No Evidence for Treating Friends’ Children Like Kin in Canadian Androphilic Men

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Abstract

Given that same-sex sexual orientation is associated with lower reproductive success, how have genes associated with male androphilia (i.e., male sexual attraction/arousal to adult men) persisted over evolutionary time? The Kin Selection Hypothesis proposes that by directing valuable resources toward kin, androphilic men may enhance their indirect fitness and thereby offset the fitness costs of not reproducing directly. Support for this hypothesis has been garnered from studies conducted in Samoa, but not from studies of “gay” men in industrialized cultures (i.e., Canada, Japan, UK, USA). This cross-cultural difference may be due to relatively greater geographic and familial disconnect experienced by androphilic “gay” men in industrialized cultures. We reasoned that in more industrialized settings, friends’ children may serve as a non-adaptive proxy for nieces and nephews. Hence, we predicted that Canadian androphilic men would exhibit elevated altruistic tendencies toward their friends’ children compared with gynephilic men and androphilic women. This prediction was not supported. However, in line with previous research, our results indicated that androphilic women are more likely to behave altruistically toward friends’ children compared to gynephilic men. Other possible explanations for the existing cross-cultural discrepancy in altruistic tendencies toward nieces and nephews are discussed.

Keywords: male androphilia, sexual orientation, Kin Selection, avuncularity, friends, evolution, Canada
The persistence of male androphilia over evolutionary time represents an outstanding paradox in evolutionary biology. Previous research has demonstrated that androphilic men (i.e., adult men sexually attracted to and aroused by adult men) reproduce at a much lower rate than their gynephilic counterparts (i.e., adult men sexually attracted to and aroused by adult women; King et al., 2005; Saghir & Robins, 1973; Schwartz, Kim, Kolundziji, Rieger, & Sanders, 2010; Van de Ven, Rodden, Crawford & Kippax, 1997; Yankelovich, 1994), yet research in behavioral genetics has furnished compelling evidence that male androphilia has a genetic component (Bailey, Dunne, & Martin, 2000; Kendler, Thornton, Gilman, & Kessler, 2000; Långström, Rahman, Carlström, & Lichtenstein, 2010). Further, prehistoric rock art and pottery indicate that male same-sex sexual activity has existed for millennia (e.g., Larco Hoyle, 1998; Mathieu, 2003; Nash, 2001; Yates, 1993). Given what we know about the androphilic orientation of most contemporary “third” gender males (Nanda, 1999), prehistoric graves containing skeletal remains and artifacts indicative of such individuals (Hollimon, 1997; Knüsel & Ripley, 2000) also suggest the presence of male androphilia in human antiquity. A heritable trait that persists over evolutionary time despite lowering direct reproduction requires explanation when viewed in the context of natural selection, a process that favours the evolution of fitness-enhancing traits. Thus, we are left with the question of why genes for male androphilia have not become extinct.

One potential explanation, the Kin Selection Hypothesis (KSH), holds that genes for male androphilia persist because androphilic men evolved to increase their indirect fitness. Indirect fitness is a measure of an individual’s impact on the fitness of kin (who share some identical genes by virtue of common descent) weighted by the degree of relatedness (Hamilton, 1963). By increasing one’s indirect fitness, costs associated with not reproducing directly may be offset (Wilson, 1975). One way that androphilic men may increase their indirect fitness is by increasing
altruism directed toward close kin. In theory, androphilic men could increase their indirect fitness by directing altruistic behavior toward close kin, which, in turn, would facilitate survival and reproduction by those kin, thereby perpetuating shared genetic factors associated with male androphilia.

The KSH is unique in that it predicts that androphilic men will exhibit more kin-directed altruism than individuals whose lives will likely be characterized by direct reproduction. Empirical support for the KSH has been garnered from a number of studies conducted in Samoa where feminine androphilic men (known locally as fa’afafine) exhibit elevated avuncular (uncle-like) tendencies and behavior compared with Samoan women and gynephilic men (VanderLaan & Vasey, 2011; Vasey, Pocock, & VanderLaan, 2007; Vasey & VanderLaan, 2009, 2010a, b). In addition, these tendencies are expressed by fa’afafine in an economical, efficient, reliable, and precise manner—all of which are hallmarks of adaptive design (VanderLaan & Vasey, 2011; Vasey & VanderLaan, 2010c). In contrast to the situation in Samoa, studies conducted in more industrialized cultures have failed to furnish any compelling evidence that androphilic (“gay”) men exhibit elevated avuncular tendencies compared with their gynephilic counterparts (Canada: Abild, VanderLaan & Vasey, in press; Forrester, VanderLaan, Parker & Vasey, 2011; Japan: Vasey & VanderLaan, 2011; UK: Rahman & Hull, 2005; USA: Bobrow & Bailey, 2001). Thus, the question arises as to why androphilic men from Samoa (fa’afafine) express elevated avuncularity in line with predictions of the KSH, while androphilic (“gay”) men from industrialized cultures do not.

When testing evolutionary hypotheses, such as the KSH, it is important to consider the role that environmental factors, like culture, play in the development of behavioral traits. With this in mind, it is possible that the KSH is accurate, but that the genes in question are not
functionally expressed in industrialized cultures because such environments are not representative of the context in which male androphilia originally evolved. In the absence of a social context that approximates the gene’s environment of evolutionary adaptedness (EEA), a functional behavioral expression of the gene may simply not manifest (for a more general discussion of this point, see Tooby & Cosmides, 2005).

As such, genes that influence male androphilia might be expressed in more industrialized cultures in ways that are not necessarily adaptive as they might have been in the EEA, but which nonetheless reflect the affordances available in contemporary environments. For example, Abild, VanderLaan, and Vasey (in press) found that, compared with gynephilic men, androphilic men were more likely to maintain contact with their nieces and nephews via the Internet. Although this finding might be interpreted by some as consistent with predictions derived from the KSH for male androphilia and, therefore, indicative of a heightened avuncular disposition among androphilic men, it is unlikely that communicating with one’s nieces and nephews via the Internet has any fitness enhancing payoff for the individuals involved.

Similar logic might be employed when interpreting additional tests of the KSH for male androphilia within more industrialized cultures. For example, the KSH might account, in part, for the perpetuation of genes associated with male androphilia in the ancestral past, but it may not be possible for androphilic men living in contemporary industrialized cultures to exhibit elevated avuncularity because they experience greater than average familial estrangement due to homophobia (D’Augelli, Hershberger & Pilkington, 1998; Oswald, 2002). This situation may cause androphilic men to move away from their families--a situation that would have been atypical in the EEA--to live in urban environments where they can more easily achieve personal goals (Bagley & Tremblay, 1998; Knopp, 1990). Even when homophobia is not experienced,
androphilic men may move away from their families to urban settings, where they can live within “gay” communities and meet others like themselves. Consequently, as suggested by VanderLaan, Gothreau, Bartlett, and Vasey (2011), when androphilic men do engage in avuncular-like tendencies, they may be expressed in a non-functional manner, namely, by directing altruism toward more accessible proxies, like the children of close friends. Put another way, androphilic men may interact with “social” kin (i.e., friend’s children) as the closest possible facsimile of nieces and nephews who then receive the avuncular-like behavior instead of genetically related kin.

A number of studies have demonstrated that friends are treated like kin in some industrialized societies. For example, Silk (2003) demonstrated that friends are treated more like kin than like strangers in regard to the exchange of altruistic behavior. Stewart-Williams (2007) found that help is allocated toward friends above siblings, or equal to siblings, as a function of the cost of the help being given. Specifically, friends are treated more like kin if the cost of the help is low to moderate and, as such, friends are treated more like kin, more often than not. Korchmaros and Kenny (2006) noted that it is likely one’s sense of emotional closeness and obligation toward the receiver (not genetic relatedness per se) that influences altruism. Ackerman, Kenrick, and Schaller (2007) found that women, in particular, were more likely to treat friends like kin while men were more likely to treat friends like strangers.

In this study, we examined altruistic tendencies towards friends’ children in a Canadian sample. On the basis of the existing literature, we predicted that a heterosexual sex difference would exist, with Canadian androphilic women exhibiting elevated altruistic tendencies toward their friends’ children compared with gynephilic men. The KSH posits that because androphilic men do not reproduce directly, they should be particularly focused on enhancing their indirect
fitness, compared with individuals whose life-histories are, or will likely be, characterized by direct reproduction. As hypothesized above, however, avuncular behavior exhibited in industrialized cultural contexts may be expressed in terms of altruism toward friends’ children. Consequently, we predicted that Canadian androphilic men will exhibit elevated altruistic tendencies toward their friends’ children compared with both gynephilic men and androphilic women.

Method

Participants

A mixed-methods recruitment design was utilized. Canadian participants were recruited via online mailing lists ($N = 858$), the University of Lethbridge human participant pool, online advertisements placed on Facebook—a well-known social-networking website—and by word-of-mouth. Information was collected from a total of 180 androphilic men, 133 gynephilic men, and 202 androphilic women.

Kinsey ratings (Kinsey, Pomeroy, & Martin, 1948) of sexual feelings over the previous year were obtained for all participants. This measure asked participants to indicate “Which of the following statements best describes your sexual feelings during the last year?” Using a seven-point Likert-type scale (“Sexual feelings only toward the opposite sex” [Kinsey rating = 0] to “Sexual feelings only toward the same sex” [Kinsey rating = 6]). Kinsey ratings were obtained for 180 androphilic men. Of these, 77.2% ($n = 139$) had a rating of 6, and 22.8% ($n = 41$) had a rating of 5. Of the Kinsey ratings obtained for 133 gynephilic men, 85.0% ($n = 113$) had a rating of 0, and 15.0% ($n = 20$) had a rating of 1. Of the Kinsey ratings obtained for 202 androphilic women, 69.3% ($n = 140$) had a rating of 0, and 30.7% ($n = 62$) had a rating of 1.

Procedure and Measures
All data were collected via an online questionnaire. The questionnaire was comprised of two sections. The first section contained standard demographic questions pertaining to participant sex, gender identity, age, sexual orientation, ethnicity, annual income, highest level of education, parental status, and number and ages of children parented.

The second section consisted of the Altruistic Tendencies Toward Friends’ Children subscale (ATTFCS), which is comprised of 9 items. These items were adapted from Bobrow and Bailey (2001) and were designed to measure willingness to exhibit altruistic behavior toward friends’ children. Participants were told that it was not important if they actually knew a child of a friend, but that they should indicate how willing they would be to engage in these activities with an imagined child of a friend (see Wilson & O’Gorman [2003] on the utility of using such hypothetical scenarios). Willingness was rated on a 7-point Likert scale ranging from 1 = very unwilling to 7 = very willing. Items included (1) babysitting for an evening, (2) babysitting on a regular basis, (3) babysitting for a week while the parents are away, (4) buying toys for the children, (5) tutoring the child in a subject the participant knew well, (6) helping to expose the child to art and music, (7) contributing money for daycare, (8) contributing money for the child’s medical expenses, and (9) contributing money for the child’s education. Participants’ ratings for individual items were then averaged to create a mean ATTFCS score.

Between-group differences were assessed using analysis of variance (ANOVA). Fisher's Protected Tests were used to limit Type I Error. That is, direct group comparisons were performed using Fisher’s Least Significant Difference (LSD) tests, but only in the presence of statistically significant main effects. All p-values for direct group comparisons were two-tailed.

Results
Table 1 shows the descriptive statistics and standardized internal consistency reliabilities (α) for androphilic men, gynephilic men, and androphilic women for the ATTFCS. Reliabilities were high for all three groups. Descriptive statistics for all demographic and recruitment variables are presented in Table 2. A one-way ANOVA indicated a significant main effect of group for age ($F[2, 512] = 81.12, p < .001, \eta_p^2 = .24$) and income ($F[2, 476] = 54.58, p < .001, \eta_p^2 = .19$), but not for number of children parented ($F[2, 512] = .87, p = .42, \eta_p^2 < .01$). Chi-square tests of independence demonstrated group differences with respect to level of education ($\chi^2[2, 515] = 44.74, p < .001$, Cramer’s $\phi = .30$) and recruitment method ($\chi^2[4, 515] = 68.16, p < .001$, Cramer’s $\phi = .26$), but did not demonstrate group differences with respect to ethnicity ($\chi^2[2, 515] = 2.73, p = .26$, Cramer’s $\phi = .07$) or whether the participant had children ($\chi^2[2, 515] = 1.50, p = .47$, Cramer’s $\phi = .05$). Recruitment method was therefore divided into 4 nominal, dummy-coded variables: Facebook/website recruitment, mailing list recruitment, university recruitment, and word-of-mouth recruitment. Further chi-square tests of independence demonstrated group differences with respect to Facebook/website recruitment ($\chi^2[2, 515] = 40.85, p < .001$, Cramer’s $\phi = .28$), university recruitment ($\chi^2[2, 515] = 36.57, p < .001$, Cramer’s $\phi = .27$), and word-of-mouth recruitment ($\chi^2[2, 515] = 17.70, p < .001$, Cramer’s $\phi = .19$), but did not demonstrate group differences with respect to mailing list recruitment ($\chi^2[2, 515] = .90, p = .64$, Cramer’s $\phi = .04$). Thus, age, income, level of education, Facebook/website recruitment, university recruitment, and word-of-mouth recruitment were examined further as possible covariates. None of these demographic variables were significantly correlated with ATTFCS scores (Table 3) nor did they demonstrate significance as covariates in a one-way analysis of covariance (ANCOVA) with ATTFCS scores as the dependent variable and group as
the fixed factor (Table 4). As such, no demographic variables were treated as covariates for subsequent analyses.

A one-way ANOVA was conducted with ATTFCS scores as the dependent variable and group as the fixed factor. This test showed a significant between-group difference in ATTFCS scores ($F[2, 514] = 6.69, p = .001, \eta^2_p = .025$). Fisher’s Protected LSD tests subsequently revealed that androphilic women displayed significantly higher ATTFCS scores than gynephilic men ($p < .001$, Cohen’s $d = .44$) and androphilic men ($p = .019$, Cohen’s $d = .25$). Androphilic men did not display higher ATTFCS scores than gynephilic men ($p = .180$, Cohen’s $d = .14$).

**Discussion**

Research has shown that while humans evolved to preferentially direct altruism toward kin (Daly, Salmon, & Wilson, 1997), they may also allocate altruism toward friends whom they treat as “social kin” (Korchmaros & Kenny, 2006; Silk, 2003; Stewart-Williams, 2007). It stands to reason that this may be especially true in more industrialized cultures where kin networks are more likely to be geographically disconnected (Hofstede, 1980; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988), and for individuals, like androphilic men, who may experience below average familial acceptance (VanderLaan et al., 2011).

First, on the basis of the existing literature (Ackerman et al., 2007), we predicted that a heterosexual sex difference would exist in altruistic tendencies toward friends’ children. Specifically, we predicted that Canadian androphilic women would demonstrate elevated altruistic tendencies toward friends’ children compared with gynephilic men. Our prediction concerning this heterosexual sex difference was supported. Next, using the KSH as a theoretical starting point, coupled with hypotheses that suggested androphilic men are often geographically and emotionally disconnected from their kin (Bobrow & Bailey, 2001; VanderLaan, Gothreau,
Bartlett, & Vasey, 2011), we predicted that Canadian androphilic men would exhibit
significantly higher altruistic tendencies toward friends’ children compared with gynephilic men
and androphilic women. We hypothesized that androphilic men would do so because friends’
children would serve as proxies for nieces and nephews in the absence of accessible kin.
Contrary to our predictions, we found that androphilic men exhibited significantly lower
altruistic tendencies toward friends’ children compared with androphilic women. Furthermore,
androphilic and gynephilic men did not differ significantly from each other for this measure.

From a proximate (mechanistic/cognitive) perspective, it is possible that the heterosexual
sex difference in altruism directed toward friends’ children was observed, but the predicted male
sexual orientation difference was not, because men and women differ in the manner in which
they process information pertaining to close relationships. Ackerman et al. (2007) suggested that
the sexes may differ with respect to the cognitive mechanisms that underlie the processing of
information pertaining to close relationships. More specifically, individuals might differ in terms
of how they perceived the costs associated with altruism directed toward friends’ children and, in
turn, their willingness to engage in such behavior varies (Stewart-Williams, 2007). From an
ultimate (evolutionary) perspective, Ackerman et al. (2007) suggest the fitness costs of
erroneously perceiving kin as nonkin may have been greater for women than for men over
evolutionary time. Consequently, this might lead women to systematically err on the side of
false-positives and, in doing so, treat nonkin as though they were kin.

A large body of literature demonstrates that androphilic men tend to be shifted in a
female-typical direction on a number of psychological traits (reviewed in LeVay, 2011),
including in their social interests (e.g., hobbies, occupational preferences; Bailey, 2003; Lippa,
2005). Thus, our finding that androphilic men are less like androphilic women, and more like
gynephilic men, in terms of altruism directed toward friends’ children is inconsistent with this literature on social interests. However, consistent with our results, Bailey (2003) reported that women scored higher than men in terms of their interest in children (degree of kinship was not defined). Further, Bailey (2003) found no male sexual orientation difference in interest toward children. Similarly, research conducted on Brazilian *travesti* (transgendered male prostitutes) suggests that they are quite disinterested in children living in their neighbourhoods (Kulick, 1998). Future research will be needed to elucidate whether a male sexual orientation difference was not detected in our study due to an overriding sex difference in the perceived cost of the altruistic activities being measured.

Although we found that none of the potential covariates were significantly related to the ATTFCS scores, a replication study might be improved, in terms of design, by matching the groups more closely for demographic and recruitment variables. Furthermore, studies extending this research might incorporate measures of familial estrangement, as well as distance lived from family.

The question remains as to why cross-cultural differences in avuncular tendencies among androphilic men exist. More specifically, it remains unclear why elevated avuncularity among androphilic men has been repeatedly found in Samoa (VanderLaan & Vasey 2011; Vasey & VanderLaan, 2009, 2010a, b, c), but has not been found in more industrialized cultures (Canada: Abild, VanderLaan & Vasey, in press; Forrester, VanderLaan, Parker & Vasey, 2011; Japan: Vasey & VanderLaan, 2011; UK: Rahman & Hull, 2005; USA: Bobrow & Bailey, 2001). In Samoa, male androphilia is expressed as *transgendered male androphilia*. Transgendered androphilic males occupy alternative gender role categories distinct from the categories of “men” and “women,” (e.g., *fa'afafine*) and exhibit gender role presentation that is markedly similar to
members of the opposite sex within their given cultural context. In contrast, in all of the other countries in which the KSH has been tested (e.g., Canada, Japan, UK, USA), male androphilia is expressed as *sex-gender congruent (egalitarian) male androphilia*. Sex-gender congruent androphilic males adopt gender roles typical of their biological sex and self-identify as “men.” Consequently, the expression of elevated avuncularity by androphilic men may be contingent upon the expression of transgendered male androphilia. As such, tests of models for the evolution of male androphilia may be more valid if they are conducted in populations where transgendered male androphilia exists, such as with the *fa’afafine* of Samoa or the *muxes* of Oaxaca, Mexico (Stephen, 2002).

As suggested by Vasey et al. (2007), it is perhaps an interplay between a number of cultural factors (e.g., societal acceptance of male androphilia, societal acceptance of male transgenderism, cultural differences in levels of individualism and collectivism, geographic and emotional connectedness to kin-networks) that mediates the expression of elevated avuncularity by androphilic men. The unique combination of these factors in Samoa may facilitate the expression of elevated avuncularity in androphilic men, whereas the absence of one or more of these factors may mitigate its expression in more industrialized cultures. Future research will be needed to further define which specific cultural factors, and which unique combination of these factors, mediates the expression of elevated avuncularity by androphilic men.
References


**Table 1.** Descriptive statistics and internal consistency reliabilities, standardized item alphas (α) by group for Altruistic Tendencies Toward Friends’ Children subscale.

<table>
<thead>
<tr>
<th>Androphilic men (n = 180)</th>
<th>Gynephilic men (n = 133)</th>
<th>Androphilic women (n = 202)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.83 (1.38)</td>
<td>4.64 (1.30)</td>
<td>5.12 (.94)</td>
</tr>
<tr>
<td>.90</td>
<td>.88</td>
<td>.83</td>
</tr>
</tbody>
</table>
Table 2. Descriptive statistics for demographic and recruitment variables by group.

<table>
<thead>
<tr>
<th>Demographic and Recruitment Variables</th>
<th>Androphilic men ($n = 180$)</th>
<th>Gynephilic men ($n = 133$)</th>
<th>Androphilic women ($n = 202$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years) $M$ (SD)</td>
<td>35.87 (15.92)</td>
<td>24.59 (7.59)</td>
<td>22.47 (5.67)</td>
</tr>
<tr>
<td>Income$^a$ ($\text{CDN}$) $M$ (SD)</td>
<td>41,390.59 (28,087.09)</td>
<td>22,224.02 (21,399.11)</td>
<td>16,053.41 (19,473.11)</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary or less (%)</td>
<td>31.1</td>
<td>54.9</td>
<td>64.9</td>
</tr>
<tr>
<td>Post-secondary (%)</td>
<td>68.9</td>
<td>45.1</td>
<td>35.1</td>
</tr>
<tr>
<td>Recruitment Method</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facebook/online (%)</td>
<td>69.4</td>
<td>38.3</td>
<td>41.1</td>
</tr>
<tr>
<td>Mailing list (%)</td>
<td>25.6</td>
<td>27.8</td>
<td>23.3</td>
</tr>
<tr>
<td>University (%)</td>
<td>2.2</td>
<td>17.3</td>
<td>23.8</td>
</tr>
<tr>
<td>Word-of-mouth (%)</td>
<td>2.8</td>
<td>16.5</td>
<td>11.9</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>91.7</td>
<td>85.0</td>
<td>91.1</td>
</tr>
<tr>
<td>Non-Caucasian (%)</td>
<td>8.3</td>
<td>15.0</td>
<td>8.9</td>
</tr>
<tr>
<td>Do you have children?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (%)</td>
<td>12.8</td>
<td>11.3</td>
<td>8.9</td>
</tr>
<tr>
<td>No (%)</td>
<td>87.2</td>
<td>88.7</td>
<td>91.1</td>
</tr>
<tr>
<td>Number of children $M$ (SD)</td>
<td>.27 (.73)</td>
<td>.20 (.65)</td>
<td>.17 (.63)</td>
</tr>
</tbody>
</table>

$^a$ Androphilic men, $n = 164$; Gynephilic men, $n = 129$; Androphilic women, $n = 186$
Table 3. Two-tailed Pearson’s $r$ correlations between ATTFCS scores and possible covariates.

<table>
<thead>
<tr>
<th>Item</th>
<th>Androphilic men $(n = 180)$</th>
<th>Gynephilic men $(n = 133)$</th>
<th>Androphilic women $(n = 202)$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$r$</td>
<td>$p$</td>
<td>$r$</td>
</tr>
<tr>
<td>Age</td>
<td>.015</td>
<td>.84</td>
<td>-.064</td>
</tr>
<tr>
<td>Income</td>
<td>.073</td>
<td>.36</td>
<td>-.139</td>
</tr>
<tr>
<td>Education Level</td>
<td>-.056</td>
<td>.46</td>
<td>-.098</td>
</tr>
<tr>
<td>Facebook/online Recruitment</td>
<td>-.006</td>
<td>.93</td>
<td>-.020</td>
</tr>
<tr>
<td>University Recruitment</td>
<td>-.079</td>
<td>.29</td>
<td>-.055</td>
</tr>
<tr>
<td>Word-of-mouth Recruitment</td>
<td>-.050</td>
<td>.50</td>
<td>-.010</td>
</tr>
</tbody>
</table>

ATTFCS - Altruistic Tendencies Toward Friends’ Children Subscale
### Table 4: One-way ANCOVA results.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$F$</th>
<th>$p$</th>
<th>$\eta_{p}^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>590.33</td>
<td>.000</td>
<td>.557</td>
</tr>
<tr>
<td>Group</td>
<td>5.96$^a$</td>
<td>.003</td>
<td>.025</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.08</td>
<td>.778</td>
<td>.000</td>
</tr>
<tr>
<td>Income</td>
<td>.69</td>
<td>.408</td>
<td>.001</td>
</tr>
<tr>
<td>Education Level</td>
<td>.22</td>
<td>.643</td>
<td>.000</td>
</tr>
<tr>
<td>Facebook/online Recruitment</td>
<td>.50</td>
<td>.480</td>
<td>.001</td>
</tr>
<tr>
<td>University Recruitment</td>
<td>.98</td>
<td>.322</td>
<td>.002</td>
</tr>
<tr>
<td>Word-of-mouth-Recruitment</td>
<td>.38</td>
<td>.550</td>
<td>.001</td>
</tr>
</tbody>
</table>

$df = 1, 469; \ ^a df = 2, 469$