in criminal activity (Lane, 1987; Zuckerman, 2007; Zuckerman et al., 1988). Yet males did not view low C or high P females to be less well adjusted. One possible explanation for this finding is that male adjustment ratings were generally unreliable and invalid. However, a number of streams of evidence are inconsistent with this idea. First, males' adjustment ratings were internally consistent and showed moderate test–retest correlations. Second, male adjustment ratings related to same-gender levels of C and P, and also related to opposite-gender extraversion. If male adjustment ratings were largely "noise", they would not be expected to correlate with these other constructs so reliably.

In contrast to males, females rated low C and high P boys as less adjusted. They knew who the "bad" boys were. However, this knowledge seems to have no influence on how much they liked the boys. There was no reliable link between boys' level of prasocial personality and how much girls like them.

Parental investment theory can provide one explanation for this pattern (Buss, 1989; Gangestad & Simpson, 2000). This theory would suggest that females need to be skilled at detecting pro-social traits in males in order to identify supportive partners for a long-term relationship. However, if they are evaluating a male who is not considered a long-term prospect, they may not use their knowledge of his pro-social behaviour to evaluate how much they like him. Rather, in the short-term context, females may like males who offer more immediate rewards, that is, males who are fun to be around (see extraversion discussion below).

We utilised evolutionary/parental investment theory as a guide to where gender differences might occur, but our data cannot directly test this theory, or a theory that suggests gender differences are due to environmental demands. Future research is needed to examine potential moderators of the gender differences. For example, perhaps the peer rating task can be framed in a way that encourages males and females to rate their peers in terms of long-term, romantic prospects. We would expect this frame to prompt females to find low C, high P males to be less likeable.

Concerning same-gender ratings, both males and females rated pro-social peers as more adjusted. We suggested in the introduction that same-gender relationships are easier to rate, because adolescents have more experience with them. Past research is certainly consistent with the idea that greater experience is associated with more accurate personality judgments (Funder, 1995). Our pattern of findings suggest that males are able to make the easier judgments concerning adjustment of same-gender peers, but struggle to make accurate ratings of opposite-gender peers. This explanation fits our data, but is admittedly speculative. Future research will be needed to evaluate whether adolescents in Grades 9 and 10 do indeed have more experience with same-gender peers and if this greater experience accounts for the stronger link between peer-rated adjustment and pro-social personality.

Concerning extraversion, we found that both boys and girls preferred extraverts of the opposite gender. Past research suggests that children and young adolescents are more liked by same-gender peers if they are high in extraversion (Jensen-Campbell et al., 2002; Lubbers et al., 2006). Our findings with an older age group are partially consistent with this past research, in that same-gender extraverts where indeed more likeable. However, we also found that the extraversion-likeability link was stronger for opposite-gender extraverts. Also, only opposite-gender extraverts were viewed as being more adjusted. There is at least one (admittedly speculative) explanation for why adolescents prefer extraversion in the opposite sex. Extraversion has been associated with being socially dominant, but not necessarily socially skilled (Riggio, Riggio, Salinas, & Cole, 2003). This social dominance may get in the way of same-sex relationships as males and females enter adolescence and become increasingly competitive. However, social dominance may not be a problem in opposite-gender relationships. Extraverts might also have the advantage of being more likely than non-extraverts to converse easily with the opposite gender, and put them at ease.

4.1. Limitations and future directions

The present research has several limitations. First, due to ethics board constraints, we were not able to collect nominations of least liked peers, which would have allowed us to classify peers into a variety of groups (e.g. "rejected", "neglected"; Newcomb et al., 1993). Future research should examine if there are gender differences in these groups. Second, we focused exclusively on adjustment and likeability. It is possible that the gender effects will be even bigger for other variables, such as "marriageability". Future research should assess this possibility by asking peers to nominate with whom they would most like to engage in a long-term, romantic relationship and with whom they would most like to have sex. Third, our sample was taken from five Catholic schools and may not generalise to other samples. Additional research is needed in public schools, and in different cultural settings.

Finally, much research needs to be done in understanding the basic phenomena identified in this study. Why do boys seem to be insensitive to pro-social traits in girls? Do girls simply not display these traits to boys? Or are boys inept or indifferent to them? Future research could address this question using the social interaction paradigm of Funder and his colleagues (Funder, 2001; Funder & Sneed, 1993). Boys and girls can be videotaped getting to know each other in a brief interaction, and raters can then assess what behaviours girls display and the links between displayed behaviours and likeability.

In summary, boys do not respond to girls who are conscientious and low in psychoticism. Girls do respond consistently to these characteristics in boys, in that they rate these boys as more adjusted. However, girls do not use their adjustment ratings to guide their likeability ratings. Instead, they like fun, extraverted boys,

regardless of whether or not those boys have pro-social characteristics. Future research is needed to explore how these gender differences develop and change over time and across contexts (e.g., acquaintance vs. romantic relationships).

Acknowledgments

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