



Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Staying friends with an ex: Sex and dark personality traits predict motivations for post-relationship friendship

Justin K. Mogilski*, Lisa L.M. Welling

Department of Psychology, Oakland University, United States

ARTICLE INFO

Article history:

Received 12 February 2016

Received in revised form 28 March 2016

Accepted 1 April 2016

Available online xxxx

Keywords:

Cross-sex friendship
 Relationship dissolution
 Dark personality
 Sex difference

ABSTRACT

Compared to motivations for cross-sex friendship, little research has examined motivations for friendship between ex-partners after romantic relationship dissolution (i.e., post-relationship friendship; PRF). In Study 1, participants ($N = 348$) act nominated reasons for why someone might remain friends with an ex-partner. In Study 2, participants ($N = 513$) rated the importance of staying friends with an ex-partner for each reason given in Study 1 and completed the PID-5-BF and HEXACO to measure domains of clinically relevant and non-pathological personality. Principle component analysis identified seven categories of reasons for staying friends. Reasons that indicated that an ex-partner is reliable, trustworthy, and of sentimental value (i.e., *reliability/sentimentality*) were given the highest importance ratings whereas reasons that indicated that continued friendship was practical (i.e., *pragmatism*) were given the lowest ratings. Men rated *pragmatism* and *sexual access* reasons as more important than women did. Furthermore, antagonism scores on the PID-5-BF, and the Honesty–Humility and extraversion scores on the HEXACO predicted importance ratings for *pragmatism* and *sexual access*. Our findings are consistent with previous research and suggest that PRF may provide opportunity for ex-partners to exchange desirable resources (e.g., love, status, information, money, sex) after romantic relationship dissolution.

© 2016 Elsevier Ltd. All rights reserved.

1. Staying friends with an ex: sex and dark personality traits predict motivations for post-relationship friendship

Friendship is a fundamental aspect of interpersonal relationships in humans (reviewed in Hruschka, Hackman, & Macfarlan, 2015) that has likely solved a number of adaptive problems during social evolution through the formation of cooperative alliances (DeScioli & Kurzban, 2009) and exchange of material or social resources (Barclay, 2013; Cropanzano & Mitchell, 2005). Same- and cross-sex friendships (CSFs) confer similar benefits (Baumgarte & Nelson, 2009; Lewis et al., 2011). However, CSFs also facilitate mating opportunities (Guerrero & Mongeau, 2008; Hendrick & Hendrick, 2000). Indeed, although both men and women tend to keep their friendships and sexual relationships separate, sexual feelings and tensions still exist in many CSFs (Halatsis & Christakis, 2009) and nearly half of college students have engaged in sexual activity with otherwise platonic cross-sex friends (Afifi & Faulkner, 2000).

The benefits and costs of CSFs prior to and during a romantic relationship have been studied extensively (e.g. Bleske-Rechek & Buss, 2001; Bleske-Rechek et al., 2012; Lewis et al., 2011; Reeder, 2000, 2003; Tan, Agnew, VanderDrift, & Harvey, 2014). Comparatively little research has examined motivations for friendship between ex-

partners (i.e., post-relationship friendship; PRF). PRFs can have positive and negative consequences on stress, coping, and general health depending on the types of coping strategies used by each partner (Chung et al., 2003; Perilloux & Buss, 2008), the extent to which each partner engages in friendship maintenance behavior post-break-up (Dailey, McCracken, Jin, Rossetto, & Green, 2013), perceptions of control over the break-up (Gray & Silver, 1990), separation acceptance (Mason, Sbarra, Bryan, & Lee, 2012), and the extent to which friendship continues to provide valuable resources (Busboom, Collins, Givertz, & Levin, 2002). Ex-partners are more likely to remain friends after a break-up if they were friends prior to romantic involvement (Metts, Cupach, & Bejlovec, 1989), if the disengager used de-escalation tactics (see Banks, Altendorf, Greene, & Cody, 1987), if the relationship was characterized by romantic commitment (Tan et al., 2014), if an ex-partner is still perceived as desirable (Banks et al., 1987), or if an individual reported satisfaction with the relationship (Bullock, Hackathorn, Clark, & Mattingly, 2011). Likewise, neglect and avoidance, lack of support by friends and family, and a partner's involvement in a new romantic relationship are barriers to PRF quality (Busboom et al., 2002). Together, this evidence suggests that PRFs serve similar functions to that of platonic CSFs insofar as PRFs are maintained, or dissolved, depending on the perceived value of the friendship and the extent to which ex-partners engage in mutual friendship maintenance.

PRFs also resemble other platonic CSFs in that they may involve continued romantic or sexual interest. Previous romantic involvement predicts sexual attraction in platonic CSFs (Kaplan & Keys, 1997), and ex-

* Corresponding author at: Department of Psychology, Oakland University, Rochester, MI 48309, United States.

E-mail address: jkmogils@oakland.edu (J.K. Mogilski).

partners are rated low on friendship quality (but high on romantic desirability) compared to friends with no romantic/sexual history (Schneider & Kenny, 2000). Women are more likely to make in-person contact with an ex-partner who has desirable qualities (DeLecce & Weisfeld, 2015) and dissolved relationships are more likely to renew when partners report lingering feelings or have not dated others since the breakup (Dailey, Jin, Pfister, & Beck, 2011). Interestingly, individuals who receive more resources from an ex-partner (e.g., love, status, services, information, goods, money) report higher PRF quality, particularly if they are satisfied with these resources (Busboom et al., 2002). This suggests that PRF formation may permit relationship renewal or future exchange of valuable resources.

To further understand motivations for PRF, the current study used an act nomination procedure to identify reasons for staying friends after a break-up (Study 1). We then used an act frequency procedure to categorize items generated from the act nomination (Study 2). We also examined the extent to which clinically relevant (e.g., dark) and non-pathological personality features and sex predict rated importance of these reasons. Dark personality features are a collection of antagonistic behaviors and interpersonal styles that are associated with disagreeableness (e.g., Egan & McCorkindale, 2007), manipulateness and callousness (Jones & Figueredo, 2013), and exploitativeness (Jonason, Li, Webster, & Schmitt, 2009). Individuals who score higher on measures of dark personality tend to choose friends for strategic purposes (Jonason & Schmitt, 2012), rate friendship as lower in importance (Lyons & Aitken, 2010), and prefer short-term versus long-term romantic relationships (Jonason, Valentine, Li, & Harbeson, 2011; Koladich & Atkinson, 2016). Thus, it is likely that these traits will be associated with valuing friendships for utilitarian or instrumental reasons, such as to maintain sexual access.

2. Study 1

2.1. Method

2.1.1. Participants and procedure

Participants ($N = 348$; 243 female; age: $M = 21.43$, $SD = 11.88$; range = 18–51) were recruited from an Eastern United States university and from various social media websites (e.g., Reddit, Twitter). Most participants were exclusively heterosexual (96%, 3.4% bisexual, 0.6% exclusively homosexual) and White (77.6%, 9.2% Black, 4.6% Asian, 2.9% Hispanic/Latino, and 5.7% other), and roughly half were currently in a romantic relationship (55.7%).

Following previous act nomination procedures (e.g., Buss & Craik, 1983), participants responded to the following prompt:

In this study, we are interested in the reasons people continue to be friends with a romantic partner after they break-up. Please think of a time when you or someone else decided to stay friends with a romantic partner after a break-up. Below, please write down at least five reasons someone might stay friends with an ex. We are interested in specific reasons. One should be able to answer the following questions about each of your reasons: Have you ever stayed friends with someone after a break-up for this reason? How often has this been the reason for staying friends with an ex?

Materials were presented using the online survey software program Qualtrics.

2.2. Results

Participants provided 2302 act nominations. Redundant responses (e.g., still in love; I still loved him) were collapsed into 186 unique act nominations. Vague responses (e.g., power; benefits) were also eliminated. A final list of 153 acts was compiled for use in Study 2.

3. Study 2

3.1. Method

3.1.1. Participants

Participants ($N = 513$; 358 female; age: $M = 21.03$, $SD = 4.62$; range = 18–48) were recruited as per Study 1. University students who participated in Study 1 did not participate in Study 2. The majority of participants were White (78.6%, 6.8% Black, 6.2% Asian, 4.1% Hispanic/Latino, 4.1% other), exclusively heterosexual (96.3%, 3.1% bisexual, 0.6% exclusively homosexual), and currently in a romantic relationship (62.4%). All reported having experienced at least one break-up.

3.1.2. Materials and procedure

Participants provided demographic information and were given the following prompt:

In this study, we are interested in how romantic partners interact after a break-up (i.e., after their romantic relationship has ended). Sometimes, two ex-partners will continue to remain friends after their romantic relationship has ended. For example, they might still openly communicate with one another from time to time, seek each other out for advice, want to spend time with one another, etc.

Next, participants rated the importance of each of the 153 act nominations (anchors: 1 = unimportant, 5 = extremely important). Finally, participants completed the Personality Inventory for DSM-Brief Form (PID-5-BF; American Psychiatric Association, 2013) and the HEXACO-60 (Ashton & Lee, 2009). The PID-5-BF measures several pathological personality features (Krueger, Derringer, Markon, Watson, & Skodol, 2012) and interpersonal styles (e.g., manipulateness, hostility) that are associated with other measures of dark personality (Southard, Noser, Pollock, Mercer, & Zeigler-Hill, 2015), such as the Dark Tetrad (Buckels, Jones, & Paulhus, 2013) and spitefulness (Marcus, Zeigler-Hill, Mercer, & Norris, 2014). It measures five dimensions of pathological personality: negative affect (i.e., the tendency to experience negative emotions), detachment (i.e., introversion, social isolation, and anhedonia), antagonism (i.e., aggression accompanied by assertions of dominance and grandiosity), disinhibition (i.e., impulsivity and sensation seeking), and psychoticism (i.e., disconnection from reality and illogical thought patterns). Similarly, the HEXACO measures dimensions of personality that resembles the Big-5 and includes a sixth honesty-humility factor which shares common variance with measures of the Dark Triad (Lee et al., 2013), disordered personality traits (Crego, Gore, Rojas, & Widiger, in press), and unethical decision-making (De Vries & van Gelder, 2015).

3.2. Results

Principle component analyses (PCAs, followed by promax rotation) were performed on participants' evaluations of the act nominations. A Kaiser-Meyer-Olkin test (Cerny & Kaiser, 1977) indicated that our sample size was adequate for performing PCA ($KMO = .957$). An exploratory PCA extracted eleven components with an eigenvalue >1.0 (Kaiser-Guttman criterion, see Jackson, 1993). Because only seven of these components predicted unique variance, we re-ran the PCA and fixed the number of extracted factors to seven (see Table 1 for component loadings). Following O'Connor (2000), an eigenvalue Monte Carlo simulation (i.e., parallel analysis) was performed, which confirmed that extraction of seven factors was optimal.

Items with component loadings of at least 0.40 were included. Cross-loaded items were assigned to the component with the highest loading value, or excluded if the difference was <0.20 . The seven components included (in order of variance explained): *reliability/sentimentality* ($\alpha = .97$, $R^2 = 28.80$; e.g., "They made me a better person"), *pragmatism* ($\alpha = .91$, $R^2 = 7.01$; e.g., "They had a lot of money"), *continued romantic*

Table 1
Reasons for staying friends and component loadings (PCA, promax rotation).

	Loading
<i>Reliability/sentimentality</i>	
They were a great listener	.850
They were supportive of my goals	.802
We had similar personalities	.793
I valued their advice	.789
They made me a better person	.781
They were emotionally supportive	.772
I enjoyed their company	.769
I felt I could trust them	.760
I had very open communication with them	.755
They were outgoing	.752
I respected them	.748
We had common interests/hobbies	.738
They motivated me to improve myself	.728
They understood me better than other people	.716
I felt comfortable around them	.715
I found them funny	.714
I valued their friendship	.701
I considered them to be an important part of my life	.653
They were my best friend during the relationship	.651
We shared a lot of good memories	.641
They were adventurous	.631
If I needed help, they would help me	.620
They were dependable	.615
We had similar beliefs and values	.610
Being friends made me happy	.604
I didn't want to lose a friend	.582
It felt normal to have them around	.581
I told them I would always be there for them	.571
They did not betray my trust	.563
They were supportive of my religious beliefs	.507
I had a strong relationship with their family members	.506
We had many shared life events	.502
We were already friends before the relationship	.498
We were best friends before the relationship	.482
They had a strong relationship with my family members	.470
It was habit to talk to each other	.468
I believed it was better to be kind to others than to hate them	.454
We never argued in the relationship	.428
I felt we were better off as friends	.404
<i>Pragmatism</i>	
They had a lot of money	.719
I wanted money from them	.706
They would buy me nice gifts or food	.690
I wanted to keep track of them in case they began to make more money	.670
My ex knew how to fix or repair broken things (e.g., cars, and electronics)	.639
They were able to provide me transportation to places	.624
My ex was a good cook	.611
To have a standoff and determine who was most "over" the other person	.532
They had attractive friends	.532
They were a useful social connection	.528
I hoped to hook up with one or more of their friends	.517
I wanted to monitor my ex's future career success	.515
They had social connections that were beneficial to me	.457
I wanted to sabotage their chances at a new relationship	.450
To prevent that person from speaking badly of me	.446
They were a fallback plan	.443
My (their) friend didn't want us together romantically	.426
<i>Continued romantic attraction</i>	
I still had feelings for them	.789
I couldn't stand the thought of another guy/girl being with them	.789
I still wanted to date them	.764
I was still in love with them	.764
I thought we might get back together later	.684
I still felt jealous after the relationship	.681
I didn't want them to forget me	.669
As an excuse to keep seeing that other person	.634
I wanted to prevent them from getting together with a new romantic interest	.621
I didn't want to end the relationship in the first place	.619
I missed them	.605
I couldn't imagine my life without them	.532
I wanted to make their new partner/romantic interest uncomfortable	.518

Table 1 (continued)

	Loading
I wanted to be a part of my ex's life	.504
I wanted to make their new romantic partner jealous	.486
I wanted to know who they might date next	.486
So my ex's new partners/romantic interests know that I'm still around	.482
I invested a lot of time and feeling into them	.466
I still found them attractive	.464
I was not over them, but I was afraid to commit	.449
I felt lonely	.447
I still enjoyed flirting with them	.440
<i>Children and shared resources</i>	
We had children together	.841
Me or my ex was pregnant	.830
We had shared loans/debts	.798
We had shared property	.775
I wanted to provide a good family environment for children despite the break-up	.771
They were my boss	.756
We worked together professionally	.709
We were living together	.658
We had a pet together	.567
They supported me in some way (shared utilities, phone bills, etc.)	.537
I wanted to prevent my ex from harming him/herself	.496
I was supporting them financially	.482
<i>Diminished romantic attraction</i>	
I realized I was no longer in love with them	.823
I was no longer romantically attracted to them	.779
I lost sexual interest in them	.705
I was totally over my ex	.629
The romantic relationship meant little to me	.611
We were sexually incompatible	.550
There were few negative feelings after the break-up	.498
We did not date very long	.491
There were no left-over romantic feelings	.480
We both cheated on each other	.466
My ex wasn't that attractive	.463
There were no hurt feelings	.430
The relationship was just a fling	.424
<i>Social relationship maintenance</i>	
To maintain good relations with their friends	.725
We shared a group of friends	.687
To prevent awkwardness in our friend group	.668
I wanted to stay friends with their friends	.605
I wanted to show maturity	.480
To maintain a reputation of being mature and civil	.462
We attended school together	.462
Staying friends made life less dramatic	.423
I wanted to show that I was stronger/more mature than my ex	.418
We saw each other frequently	.401
<i>Sexual access</i>	
To keep having sex with them (i.e., "friends with benefits")	.764
They were a possible hook-up buddy	.688
We still had sex from time to time	.644
The sex was good	.605

attraction ($\alpha = .95, R^2 = 5.13$; e.g., "I still had feelings for them"), children and shared resources ($\alpha = .92, R^2 = 2.89$; e.g., "Me or my ex was pregnant"), diminished romantic attraction ($\alpha = .88, R^2 = 2.04$; e.g., "I lost sexual interest"), social relationship maintenance ($\alpha = .85, R^2 = 1.64$; e.g., "To prevent awkwardness in our friend group"), and sexual access ($\alpha = .87; R^2 = 1.59$; e.g., "To keep having sex with them"). Mean ratings were computed for each component (see Table 2 for intercorrelations). To control for inflated Type I error due to multiple comparisons, our alpha criterion was set to $p < .01$ for all analyses.

3.2.1. Relative importance of each component

A one-way repeated-measures ANOVA revealed a main effect of component, $F(6, 3006) = 266.32, p < .001$. Pairwise comparisons revealed that reliability/sentimentality scores ($M = 3.23, SD = 0.82$) were significantly greater than scores on each other component (all $p < .001$), and that pragmatism scores ($M = 1.70, SD = 0.61$) were

Table 2
Intercorrelations among extracted components.

	1	2	3	4	5	6	7
1. Reliability/sentimentality		.376	.650	.447	.569	.665	.292
2. Pragmatism	.376		.569	.391	.576	.545	.511
3. Continued romantic att.	.650	.569		.317	.492	.564	.515
4. Children + shared resources	.447	.391	.317		.503	.451	.243
5. Diminished attraction	.569	.576	.492	.503		.598	.315
6. Social relationship maint.	.665	.545	.564	.451	.598		.317
7. Sexual access	.292	.511	.515	.243	.315	.317	

significantly lower than each other component (all $p < .001$). Scores for *children and shared resources* ($M = 2.82$, $SD = 1.02$), *social relationship maintenance* ($M = 2.77$, $SD = 0.81$), and *continued romantic attraction* ($M = 2.54$, $SD = 0.83$) were significantly greater than *diminished romantic attraction* ($M = 2.39$, $SD = 0.79$) and *sexual access* ($M = 2.19$, $SD = 1.07$). Likewise, *diminished romantic attraction* scores were significantly greater than *sexual access* scores. Next, a between-subjects MANOVA was used to compare men's and women's scores on each of the seven components (see Fig. 1). *Pragmatism*, $F(1500) = 12.77$, $p < .001$, $d = 0.33$, and *sexual access* scores, $F(1500) = 32.57$, $p < .001$, $d = 0.54$, were higher for men than for women. However, after controlling for scores on antagonism, honesty-humility, and extraversion (see Section 3.2.2), men scored only marginally higher on *pragmatism*, $F(1500) = 2.90$, $p = .089$. There were no other sex differences (all $F < 2.21$, all $p > .138$).

3.2.2. Personality

Seven multiple regressions were used to assess whether scores on the five domains of the PID-5-BF and six domains of the HEXACO predicted any of the seven components (see Table 3). Antagonism and extraversion positively, and honesty-humility negatively, predicted *pragmatism*. Similarly, honesty-humility negatively, and extraversion positively, predicted *sexual access*. Negative affect, extraversion, and agreeableness also predicted *reliability/sentimentality*, and negative affect and extraversion positively, and honesty-humility negatively, predicted *continued romantic attraction*. See Table 4 in Supplemental materials for alpha reliabilities and intercorrelations among normal and pathological personality traits.

4. Discussion

4.1. Summary of findings and interpretation

In Study 2, participants rated the importance of staying friends with an ex-partner for each act nominated reason given in Study 1, yielding seven categories of reasons. Reasons that indicated that an ex-partner is reliable, trustworthy, and of sentimental value (i.e., *reliability/sentimentality*) were rated as more important than each other reason. This is consistent with other research showing that individuals prioritize these types of qualities (e.g., altruism, agreeableness, cooperativeness, trust) in an opposite-sex friend (Baumgarte & Nelson, 2009; Bleske-Rechek & Buss, 2001; Lewis et al., 2011). By contrast, reasons that indicated that continued friendship with an ex-partner is practical (i.e., *pragmatism*) were rated as less important than each other reason, with *sexual access* rated as second least important. As predicted, measures of dark personality, in particular participants' scores on the antagonism dimension of the PID-5-BF, were positively associated with *pragmatism*, and scores on the honesty-humility factor of the HEXACO were negatively associated with *sexual access*. This is consistent with research showing that individuals who score higher on similar measures (e.g., the Dark Triad) value short-term mating over long-term mating (Jonason et al., 2009; Lee et al., 2013), value money and power (Lee et al., 2013), adopt selfish behaviors in economic experiments (Hilbig & Zettler, 2009), and are more manipulative and callous (Jones & Figueredo, 2013). Likewise, pragmatic motivations and sexual access were predicted by extraversion, which is also associated with facets of dark personality (Dufner, Rauthmann, Czarna, & Denissen, 2013; Paulhus & Williams, 2002) and interest in short-term mating (Schmitt & Shackelford, 2008).

Interestingly, those who scored higher on negative affect rated *reliability/sentimentality* and *continued romantic attraction* as more important. Individuals those who score higher on neuroticism (i.e., negative affect's non-pathological counterpart) tend to experience more serious psychological distress during a break-up (Tavares & Aassve, 2013). It may be that individuals who experience more anxiety from the negative thoughts and emotions that accompany a break-up are more motivated to maintain a PRF for these reasons. PRFs may mitigate break-up anxiety by assuring that one will not lose the socioemotional support of an ex-partner (i.e., *reliability/sentimentality*) or miss out on romantic involvement (i.e., *continued romantic attraction*).

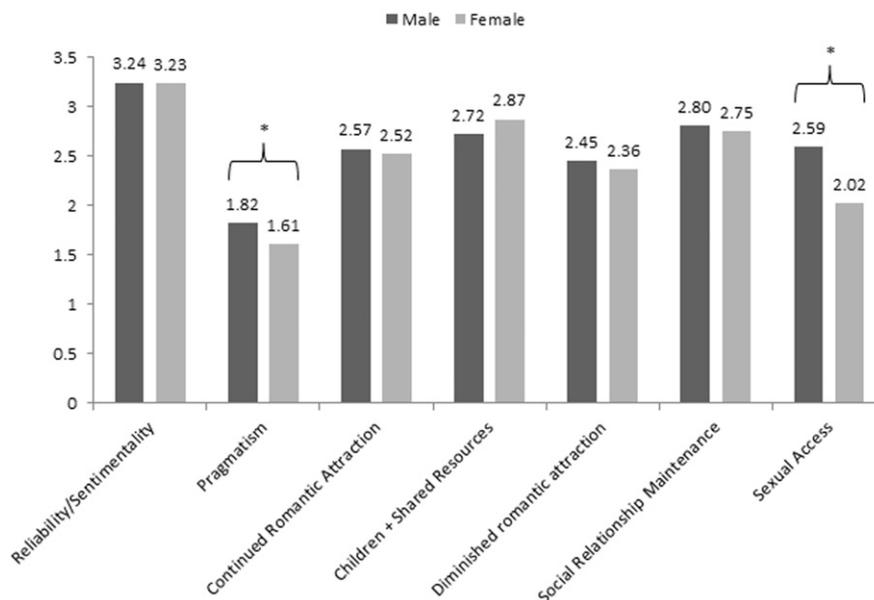


Fig. 1. Sex differences in mean importance ratings for each component.

Table 3

β regression weights and 99% confidence intervals for multiple regressions predicting importance ratings for each component from scores on the PID-5-SF and HEXACO.

	Reliab./senti.		Pragmatism		Cont. rom. att.		Shared resources		Dim. rom. att.		Soc. relat. maint.		Sex. access	
	β	CI	β	CI	β	CI	β	CI	β	CI	β	CI	β	CI
PID-5-SF														
Negative affect	.20*	[.08, .40]	.02	[−.09, .12]	.22**	[.11, .42]	.14	[.01, .41]	.15	[.01, .33]	.13	[−.01, .31]	−.02	[−.23, .17]
Detachment	.05	[−.11, .24]	.04	[−.07, .16]	.07	[−.07, .27]	.06	[−.11, .33]	.12	[.00, .34]	.10	[−.02, .32]	.13	[.04, .47]
Antagonism	.00	[−.20, .20]	.27**	[.20, .46]	.05	[−.11, .27]	.03	[−.19, .31]	.07	[−.08, .31]	.09	[−.05, .34]	.10	[−.04, .45]
Disinhibition	.10	[−.04, .33]	.08	[−.05, .21]	.06	[−.10, .26]	.13	[.00, .46]	.04	[−.13, .23]	.11	[−.03, .33]	.07	[−.09, .37]
Psychoticism	−.02	[−.16, .13]	−.03	[−.12, .07]	−.03	[−.17, .11]	−.08	[−.30, .06]	−.08	[−.23, .05]	−.01	[−.15, .13]	.01	[−.16, .20]
HEXACO														
Honesty–Humility	−.03	[−.02, .01]	−.18*	[−.03, −.01]	−.20**	[−.05, −.02]	−.05	[−.03, .01]	−.08	[−.03, .00]	−.10	[−.03, .00]	−.15*	[−.05, −.01]
Emotionality	.08	[−.01, .02]	.00	[−.01, .01]	.07	[−.01, .02]	.09	[.00, .03]	.01	[−.01, .01]	.10	[.00, .03]	−.12	[−.04, .00]
Extraversion	.15*	[.01, .03]	.10*	[.00, .02]	.15*	[.01, .03]	−.04	[−.02, .01]	.13	[.00, .03]	.14	[.00, .03]	.23**	[.02, .05]
Agreeableness	.15*	[.01, .03]	.06	[.00, .02]	.01	[−.01, .01]	.09	[.00, .03]	.05	[−.01, .02]	.12	[.00, .03]	−.04	[−.02, .01]
Conscientiousness	.02	[−.01, .02]	−.08	[−.02, .00]	−.05	[−.02, .01]	.05	[−.01, .03]	−.07	[−.03, .01]	.04	[−.01, .02]	−.04	[−.03, .01]
Openness	.04	[−.01, .02]	−.05	[−.01, .00]	−.03	[−.01, .01]	.04	[−.01, .02]	.01	[−.01, .01]	−.03	[−.01, .01]	.02	[−.01, .02]

* $p < .01$.

** $p < .001$.

Men rated sexual access higher on importance than women did, which is consistent with other research showing that men are more likely than women to form CSFs due to sexual attraction (Bleske-Rechek & Buss, 2001; Lewis et al., 2011). Men were also more likely than women to rate *pragmatism* as important, though this finding was only marginally significant after controlling for personality predictors of *pragmatism*. It is unclear why this is the case. Some research has found that male friendships are less reciprocal than relationships with women, particularly with regard to affective dimensions of friendship (e.g., self-disclosure, trust, authenticity; Parker & de Vries, 1993). It is possible that men are more likely to value friendships for their practical, as opposed to socioemotional, benefits. However, this interpretation requires further research. Previous research has also found that men tend to have darker personalities than women (Paulhus & Williams, 2002), which may explain why controlling for antagonism and honesty–humility weakened this sex difference.

Although past research has found that women judge physical protection and physical prowess as more important for initiating a CSF than men (Bleske-Rechek & Buss, 2001; Lewis et al., 2011), we did not find sex differences related to physical protection. In fact, none of the identified categories included reasons related to physical protection or an ex-partner's physical prowess. Our two samples largely consisted of university participants, which is a demographic for which concerns about physical protection may not be especially salient. Women may also be less likely to seek physical protection from an ex-partner compared to other platonic male friends, particularly if protectiveness signals that their romantic relationship has not dissolved or if it dissuades other potential suitors. Likewise, we did not find that women prioritize economic resources in a cross-sex friend more than men (Lewis et al., 2011). Both men and women rated *children and shared resources* as equally important. However, it is possible that this is due to differences between initiating a CSF and continuing to be friends with an ex-partner. Whereas individuals who are not yet friends have no personal investment in shared resources, men and women who are ex-partners may have equal concern for resources that were jointly managed during the relationship.

4.2. Limitations and future directions

Two main limitations of the current design are that participants provided ratings retrospectively and may have provided ratings for circumstances that they had never personally experienced (e.g., “staying friends because you or your ex was pregnant”). Future research should include behavioral measures, such as whether an individual actually stayed friends with an ex-partner for each reason. Likewise, future research may benefit from assessing the degree of friendship between ex-partners and determining whether this is proportional to each ex-

partner's perceived value (e.g., their physical attractiveness or resource earning potential). Indeed, perceptions of an ex-partner's mate value may influence the relative importance of each reason for staying friends, such that ex-partners with higher mate value in a particular domain (e.g., kindness vs. physical attractiveness) may be valuable for different reasons (e.g., reliability/sentimentality vs. sexual access). Future studies should also include other measures of dark personality, such as the MACH-IV (Christie & Geis, 1970), the Narcissistic Personality Inventory (Raskin & Hall, 1979), and the Self-Report Psychopathy scale (Hare, 1985).

4.3. Conclusion

Although a break-up nominally marks the end of a romantic relationship, the current research suggests that resource exchange between ex-partners can extend beyond relationship dissolution. Across two studies, we identified reasons for remaining friends after a break-up and outlined how the importance of these reasons varies with sex and personality. This research builds upon literature examining CSFs and suggests that PRFs are functionally similar insofar as they permit continued exchange of desirable resources.

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.paid.2016.04.016>.

Author note

In support of the open science and transparency initiative, this study's complete dataset may be downloaded from the first author's ResearchGate account.

References

- Afifi, W. A., & Faulkner, S. L. (2000). On being just friends: The frequency and impact of sexual activity in crosssex friendships. *Journal of Social and Personal Relationships, 17*, 205–222.
- American Psychiatric Association (2013). Online assessment measures: The personality inventory for DSM-5–Brief Form (PID-5-BF). Retrieved from <http://www.psychiatry.org/practice/dsm/dsm5/online-assessment-measures>
- Ashton, M. C., & Lee, K. (2009). The HEXACO-60: A short measure of the major dimensions of personality. *Journal of Personality Assessment, 91*, 340–345.
- Christie, R., & Geis, F. L. (1970). *Studies in Machiavellianism*. New York: Academic Press.
- Banks, S. P., Altendorf, D. M., Greene, J. O., & Cody, M. J. (1987). An examination of relationship disengagement: Perceptions, breakup strategies and outcomes. *Western Journal of Communication, 51*, 19–41.
- Barclay, P. (2013). Strategies for cooperation in biological markets, especially for humans. *Evolution and Human Behavior, 34*, 164–175.
- Baumgarte, R., & Nelson, D. W. (2009). Preference for same-versus cross-sex friendships. *Journal of Applied Social Psychology, 39*, 901–917.
- Bleske-Rechek, A. L., & Buss, D. M. (2001). Opposite-sex friendship: Sex differences and similarities in initiation, selection, and dissolution. *Personality and Social Psychology Bulletin, 27*, 1310–1323.

- Bleske-Rechek, A., Somers, E., Micke, C., Erickson, L., Matteson, L., Stocco, C., ... Ritchie, L. (2012). Benefit or burden? Attraction in cross-sex friendship. *Journal of Social and Personal Relationships*, 29, 569–596.
- Buckels, E. E., Jones, D. N., & Paulhus, D. L. (2013). Behavioral confirmation of everyday sadism. *Psychological Science*, 24, 2201–2209.
- Bullock, M., Hackathorn, J., Clark, E. M., & Mattingly, B. A. (2011). Can we be (and stay) friends? Remaining friends after dissolution of a romantic relationship. *The Journal of Social Psychology*, 151, 662–666.
- Busboom, A. L., Collins, D. M., Givertz, M. D., & Levin, L. A. (2002). Can we still be friends? Resources and barriers to friendship quality after romantic relationship dissolution. *Personal Relationships*, 9, 215–223.
- Buss, D. M., & Craik, K. H. (1983). The act frequency approach to personality. *Psychological Review*, 90, 105–126.
- Cerny, C. A., & Kaiser, H. F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research*, 12, 43–47.
- Chung, M. C., Farmer, S., Grant, K., Newton, R., Payne, S., Perry, M., ... Stone, N. (2003). Coping with post-traumatic stress symptoms following relationship dissolution. *Stress and Health*, 19, 27–36.
- Crego, C., Gore, W. L., Rojas, S. L., & Widiger, T. A. (2016). The discriminant (and convergent) validity of the personality inventory for DSM-5. *Personality Disorders: Theory, Research, and Treatment* (in press).
- Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31, 874–900.
- Dailey, R. M., Jin, B., Pfister, A., & Beck, G. (2011). On-again/off-again dating relationships: What keeps partners coming back? *The Journal of Social Psychology*, 151, 417–440.
- Dailey, R. M., McCracken, A. A., Jin, B., Rossetto, K. R., & Green, E. W. (2013). Negotiating breakups and renewals: Types of on-again/off-again dating relationships. *Western Journal of Communication*, 77, 382–410.
- DeLecce, T., & Weisfeld, G. (2015). An evolutionary explanation for sex differences in non-marital breakup experiences. *Adaptive Human Behavior and Physiology*.
- DeScioli, P., & Kurzban, R. (2009). The alliance hypothesis for human friendship. *PLoS One*, 4, e5802.
- Dufner, M., Rauthmann, J. F., Czarna, A. Z., & Denissen, J. J. A. (2013). Are narcissists sexy? Zeroing in on the effect of narcissism on short-term mate appeal. *Personality and Social Psychology Bulletin*, 39, 870–882.
- Egan, V., & McCorkindale, C. (2007). Narcissism, vanity, personality and mating effort. *Personality and Individual Differences*, 43, 2105–2115.
- Gray, J. D., & Silver, R. C. (1990). Opposite sides of the same coin: Former spouses' divergent perspectives in coping with their divorce. *Journal of Personality and Social Psychology*, 59, 1180–1191.
- Guerrero, L. K., & Mongeau, P. A. (2008). On becoming "more than friends": The transition from friendship to romantic relationship. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 175–194). New York: Psychology Press.
- Halatsis, P., & Christakis, N. (2009). The challenge of sexual attraction within heterosexuals' cross-sex friendship. *Journal of Social and Personal Relationships*, 26, 919–937.
- Hare, R. D. (1985). Comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology*, 53, 7–16.
- Hendrick, S. S., & Hendrick, C. (2000). Romantic love. In C. Hendrick, & S. S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 203–215). Thousand Oaks, CA: Sage.
- Hilbig, B. E., & Zettler, I. (2009). Pillars of cooperation: Honesty–Humility, social value orientations, and economic behavior. *Journal of Research in Personality*, 43, 516–519.
- Hruschka, D., Hackman, J., & Macfarlan, S. (2015). Why do humans help their friends? Proximal and ultimate hypotheses from evolutionary theory. In V. Zeigler-Hill, L. L. M. Welling, & T. K. Shackelford (Eds.), *Evolutionary perspectives on social psychology* (pp. 3–12). New York: Springer.
- Jackson, D. A. (1993). Stopping rules in principal components analysis: A comparison of heuristic and statistical approaches. *Ecology*, 74, 2204–2214.
- Jonason, P. K., & Schmitt, D. P. (2012). What have you done for me lately? Friendship-selection in the shadow of the Dark Triad traits. *Evolutionary Psychology*, 10 (147470491201000303).
- Jonason, P. K., Li, N. P., Webster, G. D., & Schmitt, D. P. (2009). The dark triad: Facilitating a short-term mating strategy in men. *European Journal of Personality*, 23, 5–18.
- Jonason, P. K., Valentine, K. A., Li, N. P., & Harbeson, C. L. (2011). Mate-selection and the Dark Triad: Facilitating a short-term mating strategy and creating a volatile environment. *Personality and Individual Differences*, 51, 759–763.
- Jones, D. N., & Figueredo, A. J. (2013). The core of darkness: Uncovering the heart of the Dark Triad. *European Journal of Personality*, 27, 521–531.
- Kaplan, D. L., & Keys, C. B. (1997). Sex and relationship variables as predictors of sexual attraction in cross-sex platonic friendships between young heterosexual adults. *Journal of Social and Personal Relationships*, 14, 191–206.
- Koladich, S. J., & Atkinson, B. E. (2016). The dark triad and relationship preferences: A replication and extension. *Personality and Individual Differences*, 94, 253–255.
- Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*, 42, 1879–1890.
- Lee, K., Ashton, M. C., Wiltshire, J., Bourdage, J. S., Visser, B. A., & Gallucci, A. (2013). Sex, power, and money: Prediction from the Dark Triad and Honesty–Humility. *European Journal of Personality*, 27(2), 169–184.
- Lewis, D. M., Conroy-Beam, D., Al-Shawaf, L., Raja, A., DeKay, T., & Buss, D. M. (2011). Friends with benefits: The evolved psychology of same-and opposite-sex friendship. *Evolutionary Psychology*, 9.
- Lyons, M., & Aitken, S. (2010). Machiavellian friends? The role of Machiavellianism in friendship formation and maintenance. *Journal of Social, Evolutionary, and Cultural Psychology*, 4, 194–202.
- Marcus, D. K., Zeigler-Hill, V., Mercer, S. H., & Norris, A. L. (2014). The psychology of spite and the measurement of spitefulness. *Psychological Assessment*, 26, 563–574.
- Mason, A. E., Sbarra, D. A., Bryan, A. E., & Lee, L. A. (2012). Staying connected when coming apart: The psychological correlates of contact and sex with an ex-partner. *Journal of Social and Clinical Psychology*, 31, 488–507.
- Metts, S., Cupach, W. R., & Bejlovec, R. A. (1989). 'I love you too much to ever start liking you': Redefining romantic relationships. *Journal of Social and Personal Relationships*, 6, 259–274.
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers*, 32, 396–402.
- Parker, S., & de Vries, B. (1993). Patterns of friendship for women and men in same and cross-sex relationships. *Journal of Social and Personal Relationships*, 10, 617–626.
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36, 556–563.
- Perilloux, C., & Buss, D. M. (2008). Breaking up romantic relationships: Costs experienced and coping strategies deployed. *Evolutionary Psychology*, 6.
- Raskin, R., & Hall, C. S. (1979). A narcissistic personality inventory. *Psychological Reports*, 45, 590.
- Reeder, H. M. (2000). 'I like you... as a friend': The role of attraction in cross-sex friendship. *Journal of Social and Personal Relationships*, 17, 329–348.
- Reeder, H. M. (2003). The effect of gender role orientation on same-and cross-sex friendship formation. *Sex Roles*, 49, 143–152.
- Schmitt, D. P., & Shackelford, T. K. (2008). Big five traits related to short-term mating: From personality to promiscuity across 46 nations. *Evolutionary Psychology*, 6, 246–282.
- Schneider, C. S., & Kenny, D. A. (2000). Cross-sex friends who were once romantic partners: are they platonic friends now? *Journal of Social and Personal Relationships*, 17, 451–466.
- Southard, A. C., Noser, A. E., Pollock, N. C., Mercer, S. H., & Zeigler-Hill, V. (2015). The interpersonal nature of dark personality features. *Journal of Social and Clinical Psychology*, 34, 555–586.
- Tan, K., Agnew, C. R., Vanderdrift, L. E., & Harvey, S. M. (2014). Committed to us: Predicting relationship closeness following nonmarital romantic relationship breakup. *Journal of Social and Personal Relationships*, 32, 456–471.
- Tavares, L. P., & Aassve, A. (2013). Psychological distress of marital and cohabitation breakups. *Social Science Research*, 42, 1599–1611.
- de Vries, R. E., & van Gelder, J. L. (2015). Explaining workplace delinquency: The role of Honesty–Humility, ethical culture, and employee surveillance. *Personality and Individual Differences*, 86, 112–116.