

# Social Media Friendship Jealousy

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Tracy Vaillancourt<sup>1,2</sup> , Heather Brittain<sup>1</sup> , Mollie Eriksson<sup>3</sup>,  
Amanda Krygsman<sup>1</sup>, Ann H. Farrell<sup>4</sup>, Adam C. Davis<sup>5</sup> ,  
Anthony A. Volk<sup>4</sup> and Steven Arnocky<sup>6</sup>

## Abstract

A new measure to assess friendship jealousy in the context of social media was developed. This one-factor, seven-item measure was psychometrically sound, showing evidence of validity and reliability in three samples of North American adults (Study 1,  $n = 491$ ; Study 2,  $n = 494$ ; Study 3,  $n = 415$ ) and one-, two-, and three-year stability (Study 3). Women reported more social media friendship jealousy than men (Studies 2 and 3) and younger women had the highest levels of social media friendship jealousy (compared with younger men and older men and women; Study 2). Social media friendship jealousy was associated with lower friendship quality (Study 1) and higher social media use and trait jealousy (Study 2). The relation between social media friendship jealousy and internalizing symptoms indicated positive within time associations and longitudinal bidirectional relations (Study 3). Specifically, social media friendship jealousy predicted increases in internalizing problems, and internalizing problems predicted greater social media friendship jealousy accounting for gender and trait levels of social media friendship jealousy and internalizing problems. Anxious and depressed adults may be predisposed to monitor threats to their friendships via social media and experience negative consequences because of this behavior. Although social media interactions can be associated with positive well-being and social connectedness, our results highlight that they can also undermine friendships and mental health due to jealousy.

## Keywords

social media, jealousy, friendships, anxiety symptoms, depression symptoms, gender differences

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Friendships serve important functions and confer benefits across the lifespan. They provide emotional support, entertainment, intimacy, resources, and alliances and are associated with a host of positive outcomes including better health and longevity (Almqvist, 2012; Ehrlich et al., 2015; Hill et al., 2014; Holt-Lunstad et al., 2010), lower loneliness (Pinquart & Sörensen, 2003), and greater happiness (Demir et al., 2015). Friendships also serve adaptive functions like promoting survival and status through resource accrual, helping thwart physical and social threats and win conflicts, and improving the survivability of offspring (Hrdy, 2009; Krems et al., 2021). Although friendships are generally viewed as positive, they can also be a source of stress. One particularly challenging aspect of friendships is jealousy. Jealousy is a “distinct, yet complex, aversive emotional response to a real or imagined threat to a valued relationship” (Davis et al., 2016, p. 1) that tends to elicit a mélange of anger, sadness, depression, and anxiety (Cano & O’Leary, 1997; Krems et al., 2021; Sharpsteen, 1991). Jealousy, usually studied in the context of sexual and/or romantic

relationships (Davis et al., 2016), is thought to serve important adaptive functions such as alerting individuals to threats to their relationship and aiding in the retention of mates (Buss, 2000, 2013; Buss & Haselton, 2005; Scelza et al., 2020; Symons, 1979). Like romantic jealousy, friendship jealousy is often

<sup>1</sup>Counselling Psychology, Faculty of Education, University of Ottawa, Ottawa, ON, Canada

<sup>2</sup>School of Psychology, Faculty of Social Sciences, University of Ottawa, Ottawa, ON, Canada

<sup>3</sup>Psychology, Neuroscience, & Behaviour, Faculty of Science, McMaster University, Hamilton, ON, Canada

<sup>4</sup>Department of Child and Youth Studies, Brock University, St Catharines, ON, Canada

<sup>5</sup>Department of Social Science, Canadore College, North Bay, ON, Canada

<sup>6</sup>Department of Psychology, Nipissing University, North Bay, ON, Canada

## Corresponding author:

Tracy Vaillancourt, Counselling Psychology, Faculty of Education, University of Ottawa, 145 Jean-Jacques-Lussier, Ottawa, ON K1N 6N5, Canada.  
Email: [tracy.vaillancourt@uottawa.ca](mailto:tracy.vaillancourt@uottawa.ca)



borne from real or perceived threats to friendships by third parties (Casper & Card, 2010; Krems et al., 2021; Parker et al., 2005).

Friendship jealousy has typically been examined in adolescents in relation to social processes like aggression, social adjustment, self-esteem, and social preference (Kim et al., 2017; Kraft & Mayeux, 2018; Parker et al., 2005). However, given its links to adaptive functions, friendship jealousy is now being examined in adults using an evolutionary framework. For example, in a series of experimental studies, Krems et al. (2021) convincingly demonstrated that the threat of losing a friend to a third party elicited more jealousy than the threat of losing a friend alone. In these studies, the loss of a friend to a third party was depicted in relation to a close friend engaging in preferred activities with another person or a close friend relying on someone else for support (or other important functions solicited directly from participants). We were interested in extending this research on friendship jealousy to the context of social media.

Smartphones are increasingly used in a widening range of social activities (Poushter, 2016) and social media platforms and social networking sites (henceforth referred to as social media) like Instagram, Snapchat, Facebook, TikTok, Twitter (now X), Reddit, and VSCO are now part of daily life. Social media is frequently used by adolescents and adults to chat, send images, share stories, and keep up with friends (Auxier & Anderson, 2021; Kim et al., 2016); it is also the preferred way for young people to communicate with one another (Common Sense Media, 2018). Although social media interactions are associated with positive well-being (Liu et al., 2019), and increased social connectedness (Ryan et al., 2017), they can also undermine relationships (Faber et al., 2022; Tandon et al., 2021). Indeed, social media is likely a common way for people to experience third-party threats to their friendships. This is because social media features allow individuals to easily see their friends engage in activities with others—they can watch live videos posted on their “stories” of friends at a party they are not invited to, they can see the shared geolocators of friends while they are at home alone, or they can read intimate conversations between friends in group chats. In other words, social media allows people to experience their friends engaging with others in real time, which may or may not include them. These examples are consistent with the fear of missing out (the need to be connected to what others are doing; Przybylski et al., 2013) and social comparison orientation (the tendency to make social comparisons; Gibbons & Buunk, 1999), which play a role in the development of jealousy (Frampton & Fox, 2018; Wang et al., 2019) and mental health problems in relation to social media use (Reer et al., 2019; Vogel et al., 2014). Because social media also affords the opportunity to revisit interactions, and thus re-live perceived friendship threats, rumination can ensue. Rumination also plays an important role in jealousy and surveillance behavior in romantic relationships (Carson & Cupach, 2000) and friendships (Lavallee & Parker, 2009), and is associated with poorer mental health (Watkins & Roberts, 2020).

Social media surveillance behavior in friendships includes actions such as checking on friends’ locations, viewing their posts repeatedly, and going through the media content of shared friends. This type of checking can confirm jealous suspicions about third-party threats to friendships, and thus increase jealousy, with implications for mental health. In romantic relationships, social media use engenders jealousy (Muise et al., 2009), conflict and aggression (Brem et al., 2015; Daspe et al., 2018; Vogels & Anderson, 2020), mate retention tactics (Brem et al., 2015; Demirtaş-Madran, 2018), as well as greater surveillance behavior (see reviews by Arnocky et al., 2019; Muscanell & Guadagno, 2016). Moreover, frequent social media use is associated with increased mental health difficulties like depression (Hunt et al., 2018; Lin et al., 2016; Primack et al., 2017) and anxiety (Primack et al., 2017; Vannucci et al., 2017). Poor mental health outcomes are commonly attributed to high usage without describing the mechanism. We believe that poorer mental health outcomes are in part, due to social media-induced jealousy via relationship threats.

In earlier work, the expression of jealousy in romantic relationships and friendships has been associated with negative mental health symptoms. Jealousy has been conceptualized by some as a “blended emotion” that co-occurs with feelings of anger, sadness, depression, and anxiety (Cano & O’Leary, 1997). Heightened levels of depression symptoms appear to generally result from the loss of a valued romantic partner, whereas anxiety may be expressed when a rival threatens the dyad (Mathes et al., 1985). Furthermore, those reporting greater depression symptoms and feelings of insecurity are more likely to perceive a rival as threatening (Radecki-Bush et al., 1993). Thus, individuals higher in dispositional jealousy tend to express lower self-esteem, higher anxiety, and higher depression (Jaremko & Lindsey, 1979; discussed in Bringle, 1991). In the context of social media, in young adults, having an anxious attachment style (i.e., feeling more insecure about the bond with their partner) positively predicts the expression of Facebook jealousy, which may be explained by an erosion of trust (Marshall et al., 2013). Similar results have been found regarding friendship dynamics and negative emotionality. Among adolescents, friendship jealousy shares concurrent positive associations with feelings of anxiety and the perpetration of relational aggression (Voulgaridou & Kokkinos, 2020). In this study, friendship jealousy also positively predicted these outcomes six months later.

## Present Studies

Our aims were to examine friendship jealousy in the context of social media (Studies 1, 2, and 3) and how this form of jealousy relates to mental health (Study 3). Examining friendship jealousy is worthy of attention given the importance of friendships for well-being across the lifespan (Holt-Lunstad et al., 2010) and because social media now plays a fundamental role in our lives. Indeed, for young people in particular (aged 15–24), the time spent with friends in person has decreased,

while time spent online has increased (Twenge, 2023). This change likely reflects the fact that young people prefer to communicate with one another using social media (Common Sense Media, 2018). Moreover, because of its ubiquity (Dixon, 2023), social media is likely the standard means for people to experience third-party threats to their friendships (Lin et al., 2016; Primack et al., 2017; Vannucci et al., 2017).

Toward these aims, we first examined the psychometric properties of a new *Social Media Friendship Jealousy Scale* (SMFJS) developed for this research, based on a scale created by Muise et al. (2009) that was later adapted by Utz et al. (2015) to assess social media jealousy in romantic partnerships (Studies 1 and 2). In our new scale, we asked participants to indicate the likelihood that they would become jealous if their friend was involved with other friends on social media (e.g., seeing a friend post pictures with another friend; see Table 1). Convergent validity was examined with friendship quality (Study 1), trait jealousy (Study 2), and social media use (Study 2). Parker et al. (2016) found that jealousy had a negative impact on friendship quality (i.e., closeness) and Muise et al. (2009) found that trait jealousy and greater social media

use were associated with greater social media jealousy. Discriminant validity (Study 1) was examined using the HEXACO, a six-dimension personality measure that assesses Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (Ashton & Lee, 2007). Kokkinos et al. (2020) found that friendship jealousy was not related to extraversion, agreeableness, and only weakly associated with conscientiousness. Richter et al. (2022) found that romantic relationship jealousy was not predicted by extraversion and conscientiousness. Gubler et al. (2023) developed a new digital jealousy scale for romantic relationships and found that it held no relation to extraversion, conscientiousness, or agreeableness.

The threat of losing a friend to a third party has been shown to elicit more jealousy in women than in men (Krems et al., 2022), who also worry more about replacement threats than men (Reynolds & Palmer-Hague, 2022). Although this sex difference is proposed to stem from the different structure and function of women's and men's friendships (Dunbar, 2018; Hall, 2011; Krems et al., 2022; Pearce et al., 2021), it might also be due to the more precarious stability of women's

**Table 1.** Correlations Among All Items and EFA Factor Loadings for Studies 1 and 2.

Items	Factor Loadings Study 1 (full scale)	Factor Loadings Study 1 (revised)	Factor Loadings Study 2							
				1	2	3	4	5	6	7
1. Become jealous if your friend posts pictures of themselves with another friend.	.797	.771	.768	–	.590	.688	.656	.700	.656	.596
2. Become jealous if your friend posts a picture without tagging you.	.818	.821	.880	.673	–	.729	.732	.711	.586	.689
3. Become jealous if your friend posts a picture or video that does not include you.	.840	.847	.880	.704	.797	–	.741	.712	.611	.707
4. Become jealous if your friend comments on a post of another friend.	.866	.883	.891	.669	.785	.758	–	.777	.599	.776
5. Become jealous if your friend posts about a significant event like a birthday of another friend.	.873	.873	.873	.689	.744	.749	.788	–	.660	.726
6. Become jealous if your friend comments on a post from a person they know you dislike.	.758	.731	.778	.664	.702	.702	.665	.682	–	.610
7. Become jealous if your friend re-posts a mutual friend's post.	.820	.839	.911	.650	.796	.804	.838	.809	.682	–
8. Become jealous if your friend posts pictures of themselves at an event that you are not invited to.	.673									
9. Become jealous if your friend does not include you on a private story or close friends list.	.650									

Note. All correlations are statistically significant at  $p < .001$ . Correlations in the upper diagonal are from Study 1 and in the bottom diagonal are from Study 2.

friendships. In adolescence (Benenson & Christakos, 2003) and in adulthood (Dunbar & Machin, 2014; Reynolds & Palmer-Hague, 2022), women's friendships are more fragile than men's, a fragility that often stems from jealousy (Dunbar & Machin, 2014). Previous work also shows that women score higher in Facebook jealousy in comparison to men (Marshall et al., 2013; Muise et al., 2009). An important evolutionary reason behind women's friendship jealousy is that women in every culture, throughout history, have typically relied on the assistance of others to raise their children (Hrdy, 2009). Although fathers are an obvious choice of assistance, female kin and friends represent another critical, but limited, source of assistance to mothers as they start to have children (Hrdy, 2009). Given these differences, we predicted that women would report more social media friendship jealousy than men (Studies 1, 2, and 3).

Age differences were also examined (Studies 1 and 2). Younger adults tend to have larger social networks than older adults, which are less stable than the friendships of older adults (Dunbar, 2018; Fung et al., 2001). Additionally, at age 25, people have the most social contacts in their lifetime (Bhattacharya et al., 2016), leaving more opportunities for friendships to flourish or erode. Using a cellphone database, Roy et al. (2022) found that inner circle close relationships, defined in this study as family, friends, and romantic partners, were stable over three years, but the rate of formation and decay was higher among younger adults (aged 17–21) and adults (25–35) than middle-aged adults (45–55). Therefore, younger adults may perceive interlopers as more threatening due to friendship instability and in turn experience more jealousy, at least relative to older adults who likely have fewer yet more stable and secure friendships. Based on these findings, we predicted that younger adults (<30 years of age) would report more social media friendship jealousy than older adults (>30 years of age; Studies 1 and 2). Younger people have also been shown to experience more envy<sup>1</sup> than older people, which might explain this age difference (Henniger & Harris, 2015), which likely reflects the different structure and function of friendships across ages (Bhattacharya et al., 2016; Dunbar, 2018; Fung et al., 2001; Roy et al., 2022). Considering these gender and age differences, we also predicted that younger women would report the highest level of social media friendship jealousy.

Finally, we examined the temporal relations between social media friendship jealousy and internalizing symptoms (depression and anxiety) and predicted that social media friendship jealousy would be associated with poorer mental health within and across three assessments over four years, controlling for gender.

Data were collected during the COVID-19 pandemic, a time when social media use increased worldwide (Dixon, 2022; GlobalWebIndex, 2020; Tregoning, 2020). For Study 1, participants were asked to reflect on their experiences in the previous year (before the pandemic), whereas for Studies 2 and 3, this instruction was not given. Data were collected from April 30 to May 12, 2020, for Study 1, from May 6 to June 3, 2021, for Study 2, and from May to July 2020, 2021, and 2023 for Study 3.

## Study 1

### Participants

Participants were recruited through Amazon Mechanical Turk (MTurk), an online crowdsourcing platform. Data were screened for eligibility, duplicates, completeness, and attention check completion ( $n = 61$  excluded), data were available on 514 adults (mean age of 29.62 years,  $SD = 3.05$ ;  $minimum = 24$ ;  $maximum = 35$ ; 49.2% women; 70.6% White, 11.1% Black, 6.0% Latin, 3.9% East Asian, 1.8% South Asian, 1.6% Southeast Asian, 0.4% West Asian/Arab, 0.2% Indigenous/Aboriginal/Native, 4.5% other; median income \$41,000–60,000USD). To be included in the analytic sample, participants had to have answered all nine social media friendship jealousy items and report using social media. This resulted in an analytic sample of 491.

### Procedure

Participants were invited to participate through a “human intelligence task” (i.e., HIT) on TurkPrime (Litman et al., 2017). The eligibility criteria included: (1) adult between the ages of 24 and 35, (2) Canadian or United States resident, (3) a  $\geq 85$  HIT approval rate (i.e., number of approved assignments divided by completed assignments), and (4) have completed  $\geq 50$  HITs. After consent was provided, participants were asked to complete several self-report measures that were randomly ordered (30 min to complete). Participants were compensated \$10.00CAD if their survey was completed and attention check items were answered correctly (4 out of 5). Research ethics board approval was granted by Brock University. Data for Study 1 are available upon request to the first author.

### Measures

*Social Media Friendship Jealousy.* The SMFJS was developed for this research based on a 27-item Facebook jealousy scale by Muise et al. (2009) that was later adapted by Utz et al. (2015) to include 14-items addressing Facebook versus Snapchat jealousy. Both measures were used to assess jealousy in romantic relationships. We modified Utz et al.'s measure to assess jealousy evoked from social media posts in the context of friendships. Specifically, we retained the same stem used by Utz et al. (i.e., “How likely are you to become jealous if your...”) and modified relevant questions to be applicable to the posting behavior among friends. For example, Utz et al. question “Become jealous if your partner sends pictures/makes wall posts of him/herself with a previous romantic or sexual partner?” was changed to “Become jealous if your friend posts pictures of themselves with another friend.” We also modified Utz et al.'s questions to extend beyond the social media platforms of Snapchat and Facebook by only mentioning “posts.”

Participants were first asked to indicate which social media platforms they were currently using from a prepopulated list

that included Instagram, Twitter (now X), Facebook, Snapchat, TikTok, VSCO, Pinterest, Tumblr, Reddit, YouTube, and Other (participants asked to describe). They were then asked to indicate the likelihood that they would become jealous in nine specific situations (see Table 1) using a 5-point scale that ranged from 1 (*very unlikely*) to 5 (*very likely*). Specifically, they were asked to “Please indicate the likelihood that you would become jealous in specific situations on social media using a 5-point scale.” When answering these questions, participants were asked to reflect on their “experiences prior to the COVID-19 pandemic” (e.g., prior to and including December 2019). Items were summed to create a composite score with higher scores indicating greater social media friendship jealousy.

**Friendship Quality.** Friendship quality (general and best friend) was assessed using subscales of the Intimate Friendship Scale (Sharabany, 1994). Participants were asked eight questions about their general relationships with friends and their friendship groups. They were instructed to answer about their “friends in general” along a 5-point scale (1 = *strongly agree* to 5 = *strongly disagree*). Sample items included: “I feel free to talk to my friends about almost anything.” and “I feel close to my friends.” Items were averaged to create a composite score with lower scores indicating better friendship quality. The Cronbach’s alpha coefficient was excellent,  $\alpha = .87$ . Participants were also asked about the quality of their relationship with their best friend using the same eight questions. Items were averaged to create a composite score with lower scores indicating better friendship quality with a best friend. The Cronbach’s alpha coefficient was excellent,  $\alpha = .89$ .

**HEXACO.** The 60-item HEXACO scale assesses six personality dimensions: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (10 items per dimension; Ashton & Lee, 2007). In the present study, Extraversion ( $\alpha = .81$ ), Agreeableness ( $\alpha = .77$ ), and Conscientiousness ( $\alpha = .79$ ) were used to establish discriminant validity based on previous findings (Gubler et al., 2023; Kokkinos et al., 2020; Richter et al., 2022). Participants responded along a 5-point Likert-type scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*).

**Attention Check.** Five items were created (based on Marjanovic et al., 2014) and randomly introduced in the survey package to assess nonpurposeful responding (e.g., “To answer this question, please choose option number four, ‘Very likely’”). Participants’ data were excluded if more than one was answered incorrectly ( $n = 61$  excluded).

## Results

**Psychometric Properties.** Internal reliability was first assessed by calculating the item-total correlations (Table 1,  $r = .450$  to  $r = .777$ ). All correlations exceeded the recommended  $r = .300$  (Tabachnick & Fidell, 1996), thus a maximum likelihood exploratory factor analysis (EFA) was conducted to examine the number of factors in our measure. Results of the EFA indicated that a one-factor solution accounted for 62.70% of the variance in responses. All items had a factor loading greater than .65 (see Table 1).

A confirmatory factor analysis (CFA) was also conducted to verify the one-factor solution and identify areas for improvement of the model. Model fit was assessed using the chi-square test, the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA). A nonsignificant chi-square, CFI and TLI values of greater than .95, and RMSEA values less than .08 indicated adequate model fit (Browne & Cudeck, 1992; Hu & Bentler, 1999). The one-factor model had poor fit to the data,  $\chi^2(27) = 168.890$ ,  $p < .001$ ; RMSEA = .103, 90% CI [.089, .119]; CFI = .911; TLI = .881; SRMR = .055. To improve model fit, we examined the modifications indices and standardized residuals to identify areas of misfit. Several modification indices indicated that correlations between item 8 and 6 other items would result in significant improvement in model fit. In addition, seven of eight residual covariances between item 8 and other items exceeded 11.961 (12.5751–116.0421). Removal of item 8 resulted in an improvement in model fit, Satorra-Bentler scaled chi-square difference test  $\Delta\chi^2(7) = 112.360$ ,  $p < .001$ , and resulted in a model that had acceptable fit to the data,  $\chi^2(20) = 71.671$ ,  $p < .001$ ; RMSEA = .073, 90% CI [.055, .091]; CFI = .960; TLI = .943; SRMR = .036. In this model, 4 of 7 standardized residuals for item 9 exceeded 11.961 (13.5711–17.3771) and several modification indices indicated that the model would be improved by correlations between item 9 and 4 other items. The revised 7-item scale, with item 9 removed, was an improvement over the 8-item scale,  $\Delta\chi^2(6) = 42.178$ ,  $p < .001$ , and had acceptable fit to the data,  $\chi^2(14) = 35.965$ ,  $p = .001$ ; RMSEA = .057, 90% CI [.034, .080]; CFI = .979; TLI = .968; SRMR = .025. Cronbach’s alpha coefficient was excellent,  $\alpha = .93$ . The mean for the scale was  $M = 11.87$  ( $SD = 6.22$ ; *minimum* = 7 and *maximum* = 31).

**Convergent Validity.** The SMFJS total score was positively correlated with friendship quality,  $r = .261$ ,  $p < .001$  (general),  $r = .302$ ,  $p < .001$  (best friend).

**Discriminant Validity.** The SMFJS total score was unrelated to extraversion ( $r = .009$ ,  $p = .841$ ), had a small negative relation with agreeableness ( $r = -.196$ ,  $p < .001$ ), and a modest negative correlation with conscientiousness ( $r = -.453$ ,  $p < .001$ ).

**Gender and Age Differences.** A two-way analysis of variance (ANOVA) was performed with gender and age (recoded into two categories: younger than 30 and 30 and over), as well as a gender-by-age interaction, with and without friendship quality as covariates on social media friendship jealousy. There were no significant interactions,  $F(1, 484) = 0.672$ ,  $p = .413$ , or main effects of gender,  $F(1, 484) = 2.856$ ,  $p = .092$  (Men  $M = 12.34$ ,  $SD = 6.52$ ; Women  $M = 11.45$ ,  $SD = 5.90$ ) or age,  $F(1, 484) = 1.032$ ,  $p = .310$  (Under 30  $M = 11.61$ ,  $SD = 6.02$ ; Over 30  $M = 12.09$ ,  $SD = 6.39$ ). The pattern of results was similar when controlling for friendship quality.

## Brief Discussion

First, the SMFJS demonstrated excellent psychometric properties. Second, as predicted, social media friendship jealousy was

associated with poorer friendship quality, which is consistent with what has been shown in romantic relationships. For example, Halpern et al. (2017) found that jealousy indirectly predicted poorer romantic relationship quality through social media photo-related conflicts. Delle et al. (2022) found that active use of Twitter and Instagram was negatively associated with relationship satisfaction through romantic relationship stress among adults aged 18–46. Few have studied the impact of jealousy on friendship quality (exception Parker et al., 2016). As expected, the SMFJS was unrelated to extraversion and was weakly related to agreeableness. The modest negative association with conscientiousness is different from previous studies on jealousy. Kokkinos et al. (2020) reported a small negative correlation between conscientiousness with friendship jealousy ( $r = -.15$ ), but Richter et al. (2022) and Gubler et al. (2023) found no relation between romantic jealousy and conscientiousness. Fourth, contrary to initial predictions, gender and age differences were not found. The null age and gender result may reflect the sample characteristics. Participants were recruited from an older and narrower age band as part of a larger study designed to examine how young adults allocated investments between parenting, somatic, and mating effort during the critical ages of 24–35, a time in life when many big decisions are made regarding these types of investments (Volk et al., 2021). As men and women approach age 30, they spend less time monitoring their friendships in general and online. Indeed, the structure and function of friendships change with age (Bhattacharya et al., 2016; Dunbar, 2018; Roy et al., 2022). In particular, intimacy has been shown to decrease from age 19 to age 30, especially for women (Langheit & Poulin, 2022), which may make older women less vulnerable to social media friendship jealousy than younger women (see Study 2).

## Study 2

### Participants

Participants were recruited through Amazon Mechanical Turk (MTurk). After data were screened for eligibility, duplicates, completeness, and attention check completion ( $n = 48$  excluded), data were available on 516 adults (mean age of 37.90 years,  $SD = 12.76$ ; *minimum* = 18; *maximum* = 61). Participants indicated their assigned sex at birth (53.1% female), ethnic/racial background (74.0% White, 8.3% Black, 3.7% East Asian, 2.1% South Asian, 1.9% Latin, 1.2% Southeast Asian, 0.4% Indigenous/Aboriginal/Native, 8.5% other), and level of education (33.9%, median education = “completed undergraduate degree”). To be included in analytic sample, participants had to have answered all seven social media friendship jealousy items and reported using social media. This resulted in an analytic sample of 494.

### Procedure

Participants were invited to participate through a HIT on MTurk. The invitation included a brief description of the

research and eligibility criteria: (1) adult between the ages of 18 and 65, (2) Canadian or United States resident, and (3) lifetime HIT approval rating  $\geq 80$ . After consent was provided, participants were asked to complete several self-report measures that were randomly ordered (30 min to complete). If the entire survey was completed and attention check items answered correctly (4 out of 5), participants were compensated \$5.00CAD. Research ethics board approval was granted by the University of Ottawa. Data for Study 2 are available upon request to the first author.

### Measures

*Social Media Friendship Jealousy.* The SMFJS from Study 1 was used to assess social media friendship jealousy using a 4-point scale<sup>2</sup> ranging from 1 = *very unlikely* to 4 = *very likely*. Items were summed to create a composite score with higher scores indicating greater social media friendship jealousy.

*Social Media Use.* Participants were also asked to indicate which social media platforms they were currently using and how often they used social media on a 5-point scale ranging from 1 = *never* to 5 = *always*.

*Trait Jealousy.* We assessed trait jealousy by asking participants to indicate how jealous they become when someone else does well (i.e., “I feel angry or jealous when someone else does well.”) and generally how jealous they are of others (i.e., “I am jealous of other people.”) using a 4-point scale that ranges from 1 = *not at all* to 4 = *very much*. The items were taken from the Matson Evaluation of Social Skills with Youngsters scale (MESSY; Matson et al., 1983). Items were summed to create a composite score with higher scores indicating greater jealousy. The correlation between the two items was  $r = .732$ ,  $p < .001$ , Spearman-Brown reliability estimate = .85.

*Attention Check.* Five attention check items from Study 1 were included in the survey package. Participants’ data were excluded if one or more items were answered incorrectly ( $n = 48$  excluded).

### Results

*Psychometric Properties.* Internal reliability was assessed by calculating the item-total correlations (Table 1,  $r = .650$  to  $r = .838$ ). All correlations exceeded  $r = .300$  (Tabachnick & Fidell, 1996), thus a maximum likelihood EFA was conducted to examine the number of factors in our measure. Results of the EFA indicated a one-factor solution accounted for 73.30% of the variance in responses. All items had factor loadings greater than .768 (see Table 1). Cronbach’s alpha coefficient was excellent,  $\alpha = .95$ . A CFA was also conducted to verify the one-factor solution. Model fit was assessed using the same criteria as Study 1. The one-factor model had acceptable fit to the data,  $\chi^2(14) = 48.810$ ,  $p < .001$ ; RMSEA = .072, 90% CI [.051, .094]; CFI = .979; TLI = .968; SRMR = .020. The mean for the scale was  $M = 11.89$  ( $SD = 6.10$ ; *minimum* = 7 and *maximum* = 28).

**Convergent Validity.** The SMFJS total score was positively correlated with trait jealousy,  $r = .731$ ,  $p < .001$ , and social media use,  $r = .238$ ,  $p < .001$ .

**Sex and Age Differences.** A two-way ANOVA was performed with sex and age (where age was recoded into two categories: (1) younger than 30 and (2) 30 and over, and with and without frequency of social media use as a covariate, predicting social media friendship jealousy. There was a significant interaction,  $F(1, 485) = 5.786$ ,  $p = .017$ , as well as main effects of both sex,  $F(1, 485) = 14.610$ ,  $p < .001$ , and age,  $F(1, 485) = 14.605$ ,  $p < .001$ . As predicted, women ( $M = 12.73$ ,  $SD = 6.49$ ) scored higher than men ( $M = 11.02$ ,  $SD = 5.53$ ) on the SMFJS,  $d = .28$ . Participants under 30 ( $M = 13.13$ ,  $SD = 6.95$ ) reported more social media friendship jealousy than older participants ( $M = 11.10$ ,  $SD = 5.35$ ),  $d = .34$ . Furthermore, the interaction between sex and age indicated that younger women ( $M = 14.94$ ,  $SD = 7.34$ ) scored higher than younger men ( $M = 11.48$ ,  $SD = 6.17$ ),  $p < .001$ , and older women ( $M = 11.48$ ,  $SD = 5.60$ ) had similar scores to older men ( $M = 10.69$ ,  $SD = 5.02$ ); younger women were also higher than older women,  $p < .001$ . The pattern of results was similar when controlling for the frequency of social media use.

### Brief Discussion

First, the SMFJS demonstrated excellent psychometric properties. Second, as predicted women reported more social media friendship jealousy than men, even when controlling for social media use frequency. This result is consistent with findings by Krems et al. (2022) who argued that sex difference results from variations in the structure and functions of friendships for women and men. For example, women tend to rely more heavily on close friends than men and their friendships tend to be more intimate and based on emotional sharing and talking than men's (e.g., Caldwell & Peplau, 1982; Hall, 2011; Hussong, 2000). Third, as predicted, younger participants reported more jealousy than older participants, even when controlling for social media use. This age difference likely reflects the distinct structure and function of friendships across ages (Bhattacharya et al., 2016; Dunbar, 2018; Roy et al., 2022). Fourth, as predicted, younger women scored the highest on social media friendship jealousy. The different characteristics of young women's friendships (e.g., exclusivity, loyalty, and intimacy; Hall, 2011) might make them more vulnerable for jealousy when the friendship is challenged.

## Study 3

### Participants

Participants were drawn from a longitudinal study [McMaster Teen Study] that began in the spring of 2008 and is still on-going. Participants were initially recruited from 51 randomly selected schools in southern Ontario when they were in Grade 5 (age 10; mean age of 10.91;  $SD = 0.36$ ). To be included in the analytic sample for this study, participants needed to have data

on the SMFJS and internalizing symptoms on at least one time point between Time 13 (age 23), Time 14 (age 24), and Time 15 (age 26) and pass the attention check items. The final analytic sample was comprised of 415 participants (60.5% women; 78.3% White; 3.9% Black; 2.9% South Asian; 2.2% Asian; 1.7% Middle Eastern; 1.7% Aboriginal; 1.7% other [6.7% missing ethnicity]; 65.7% had completed postsecondary education or training as of age 23).

### Procedure

Measures were completed online using Survey Monkey and data were collected in late spring of each year. Consent was provided each year and research ethics board approval was granted by the University of Ottawa. Participants were compensated \$75CAD to complete a comprehensive survey package that took between 35 and 45 min to complete. A \$25CAD bonus was also given if the survey package was completed within two weeks of providing informed consent. Data for Study 3 are available upon request to the first author.

### Measures

**Social Media Friendship Jealousy.** The SMFJS from Studies 1 and 2 was used. Participants indicated their responses to seven items along a 5-point scale ranging from 1 = *very unlikely* to 5 = *very likely*. Cronbach's alpha coefficient was excellent at age 23,  $\alpha = .83$ , age 24,  $\alpha = .82$ , and age 26,  $\alpha = .79$ . At age 26, BeReal, Truth, and Mastodon were added to the "Which social media platforms do you currently use?" prepopulated list.

**Internalizing Symptoms.** The self-report of personality college version of the Behavior Assessment System for Children-Second Edition (BASC-2), (SRP-COL; Reynolds & Kamphaus, 2004) was used to assess internalizing symptoms (depression + anxiety). The Depression subscale included 13 items of which nine items were rated as 2 = *true* or 0 = *false* (e.g., "Nothing is fun anymore") and four items were rated on a 4-point frequency scale of 0 = *never*, 1 = *sometimes*, 2 = *often*, and 3 = *almost always* (e.g., "I feel sad"). The Anxiety subscale included 10 items that were responded to on a 4-point scale from 0 (*never*) to 3 (*almost always*) and four true/false items (2 = *true* and 0 = *false*). Depression and anxiety scores were created by summing respective items, allowing two items to be missing on each scale (using adjustment factors according to the BASC-2 manual). An internalizing composite score was created by summing the depression and anxiety subscales, with higher scores indicating greater internalizing symptoms. Internal consistencies were excellent at every time point: age 23  $\alpha = .94$ , age 24  $\alpha = .94$ , and age 26  $\alpha = .94$ .

**Attention Check.** The same attention check from Studies 1 and 2 was used in Study 3 ( $n = 7$  excluded).

### Analytic Plan

To test the longitudinal association between social media friendship jealousy, we created a random-intercept cross-lagged

panel model (RI-CLPM) with social media friendship jealousy and internalizing symptoms at ages 23, 24, and 26 with gender<sup>3</sup> as a control. The RI-CLPM was performed in Mplus version 8.0 (Muthén & Muthén, 2017), following recommendations by Mulder and Hamaker (2021), with maximum likelihood robust estimation (MLR) with full information maximum likelihood (FIML) for missing data. Model fit was assessed using the same criteria as Studies 1 and 2. We also performed a sensitivity analysis where we removed participants who indicated not using social media at any of the three time points resulting in a subsample of  $n = 392$ .

## Results

**Gender and Time Differences.** Results of independent samples  $t$ -tests indicated that women scored higher than men on social media friendship jealousy at age 23 ( $M_{\text{women}} = 9.55$ ,  $SD = 3.73$ ;  $M_{\text{men}} = 8.57$ ,  $SD = 2.77$ ),  $t(340.968) = 2.845$ ,  $p = .005$ ,  $d = .289$ , age 24 ( $M_{\text{women}} = 9.70$ ,  $SD = 3.66$ ;  $M_{\text{men}} = 8.43$ ,  $SD = 2.41$ ),  $t(353.482) = 3.947$ ,  $p < .001$ ,  $d = .392$ , and age 26 ( $M_{\text{women}} = 9.76$ ,  $SD = 3.43$ ;  $M_{\text{men}} = 8.33$ ,  $SD = 2.50$ ),  $t(329.860) = 4.487$ ,  $p < .001$ ,  $d = .461$ . Paired samples  $t$ -tests indicated that there were no differences between scores at age 23 and age 24,  $t(315) = 0.224$ ,  $p = .823$ , age 24 and age 26,  $t(314) = 0.654$ ,  $p = .513$ , or age 23 and age 26,  $t(302) = 1.392$ ,  $p = .165$ . Social media friendship jealousy at ages 23, 24, and 26 were highly correlated (Table 2).

**Random-Intercept Cross-lagged Panel Model.** The model had excellent fit to the data,  $\chi^2(5) = 6.681$ ,  $p = .246$ , RMSEA = 0.028, 90% CI[0.000, 0.078], CFI = .998, TLI = 0.991, and SRMR = .015. At the between level, social media friendship jealousy was not associated with internalizing symptoms ( $cov = 4.439$ ,  $p = .226$ ,  $r = .203$ ,  $p = .144$ ). Gender was associated with the random intercept of internalizing symptoms ( $b = 7.377$ ,  $p < .001$ ,  $\beta = .348$ ,  $p < .001$ ) and social media friendship jealousy ( $b = 1.176$ ,  $p < .001$ ,  $\beta = .248$ ,  $p < .001$ ), with women higher than men. At the within-level, deviations from one's average level of social media friendship jealousy were positively associated with deviations on internalizing symptoms at age 23 ( $cov = 9.163$ ,  $p = .029$ ,  $r = .440$ ,  $p < .001$ ) and 24 ( $cov = 6.469$ ,  $p < .001$ ,  $r = .551$ ,  $p < .001$ ) but not at age 26 ( $cov = 1.990$ ,  $p = .116$ ,  $r = .146$ ,  $p = .103$ ). See Figure 1. Controlling for average levels and other variables in the model, internalizing symptoms had high residual stability over time (age 23–24  $b = 0.473$ ,  $p < .001$ ,  $\beta = .450$ ,  $p < .001$ ; age 24–26  $b = 0.402$ ,

$p = .006$ ,  $\beta = .438$ ,  $p = .001$ ); higher scores than average at one time point were associated with higher scores than average at the following time point. The residual stability in social media friendship jealousy was not significant (age 23–24  $b = 0.070$ ,  $p = .641$ ,  $\beta = .078$ ,  $p = .637$ ; age 24–26  $b = 0.191$ ,  $p = .277$ ,  $\beta = .195$ ,  $p = .300$ ).

Several cross-lagged paths emerged in the model. Deviations in internalizing symptoms at age 23 predicted deviations in social media friendship jealousy at age 24 ( $b = 0.156$ ,  $p < .001$ ,  $\beta = .573$ ,  $p < .001$ ). This path was not statistically significant from age 24 to age 26 ( $b = 0.029$ ,  $p = .431$ ,  $\beta = .115$ ,  $p = .442$ ). Deviations in social media friendship jealousy also predicted deviations in internalizing symptoms from age 23 to 24 ( $b = 1.111$ ,  $p = .001$ ,  $\beta = .319$ ,  $p = .001$ ) but not from age 24–26 ( $b = 0.702$ ,  $p = .192$ ,  $\beta = .198$ ,  $p = .191$ ).

**Sensitivity Analysis.** Results were replicated when reducing the sample to only those who indicated using social media. The significance of each parameter was identical, and the magnitude of the effects was similar.

## Brief Discussion

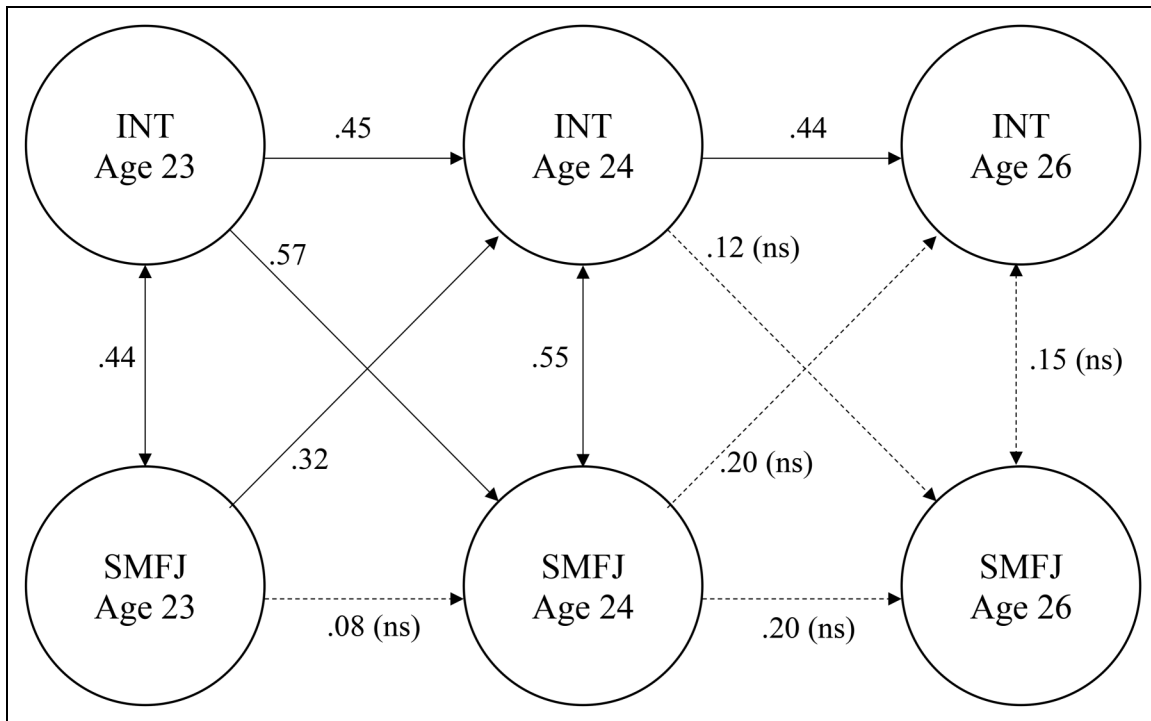
First, the SMFJS demonstrated excellent internal consistency reliability at age 23, age 24, and age 26 as well as high stability across one, two, and three years.<sup>4</sup> Second, as predicted, and consistent with Study 2, women reported more social media friendship jealousy than men at age 23, age 24, and age 26. Third, as predicted, higher than average social media friendship jealousy was associated with higher than average internalizing symptoms at age 23 and 24 and increases in internalizing symptoms from age 23 to age 24. Fourth, higher than average internalizing symptoms at age 23 predicted higher than average social media friendship jealousy the following year. The paths from age 24 to 26 were not statistically significant, but their magnitudes were large based on Orth et al.'s (2022) benchmark values when interpreting the size of cross-lagged effects for RI-CLPM (i.e., .03 = small effect, .07 = medium effect, and .12 = large effect). The nonstatistically significant cross-lagged effects from age 24 to 26 may be related to the extended time between assessment relative to the first time points (two years vs. one year), increased maturity (in Study 2, older adults had lower social media friendship jealousy than younger adults), or it may be due to the fact that by age 26, pandemic restrictions were no longer in place and thus participants spent less time on

**Table 2.** Correlations Study 3.

	SMFJ age 23	SMFJ age 24	SMFJ age 26	Internalizing age 23	Internalizing age 24	Internalizing age 26
SMFJ age 23	–					
SMFJ age 24	.670 <sup>a</sup>	–				
SMFJ age 26	.573 <sup>a</sup>	.658 <sup>a</sup>	–			
Internalizing age 23	.350 <sup>a</sup>	.442 <sup>a</sup>	.257 <sup>a</sup>	–		
Internalizing age 24	.395 <sup>a</sup>	.471 <sup>a</sup>	.285 <sup>a</sup>	.841 <sup>a</sup>	–	
Internalizing age 26	.266 <sup>a</sup>	.380 <sup>a</sup>	.283 <sup>a</sup>	.768 <sup>a</sup>	.833 <sup>a</sup>	–

<sup>a</sup>Correlation is significant at the .01 level (2-tailed).





**Figure 1.** Longitudinal associations between internalizing symptoms and social media friendship jealousy (Study 3).

Note. INT = Internalizing symptoms; SMFJ = Social media friendship jealousy. Standardized estimates are reported. Solid lines represent estimates that are statistically significant at  $p < .05$  and dashed represent estimates that were not statistically significant ( $p > .05$ ). Results from within part of the RI-CLPM are depicted.

social media (at age 23 data were collected during social lockdown and at age 24 some restrictions still applied).

By controlling for trait levels, we were able to examine the unique temporal pathways from social media jealousy to internalizing problems, and vice versa, thus providing a clue into the possible causal directions of effects. Our results suggest a bidirectional relation between social media friendship jealousy and mental health problems whereby anxious and depressed adults may be predisposed to monitor threats to their friendships via social media, which in turn elicits jealousy and negative mental health consequences because of this behavior. Anxious and depressed individuals have been shown to selectively attend to threats in their environment, which often leads to maladaptive coping that includes safety behavior like hyper-vigilant monitoring for threats in the environment (Cisler & Koster, 2010; Richards et al., 2014). From an evolutionary perspective, jealous responses are thought to be adaptive in that they signal potential threats to a valued relationship, which can help with the retention of mates (Buss, 2000, 2013; Buss & Haselton, 2005; Scelza et al., 2020; Symons, 1979). Friendship jealousy may be similarly adaptive, but, as our results suggest, can also be associated with poorer outcomes like increased depression and anxiety.

## General Discussion

Jealous responses have been hypothesized to be adaptive by signaling potential threats to a valued relationship, and in turn,

mobilizing efforts to safeguard the union (Buss, 2000, 2013; Buss & Haselton, 2005; Scelza et al., 2020; Symons, 1979). The bulk of studies on this topic have focused on romantic or sexual relationships (see review by Davis et al., 2016). Recent evidence suggests a similar mechanism occurs in the context of friendships, with third-party threats eliciting jealousy (Krems, Merrie et al., 2022; Krems, Williams et al., 2021). With the increased use of social media, the role of jealousy in this context is being examined in romantic relationships (Demirtaş-Madran, 2018; Marshall et al., 2013; Muise et al., 2009; Muscanell & Guadagno, 2016). We were interested in extending this research to friendships.

Toward this aim, we developed a 7-item measure to assess social media friendship jealousy that proved to be psychometrically sound across three independent samples of adults. Using this measure, we found that women were more likely to report social media friendship jealousy than men (Studies 2 and 3), consistent with findings by Krems et al. (2022), and that younger adults reported more jealousy than older adults (Study 2). An interaction was also found such that younger women reported higher levels of social media jealousy than men, and older adults (Study 2). No sex or age differences were found in Study 1, but this may reflect the fact that our age groups for this study was restricted to individuals aged 24–35 and perhaps the effects were driven by those in early adulthood. We also found that social media friendship jealousy was associated with poorer friendship quality (Study 1; see Parker et al., 2016), and higher trait jealousy and social media

use (Study 2; see Muise et al., 2009). These associations provided evidence of convergent validity.

Discriminant validity was established with the HEXACO model of personality. Social media friendship jealousy was unrelated to extraversion and weakly associated with agreeableness consistent with previous research on friendship jealousy (Kokkinos et al., 2020) and romantic jealousy (Gubler et al., 2023; Richter et al., 2022). Contrary to predictions, social media friendship jealousy had a modest negative association with conscientiousness. Unlike romantic relationships that necessarily feature a regular degree of intimacy, it may be that online platonic friendships require more attention and focus (e.g., regular and timely viewing, liking, and upvoting friends' content). Tong et al. (2008) found that individuals who had too many online friends were deemed as less desirable as friends, presumably because they lacked the capacity for conscientious reciprocation of friends' online content. Thus, low conscientiousness might equate to less reciprocation online, which in turn, generates increased feelings of jealousy. This would help to make sense of some of the discrepant findings in previous research (e.g., Gubler et al., 2023; Kokkinos et al., 2020). Social media friendship jealousy is also technologically driven via applications, and previous work has shown that conscientiousness negatively predicts social media addiction (Dailey et al., 2020). The equivocal findings in previous work might therefore be attributable to the medium through which jealousy is primarily being elicited. Stated differently, it is possible that the negative link between conscientiousness and social media friendship jealousy might be moderated by the frequency of social media use; problematic social media use may interact with conscientiousness to negatively predict social media friendship jealousy. It would be prudent for future researchers to examine if this is indeed the case.

Finally, social media friendship jealousy was associated with increased internalizing symptoms which also predicted increased social media friendship jealousy, accounting for gender and trait levels of social media friendship jealousy and internalizing problems (Study 3). Studies examining social media jealousy in the context of romantic relationships have found links with problematic behavior like aggression, conflict, and cost-inflicting mate-guarding behavior (Brem et al., 2015; Daspe et al., 2018; Demirtaş-Madran, 2018; Muscanell & Guadagno, 2016; Vogels & Anderson, 2020). Links to poorer mental health outcomes have not been examined in detail, a curious paucity given that jealousy has been described as an unconformable blend of anger and internalizing symptoms (Cano & O'Leary, 1997; Krems et al., 2021; Sharpsteen, 1991). Moreover, studies examining social media jealousy in romantic relationships have not examined temporal priority, thus it remains unknown if jealousy is in fact the antecedent. Only longitudinal studies can untangle temporal precedence and these studies need to include enough time points to capture the dynamic interplay that is typically involved with human behavior and cognition (Brittain & Vaillancourt, 2023).

The high stability of social media jealousy across one ( $r = .670$ ), two ( $r = .658$ ), and three ( $r = .573$ ) years of development

(Study 3) suggests that this type of jealousy may be a trait that could extend to other interpersonal relationships like friendships (Study 2). It could also be that social media is used with nefarious intent in friendships (and in romantic relationships), which may explain its link to poorer friendship quality (Study 2). That is, it is conceivable that for some, social media posts are intended to cause harm. Not tagging a friend on a post or not including them on a private story or posting photos with others may be used deliberately to cause jealousy and sow insecurity (a type of friendship-guarding behavior). The purposeful manipulation of social media content may also be an extension of indirect aggression. Indirect aggression is a type of circuitous behavior in which the perpetrator attempts to obscure their true harmful intent (Vaillancourt, 2013). People who engage in this type of behavior tend to be more competitive and tend to make a lot of social comparisons (Arnocky et al., 2012; Humphrey & Vaillancourt, 2021), individual characteristics that likely strain friendships, thus leading to poorer friendship quality (Study 1). It is also possible that the behavior is not intended to cause harm, but the perceiver makes misattributions based on their heightened internalizing symptoms (Study 3) or the poorer qualities of their friendships (Study 1). Research is needed to understand the temporal priority, as well as the intent of the behavior and how it is perceived and received (i.e., poorer mental health). Within this line of research, more attention to friendship poaching and guarding is needed. We suspect similarities will be found to mate poaching and retention behavior in romantic relationships, whereby positive behavior (benefit provision acts) and negative behavior (cost-inflicting acts) are used within the same relationship (i.e., a mixture of nice and mean; e.g., Davis et al., 2018).

There may also be predictable individual differences in both the form and frequency of social media friendship jealousy and "friendship guarding." In the mating literature, those who view their romantic partners as less replaceable, or who view themselves as more replaceable, engage in more benefit-provisioning and cost-inflicting mate retention (Sela et al., 2017). Perhaps a similar pattern would emerge within friendships, whereby those who view themselves as the more replaceable friend would experience more social media friendship jealousy and engage in more digital friendship-guarding behavior. Social media friendship jealousy might also be contextually sensitive to the characteristics of the poacher or "rival friend." In romantic dyads, rivals who are particularly attractive elicit more mate retention effort (Nascimento & Little, 2020). This makes sense given that jealousy and mate retention are costly and should not be enacted indiscriminately. It is possible, then, that a friend posting social media content with an attractive or socially desirable rival would similarly elicit more friendship jealousy than if the rival was less threatening.

The present research has many strengths such as the establishment of reliability and validity across three independent large-sized community samples that included roughly the same number of men and women (Studies 1 and 2) and the longitudinal assessment of jealousy and mental health controlling trait levels of social media friendship jealousy and internalizing

problems (Study 3). Despite these strengths, our studies also had some limitations. First, all three studies occurred during the pandemic, a time when social media use increased worldwide (Dixon, 2022; GlobalWebIndex, 2020; Tregoning, 2020), although for Study 1, participants were asked to consider their experiences in the previous year. Increased social media usage throughout the pandemic, might have heightened jealousy due to more frequent checking, especially during periods of lockdown and social isolation. Two, in Studies 1 and 3, participants were from a narrow age band which limits generalizability. The results from these studies may be stronger or weaker at different developmental stages. Three, in Study 3, we could not examine gender as a moderator because our attrition pattern was not random and this type of missingness can bias parameter estimates (Brittain & Vaillancourt, 2023). It is likely that the cross-lagged association would be stronger in women than in men because women tend to show more friendship jealousy (Krems et al., 2022) and more symptoms of depression and anxiety (American Psychiatric Association, 2013; Essau et al., 2010; McLean et al., 2011). Four, our samples were from Western, educated, industrialized, rich, democratic (WEIRD) countries (Henrich et al., 2010), and thus might not generalize to individuals who come from countries that do not share these demographic characteristics. Five, a coding error resulted in the scale being 4 points rather than 5 points for Study 2. This scaling difference has been shown to impact mean comparisons, but not the structure of instruments (i.e., reliability and validity; see Chyung et al., 2017 for review). Nevertheless, a formal empirical examination of this difference should be undertaken in which participants are randomized into the 4-point versus 5-point scale version. Six, only self-reported measures were used which are sensitive to social desirability effects. Seven, although Study 3 was longitudinal, causal inferences cannot be made. Eight, Studies 1 and 2 relied on samples from TurkPrime and MTurk which have shown to suffer from various issues including nonhuman respondents and dubious data quality (Ahler et al., 2019). We reduced these potential problems by following many of the recommendations outlined by Chmielewski and Kucker (2020). We only included participants with a high lifetime HIT approval rating, we included attention checks, and we carefully screened the data.

Future studies should also be conducted to examine the mechanisms linking feelings of jealousy in friendships with depression and anxiety. This should include an examination of selective attention to friendship threats, rumination, safety behavior (e.g., scanning and checking), and common thought distortions (e.g., mind-reading and catastrophizing). For example, the omission of tagging a friend on a social media post could be nefarious and intended to elicit jealousy or it could just be an oversight. Along this line, it would also be interesting to examine how individuals' attributions of the actions in the social media jealousy scale (malicious or not) are related to their own social media friendship jealousy, as well as other factors that predict different attributions and behavior such as rejection sensitivity, fear of missing out, social

comparison orientation, narcissism, hostility, or the use of indirect aggression.

In conclusion, we developed a new measure to assess friendship jealousy in the context of social media and found support for it being psychometrically sound across three independent studies drawn from the community. Bidirectional relations between social media friendship jealousy and mental health problems suggest depressed and anxious adults may be predisposed to monitor threats to their friendships, and consequently, experience more jealousy, and in turn, more symptoms of depression and anxiety. Our results highlight that social media interactions can undercut friendships and challenge mental health due to jealousy.

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### ORCID iDs

Tracy Vaillancourt  <https://orcid.org/0000-0002-9058-7276>

Heather Brittain  <https://orcid.org/0000-0001-6070-3689>

Adam C. Davis  <https://orcid.org/0000-0003-1200-1230>

Steven Arnocky  <https://orcid.org/0000-0003-3812-1871>

### Notes

- 1 Researchers have argued that the experience of envy and jealousy do not differ from one another per se, but rather "it is the situations that evoke jealousy or envy that differentiate the two" (Humphrey & Vaillancourt, 2021, p. 241; see also Bers & Rodin, 1984 and Salovey & Rodin, 1986, 1991).
- 2 A coding error resulted in the scale for Study 2 being 4 points rather than 5 points (Studies 1 and 3). Although this difference impacts mean comparisons, it typically does not impact the structure of instruments (i.e., reliability and validity; see Leung, 2011), which is what was being assessed in Studies 1 and 2.
- 3 We could not examine gender as a moderator because our attrition pattern was not random. Although our gender distribution was equal at the beginning of the longitudinal study (age 10), by age 23–26, fewer men than women participated ( $\chi^2(1) = 19.000, p < .001$ ). This type of missingness can bias parameter estimates; thus, we used gender as a control (Brittain & Vaillancourt, 2023).

4 Although the residual stability in social media friendship jealousy was not significant, this may reflect the variance being accounted for at the between level. The significant residual stability for internalizing problems may be due to a significant slope that is not accounted but is “carried over” to the paths for internalizing symptoms. Specifically, the mean internalizing at age 24 ( $M = 21.71$ ,  $SD = 13.65$ ) was higher than age 23 ( $M = 20.55$ ,  $SD = 13.35$ ),  $t(325) = 2.251$ ,  $p = .025$ , and age 26 ( $M = 20.87$ ,  $SD = 13.10$ ),  $t(316) = 3.250$ ,  $p = .001$ .

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