

Contents lists available at [ScienceDirect](#)

Journal of Adolescence

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

Jealousy in adolescents' daily lives: How does it relate to interpersonal context and well-being?



Hannah K. Lennarz ^{a,*}, Anna Lichtwarck-Aschoff ^a, Catrin Finkenauer ^{b,c},
Isabela Granic ^a

^a Radboud University, Behavioural Science Institute, Montessorilaan 3, 6525 HR, Nijmegen, The Netherlands

^b Youth Studies, Interdisciplinary Center, Utrecht University, PO Box 80140, 3508 TC, Utrecht, The Netherlands

^c Biological Psychology, Faculty of Behavioural and Movement Sciences, Free University Amsterdam, Van der Boerhorststraat 1, 1081 BT, Amsterdam, The Netherlands

ARTICLE INFO

Article history:

Received 9 February 2016

Received in revised form 1 September 2016

Accepted 19 September 2016

Keywords:

Jealousy

Adolescence

Experience sampling method

Social comparison

Family and peer relationships

Online relationships

ABSTRACT

Past studies have shown that jealousy peaks in adolescence. However, little is known about how and when adolescents experience jealousy in their daily lives. The current study aimed to examine the relation between state jealousy, the more general propensity to feel jealous, the interpersonal contexts in which jealousy arises, and different forms of social comparison. The impact of jealousy on perceptions of well-being was also explored. We used an experience sampling method during two weekends with 68 adolescents ($M_{\text{age}} = 13.94$; 64.70% girls). Jealousy was common: On average, 90% of our sample experienced jealousy in 20% of the assessments. Adolescents reported more jealousy with peers than with family. Additionally, they experienced more jealousy when in online contexts than when in face-to-face peer contexts. The normative nature of jealousy, its developmental function and relation with well-being, and implications for understanding jealousy triggered in (highly social) online contexts are discussed.

© 2016 The Foundation for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

Jealousy is a powerful emotion defined as a negative feeling that arises when an individual perceives a threat from someone else to a valued relationship (Salovey & Rodin, 1988). It can be seen as an adaptive and useful emotion because it can help to maintain relationships (Buss, 1995), but it may also lead to problematic behaviors such as aggression or rumination that contribute to psychopathology (Culotta & Goldstein, 2008; Lavalley & Parker, 2009; Parker, Kruse, & Aikins, 2010; Parker, Low, Walker, & Gamm, 2005). Often, jealousy is associated with romantic relationships; however, it can arise in any close relationship (e.g., friends, family; DeSteno, Valdesolo, & Bartlett, 2006).

During adolescence, major developments take place in the interpersonal domain that may be particularly relevant to the study of jealousy. In general, peers become more important than parents (Collins & Laursen, 2004a, 2004b) and romantic relationships start to develop (Collins, Welsh, & Furman, 2009), which make adolescents especially vulnerable to experiencing jealousy. Additionally, adolescents become vigilant to their peers' evaluations (Somerville, 2013; Steinberg, 2011) and jealousy seems to increase in adolescence as compared to childhood (Pines & Aronson, 1983). Given these interpersonal

* Corresponding author.

E-mail addresses: h.lennarz@pwo.ru.nl (H.K. Lennarz), a.lichtwarck-aschoff@pwo.ru.nl (A. Lichtwarck-Aschoff), c.finkenauer@vu.nl (C. Finkenauer), i.granic@pwo.ru.nl (I. Granic).

<http://dx.doi.org/10.1016/j.adolescence.2016.09.008>

0140-1971/© 2016 The Foundation for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

developmental changes, studies on jealousy in adolescence are surprisingly scarce (see Parker and colleagues' work for exception; Lavalley & Parker, 2009; Parker et al., 2005, 2010). We know almost nothing about the everyday experiences of jealousy in adolescence: How prevalent, frequent, and intense is jealousy in adolescents' daily lives, in which contexts do they most frequently feel jealous, and how do individual differences shape adolescents' experiences of jealousy? The present study aimed to address these questions.

Past research using questionnaire methods has revealed individual differences in jealousy and showed that some individuals are generally more prone to experience jealousy than others (Bringle, Renner, Terry, & Davis, 1983; Parker et al., 2010). However, like other emotions (e.g., guilt, happiness, sadness), jealousy is likely to fluctuate over time and across different interpersonal contexts (Baumeister, Reis, & Delespaul, 1995; Csikszentmihalyi & Hunter, 2003; Larson, 1990; Schneiders et al., 2007; van Roekel et al., 2014). Although we do expect that propensity to feel jealous and state levels of jealousy are related, they are clearly not the same. For instance, an adolescent who describes herself as generally not a jealous person may still respond with extreme jealousy under certain rare circumstances. The current study was designed to investigate the conditions that trigger instances of state jealousy in adolescents' everyday lives. We paid special attention to contexts in which jealousy emerged (family, peers, alone, and online) and social comparison (evaluation in comparison to others and general tendency to compare oneself).

1. Contexts of jealousy

Jealousy is characterized as a basic social emotion (DeSteno et al., 2006) and is likely to fluctuate depending on the nature of the interpersonal context. This might be especially salient in adolescence as developmental changes trigger reorganizations in adolescents' interpersonal relationships (Arnett, 1999). Time spent with family decreases (Larson & Richards, 1991) and negative emotionality and conflict with parents increases (Laursen, 1993). However, most family relationships remain intimate and close and provide an important source of support during early and middle adolescence (Smetana, Campione-Barr, & Metzger, 2006). Despite close emotional bonds (or perhaps because of them), family relationships remain a context in which feelings of jealousy can arise (especially among siblings; Volling, Kennedy, & Jackey, 2010).

Although parents remain important in the lives of adolescents, the relative importance and influence of peers increase (Collins & Laursen, 2004a, 2004b). In fact, a crucial developmental task during adolescence is to find a peer group among whom adolescents feel comfortable and supported; positive peer relationships are critical for adolescents' well-being (e.g., B. B. Brown & Larson, 2009). These peer relationships become more complex because adolescents need to restructure their peer networks due to normative changes such as the transition to high school (B. B. Brown, 1990). Adolescents are confronted with navigating a new peer environment, finding new friends and defining their position in the new peer group, and, at the same time, adolescents may want to maintain their established friendships. This reorganization of their friendship and peer networks can give rise to situations that elicit jealousy because social exclusion and bullying increase (Goldbaum, Craig, Pepler, & Connolly, 2007). Another important facet of these emerging peer interactions are romantic relationships (Connolly, Furman, & Konarski, 2000). Romantic relationships are a normative part of adolescent development and become common during middle adolescence (Collins et al., 2009). They can be a source of jealousy, either because one's romantic partner develops interest for someone else or because one feels neglected due to a friend spending more time with his/her romantic partner (Connolly & McIsaac, 2011). Therefore, we expected that adolescents feel most jealous when they are with peers compared to with family or alone.

Finally, the context in which these relationships are experienced seems important to consider. Interpersonal contact is not limited to face-to-face interactions but also can happen in a virtual environment. Online spaces have become an important context in which adolescents socialize with peers (Lenhart, Ling, Campbell, & Purcell, 2010). These contacts can range from chatting and playing with peers and friends they already know offline to meeting new friends in these online spaces. Jealousy has rarely been studied in these online contexts, but one study investigating the relation between jealousy and Facebook use in young adults showed that increased use of Facebook was associated with more jealousy in romantic relationships (Muise, Christofides, & Desmarais, 2009).

Online contexts such as YouTube, Facebook, and Twitter may be especially likely to elicit jealousy because they provide a ubiquitous lens through which young people can and do compare themselves socially to their peers (Haferkamp & Krämer, 2011). These online contexts are particularly compelling contexts for jealousy to emerge (Vogel, Rose, Roberts, & Eckles, 2014), because people tend to post pictures, videos, and updates of their "ideal selves" or the best parts of their lives, omitting a great deal of the boring, mundane or negative features of these same lives (Ellison, Heino, & Gibbs, 2006; Turkle, 2011). Social media sites are also continually accessible, providing ongoing opportunities for comparisons to same-aged peers. Unlike generations before that did not have smartphones and 24-h access to the internet, the current generation of adolescents, many of whom grow up sleeping with their phones (Hysing et al., 2015), have almost non-stop opportunities for social comparisons. Thus, we hypothesized that adolescents feel most jealousy when in online contexts.

2. Quality of social comparison

Peer contexts are hypothesized to elicit higher intensity and more frequent occurrences of jealousy than when adolescents are alone or with their family. However, not all peer relationships are equal in quality. Given that jealousy arises when one perceives a threat to a valued relationship (Salovey & Rodin, 1988), it is likely that jealousy is triggered towards someone who

is perceived as superior. That is, “Jane” might feel jealous because her best friend is spending all her time with a new popular girl who seems to be so much more fun to be with than Jane herself. Hence, Jane’s perceptions of the social context – her perceived role in the social hierarchy – may be critical for understanding the conditions in which jealousy is most likely felt.

Social comparison is defined by comparing one’s own achievements, competencies, and appearance to that of others (Festinger, 1954; Gibbons & Buunk, 1999). All individuals have the tendency to compare themselves to others and social comparison can serve different goals, such as self-evaluation or self-enhancement (Suls, Martin, & Wheeler, 2002). Likewise, social comparison can provide security and increase self-esteem if individuals feel a strong sense of belongingness in their peer group, or alternatively can be a source of insecurity and decreased self-esteem if individuals feel they do not belong to their peer group (Suls et al., 2002; Wood, 1989). Compared to children, adolescents are generally more insecure and have lower self-esteem (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Consequently, they have a higher need to compare themselves to others than children do (Eccles, 1999). Additionally, they become increasingly aware and attend vigilantly to their peers’ evaluations (Somerville, 2013; Steinberg, 2011). Comparisons enable adolescents to adjust and adapt their behavior if necessary to fit better in the peer group, but at the same time these comparisons make adolescents vulnerable to jealous feelings that can be triggered by these social comparisons.

2.1. Evaluation in comparison to others

Several types of social comparisons have been identified: (a) upward comparison (comparing oneself to someone who is superior), (b) horizontal comparison (comparing oneself to someone who is equal), and (c) downward comparison (comparing oneself to someone who is inferior; Festinger, 1954). Previous studies have shown that well-being decreases after upward comparison (Jordan et al., 2011) whereas it increases after downward comparison (Moskowitz, 2005a; Wheeler & Miyake, 1992). Hence, when adolescents are surrounded by people they perceive as better off than themselves (e.g., a popular peer; upward comparison), they are more likely to be jealous than when they perceive the people they are with as worse off than themselves (e.g., a bully victim; downward comparison).

2.2. Social comparison orientation

Although all individuals at some time or another compare themselves with others (Festinger, 1954), some individuals have a stronger tendency to do so. This heightened *tendency* to compare is related to insecurity (Gibbons & Buunk, 1999) and may make already insecure adolescents more prone to experiencing jealousy on a day-to-day basis. In addition to the direct relation between state jealousy and social comparison orientation, it might also be the case that individuals who are high versus low in their social comparison orientation experience different amounts of state jealousy depending on their interpersonal context or their self-evaluation in comparison to the other person.

3. Jealousy and well-being

We argue that jealousy is a normative emotion during adolescence, as well as across the lifespan. However it might be that when feeling too much jealousy, a sense of well-being is compromised. Previous studies have indeed shown that higher levels of jealousy was related to more aggression and peer-related problems (Parker et al., 2005) and to greater emotional maladjustment among adolescents (Lavalley & Parker, 2009). The current study examined whether higher levels of state jealousy were associated with lower emotional well-being, specifically increased depressive symptoms and anxiety.

4. Design and hypotheses

Previous studies have focused on trait jealousy in adolescents (Lavalley & Parker, 2009; Parker et al., 2005, 2010), but these studies cannot capture how much and in which contexts adolescents experience jealousy in everyday life. As emotions fluctuate across contexts (Baumeister et al., 1995; Csikszentmihalyi & Hunter, 2003; van Roekel et al., 2014) and as jealousy is likely to be triggered by different contexts, the current study used the experience sampling method (ESM; Csikszentmihalyi & Larson, 1987; Hektner, Schmidt, & Csikszentmihalyi, 2007) to assess adolescents’ state jealousy and its relation to interpersonal context. Advantages of ESM are reduced recall bias (Palmier-Claus et al., 2011), because adolescents provide answers close to their actual experiences, and high ecological validity, because adolescents fill out the questionnaire when they are in the situation (or shortly thereafter). Thus, this method enables researchers to identify unique contributions of contextual variables to the experience of jealousy.

Four research questions were addressed: (1) How *prevalent, frequent, and intense* is jealousy in adolescents’ daily lives? (2) In which contexts do adolescents most often feel jealous? (3) How do individual differences shape adolescents’ everyday experiences of jealousy? (4) How are jealousy and well-being related in healthy adolescents?

Regarding the first research question, we hypothesized that most adolescents would feel at least some degree of jealousy during our sampling period, based on research showing that jealousy peaks during adolescence (Pines & Aronson, 1983). Regarding the second research question, we expected that adolescents would be most jealous when with peers, followed by situations when they were with family and least jealous when they were alone because then adolescents are not confronted with interpersonal demands. However, it is clear that adolescents do not feel alone when or if they are interacting online.

Thus, we expected online contexts to elicit more jealousy than face-to-face peer contexts because of the ubiquitous and frequent opportunities these online context offer for social comparisons (Haferkamp & Krämer, 2011; Vogel et al., 2014). Further, based on research on well-being (e.g., Wheeler & Miyake, 1992), we hypothesized that when adolescents compare themselves to people they deem better than themselves (upward comparison), they would feel more jealousy than when they compared themselves with those they judged to be of lesser value (downward comparison).

Regarding the third research question, we hypothesized that the propensity to feel jealousy, social comparison orientation, and age would account for jealousy experiences: Adolescents who have a higher propensity to jealousy (i.e., feel more jealous than other adolescents on average) and adolescents who tend to compare themselves to others more often were expected to feel more jealous in daily life. Regarding age, we hypothesized that older adolescents would experience less jealousy than younger adolescents because of their increasingly sophisticated cognitive abilities (i.e., abstract reasoning, rationalizing behavior, setting and achieving goals; Steinberg, 2008) which may contribute to contextualizing social relationships and the feelings they evoke. Further, older adolescents have better developed emotion regulation skills than younger adolescents which may enable them to put their feelings into perspective and down-regulate jealousy in a more efficient way (Ahmed, Bittencourt-Hewitt, & Sebastian, 2015).

Additionally, we hypothesized that the propensity to feel jealousy, social comparison orientation, and age would moderate the relations between state jealousy and the nature of the interpersonal context. We expected that adolescents high in their propensity to feel jealousy would show stronger relations between upward comparison and jealousy than those low in propensity to jealousy. Also, we expected that adolescents high in social comparison orientation would be especially vulnerable to experiencing state jealousy in the peer context. Moreover, they might suffer more from the effects of upward comparison and hence react with higher levels of state jealousy. Finally, there is some evidence that older adolescents often have higher self-esteem (Erol & Orth, 2011), and they therefore may be less dependent on the evaluations of others. Thus, we expected the relations of upward comparison and interpersonal context with jealousy to be less strong for older adolescents than for younger adolescents. Our hypotheses regarding the fourth research question were based on research investigating trait jealousy and well-being in adolescents (Lavalley & Parker, 2009; Parker et al., 2005). When adolescents experienced more state jealousy we expected them to experience lower well-being (i.e., elevated depressive symptoms and anxiety).

5. Method

5.1. Participants

One hundred and five adolescents from three secondary schools in the Netherlands were invited to participate in the study. Ninety-eight adolescents (93.3%) agreed to participate and did not receive an objection from their parents (passive consent). Eleven participants did not participate in the ESM, because either they were sick at the time the study took place or they withdrew their willingness to participate, resulting in a total of 87 participants. Two participants did not provide their age but were included in the analyses. Most of the participants were born in the Netherlands (79 participants), three participants were born in Turkey, one participant was born in Suriname, and four participants were born in other unspecified countries. In the Netherlands, the school system streams adolescents based on their academic achievement. Our sample included pupils of the high or middle educational level in high school. To ensure reliability of the data we included only adolescents who filled out at least one third of all daily assessments ($N = 82$; Delespaul, 1995) and the baseline questionnaire ($N = 72$). The final sample consisted of 68 adolescents ($M_{age} = 13.77$, $SD_{age} = 0.95$, 64.70% girls). Participants who were excluded did not differ from participants who were included in terms of age $t(83) = 0.30$, $p = 0.77$ or gender $\chi^2(1) = 3.17$, $p = 0.09$. Adolescents participated voluntarily and received a voucher of 20€ for their participation. All procedures were approved by the Ethical Committee of the Faculty of Social Sciences (ECG2012-2606-042).

5.2. Procedure and measures

5.2.1. Baseline assessment

Two to eight weeks before the start of the ESM assessments, adolescents filled out a baseline questionnaire on a computer at home that assessed demographics and the following constructs:

5.2.1.1. Propensity to jealousy. To assess propensity to jealousy, we asked participants to rate the extent to which they experienced jealousy in the previous two weeks on a 7-point Likert scale that ranged from (1) *not at all* to (7) *very much*.

5.2.1.2. Social comparison orientation. To assess adolescents' tendency to compare themselves with others, we used the Scale for Social Comparison Orientation (Gibbons & Buunk, 1999). Participants answered 11 questions (e.g., "I am always keen to know what others would do in a similar situation") on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability of this questionnaire was good, $\alpha = 0.75$.

5.2.1.3. Depressive symptoms. To assess adolescents' depressive symptoms, we used the Children's Depression Inventory (CDI; Kovacs, 1985). The CDI is a self-report questionnaire that assesses cognitive, physical, and affective symptoms of depression

and consists of 27 items. In this study only 26 items were administered because the item about suicidal thoughts was omitted due to ethical concerns. Each item offers three statements and adolescents had to indicate which statement describes their feelings best (e.g., I am sad once in a while, I am sad many times, I am sad all the time). Mean scores were computed for each participant and a higher score indicated more depressive symptoms. Reliability of the questionnaire was good, $\alpha = 0.77$.

5.2.1.4. Anxiety. To assess anxiety symptoms, we used the brief version of the Screen for Child Anxiety Related Disorders (SCARED). The brief SCARED has similar psychometric properties as the full SCARED version (Birmaher et al., 1999) but reduces the burden for the participants because it consists of only five items. Participants had to indicate whether a specific phrase (e.g., "I get really frightened for no reason at all") was true for them during the last three months on a scale from (0) "Not True or Hardly Ever True" to (2) "Very True or Often True". Sum scores were computed for each participant and a higher score indicated more anxiety symptoms. Reliability of the questionnaire was not satisfactory, $\alpha = 0.41$.

5.2.2. Experience sampling method

This part took place for each participant during two weekends that were approximately six weeks apart. Smartphones were programmed to elicit four buzzing signals on Friday between 4.30pm and 10.30pm, and nine buzzing signals on both Saturday and Sunday, between 9.00am and 10.30pm. During each weekend, participants completed 22 assessments, thus 44 assessments in total. Completing the questionnaire took approximately 6 min and the signals occurred randomly within 90-min intervals. On the day of the start of the ESM assessments, participants received smartphones and instructions on how to use the smartphones in pairs. The instructions included stopping their current activity immediately after they heard a buzzing signal, explanations of the items, and what actions to take if any problems occurred during the sampling period. Additionally, adolescents indicated at what times they would not be able to answer the smartphone because of extracurricular activities (e.g., sports trainings, music lessons). The following domains relevant to the current study were assessed at each signal:

5.2.2.1. State jealousy. At each assessment, adolescents were asked to indicate how jealous they felt just prior to the buzzing signal, using a 7-point Likert scale that ranged from (1) *not at all* to (7) *very much*.

5.2.2.2. Interpersonal context. At each assessment, adolescents indicated whether they were alone or in someone else's company. If they were alone, they indicated whether they were really alone or whether they had online contact with others. Online contact with others counted as peer contact. If they were with someone, they indicated with whom they were (i.e., family, friends, boyfriend/girlfriend, classmates, or teammates). Because base rates needed to be high enough in order to make comparisons, we recoded interpersonal context into three categories, namely alone, family, and peers (i.e., friends, boyfriend/girlfriend, classmates or teammates, online contexts) for the data analyses. The peer category was further divided into face-to-face versus online contexts.

5.2.2.3. Evaluation in comparison to others. When adolescents were in the company of others, we asked them how they felt in comparison to these others. They indicated the extent to which they felt (−3) *worse off* (upward comparison) to (+3) *better off* (downward comparison) on a 7-point Likert scale.

6. Data analysis

6.1. Descriptive data

Descriptive analyses (Pearson correlations and frequency analyses) were run to establish the frequency and intensity of jealousy. Assessments in which adolescents rated jealousy with a 2 or higher on the Likert scale were counted as 'jealousy assessments' because these assessments were characterized by some level of jealousy. Further, we investigated how jealousy was distributed across participants and summed all assessments in which participants scored at least a 2 on the jealousy scale. We also calculated the percentage of assessments that were characterized by some level of jealousy (at least a 2) per individual.

6.2. Regression analyses

Multilevel regression models were used to examine the relations between intensity of state jealousy and state level variations in interpersonal contexts and evaluations in comparison to others, using Mplus software (Muthén & Muthén, 1998–2010). Multilevel models were used because repeated state assessments (level 1) were nested within participants (level 2). To investigate the influence of interpersonal context on state jealousy, two dummy variables were created from the interpersonal context adolescents reported: with peers or alone. Family was used as the reference category in all models because it was the most frequently reported interpersonal context. To investigate further differences in peer context, one dichotomous variable was created: face-to-face context (0) vs. online contexts (1). Similarly, we used multilevel regression analyses to investigate the relation between state jealousy and individual differences (i.e., propensity to jealousy, social comparison orientation, and age). To examine whether individual differences moderated the relation between state jealousy

and state variations in interpersonal context and evaluations in comparison to others, cross-level interactions were introduced to the models. Cross-level interactions show whether the strength of relations between level-1 variables (i.e., interpersonal context and state jealousy) varies as a function of level-2 variables (i.e., propensity to jealousy social comparison orientation or age; Aguinis, Gottfredson, & Culpepper, 2013).

To examine the relation between state jealousy and well-being state jealousy was aggregated to its person-level means. This variable was then correlated with scores on depressive symptoms and anxiety.

7. Results

7.1. Descriptive statistics

Descriptive statistics and correlations between all variables are presented in Table 1. All level-1 variables were aggregated within persons. Mean levels of propensity to jealousy and state jealousy were relatively low. Overall, adolescents' social comparison orientation was high and on average they used more downward comparison than upward comparison. Most correlations between variables were small, but significant. As expected, higher state jealousy was related to higher propensity to jealousy, to feeling worse in comparison to others (upward comparison), and marginally to higher social comparison orientation. Further, higher propensity to jealousy was related to higher social comparison orientation. In contrast to our predictions, being older was related to higher propensity to jealousy and higher social comparison orientation. Gender differences did not emerge for evaluation in comparison with others, $t(66) = 0.68$, $p = 0.50$, propensity to jealousy, $t(50.58) = 1.65$, $p = 0.11$, social comparison orientation, $t(57.25) = 1.61$, $p = 0.11$, and state jealousy, $t(66) = 0.05$, $p = 0.96$.

7.2. State jealousy

Adolescents reported some level of jealousy in one fifth of the assessments (495 assessments of the 2164 total assessments). The mean intensity of these assessments was 3.41 ($SD = 1.63$). The relative frequency of jealousy was similar across boys and girls with 22% and 23% of all assessments, respectively. Analysis of variance revealed that the intensity of jealousy did not vary across different days or different times of the day (day vs. nighttime) $F(5, 2158) = 0.78$, $p = 0.57$. When adolescents experienced jealousy, they experienced it mildly (2–3) in 58% of the assessments, moderately (4–5) in 29% of the assessments, and extremely high (6–7) in 13% of the assessments. A frequency analysis revealed that only 7 participants (10%) reported not feeling any jealousy at all, 52 participants (76%) reported jealousy between 2% and 50% percent of the time, and 9 participants (14%) reported jealousy more than 50% of the time. Overall, the majority of adolescents (90%) experienced at least some amount of jealousy during the sampling period. Because we were interested in associations of jealousy with different situational factors, adolescents who did not experience any jealousy during the sampling period were excluded from subsequent analyses. Participants who were jealous ($n = 61$) did not differ from those who were never jealous ($n = 7$) regarding gender, age, propensity to jealousy, social comparison orientation or the percentage of time they spent with family, peers or alone (all $ps > 0.05$). Because the groups are so different in size, the t-tests need to be interpreted with caution.

7.3. Associations with state jealousy in different contexts

7.3.1. Interpersonal context

In line with our expectations, multilevel regression analysis revealed that adolescents experienced less jealousy when they were with their family compared to when they were with peers. There was no difference in state jealousy in the presence of family and when adolescents were alone (see Table 2a). In line with our expectations, we found a main effect for propensity to jealousy. In contrast to our expectations, no main effects were found for social comparison orientation and age. Further, we investigated whether propensity to jealousy, social comparison orientation or age moderated the relation of state jealousy and interpersonal context. None of these individual factors moderated this relation except propensity to jealousy (see Table 2 b, c, d). Post-hoc analyses were performed for family context and peer context separately. Results revealed no main effect of propensity to jealousy when adolescents were with peers ($B = 0.24$, $SE = 0.14$, $p = 0.08$). When adolescents were with family,

Table 1
Descriptive statistics and correlations for model variables.

Variable	Range	<i>M</i>	<i>SD</i>	<i>N</i>	1	2	3	4	5
1. State jealousy	1–6.46	1.56	0.84	68	–				
2. Propensity to jealousy	1–7	1.97	1.58	68	0.48**	–			
3. Evaluation in comparison to others	–3–2.92	0.73	1.01	68	–0.27*	0.03	–		
4. Social comparison orientation	19–49	34.00	6.69	68	0.24†	0.37**	–0.10	–	
5. Age	12–16	13.95	0.94	66	0.04	0.33**	0.36**	–0.02	–
6. Number of assessments	14–44	33.76	7.30	68	–	–	–	–	–

Note. All ESM variables (state jealousy and evaluation in comparison to others) were aggregated to their person-level means.

† $p = 0.05$ * $p < 0.05$. ** $p < 0.01$.

Table 2

State Jealousy regressed on (a) Interpersonal Context (Level-1 Only Model) and on the cross-level interactions between Interpersonal Context and (b) Propensity to jealousy, (c) Social Comparison Orientation (SCO), and (d) Age.

Level-2 variables		Jealousy
(a)	Family Intercept (SE)	1.57 (0.12)***
	Peers B (SE)	0.18 (0.09)*
	Alone B (SE)	0.07 (0.10)
(b) Propensity to jealousy	Family Intercept (SE)	1.54 (0.08)***
	Peers B (SE)	0.17 (0.08)*
	Alone B (SE)	0.08 (0.10)
	Propensity to jealousy B (SE)	0.37 (0.11)**
	Propensity to jealousy x peers B (SE)	-0.12 (0.06)*
(c) SCO	Propensity to jealousy x alone B (SE)	-0.12 (0.09)
	Family Intercept (SE)	1.57 (0.11)***
	Peers B (SE)	0.16 (0.09)
	Alone B (SE)	0.08 (0.11)
	SCO B (SE)	0.04 (0.02)
	SCO x peers B (SE)	-0.01 (0.01)
(d) Age	SCO x alone B (SE)	-0.02 (0.10)
	Family Intercept (SE)	1.57 (0.11)***
	Peers B (SE)	0.18 (0.09)*
	Alone B (SE)	0.08 (0.11)
	Age B (SE)	0.06 (0.11)
	Age x peers B (SE)	-0.11 (0.10)
	Age x alone B (SE)	0.10 (0.18)

Note. All person-level variables (propensity to jealousy, social comparison orientation, and age) were grand-mean centered.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

we found a main effect of propensity to jealousy ($B = 0.39$, $SE = 0.12$, $p = 0.001$). Thus, adolescents high on propensity to jealousy experienced more state jealousy when with family compared to adolescents low on propensity to jealousy but not when with peers (see Fig. 1a).

7.3.2. Online vs. face-to-face peer contexts

To investigate the relation of online vs. face-to-face peer contexts with state jealousy, we estimated a multilevel regression model with one dummy variable. As expected, results revealed that when adolescents were in online contexts, they felt more jealous compared to when they were in face-to-face peer contexts (see Table 3a).

Further, we investigated whether individual factors moderated the relation of state jealousy and different peer contexts. Results showed that none of the individual factors moderated the relation except age (see Table 3 b, c, d). Post-hoc analyses were performed for face-to-face context and online context separately. Results revealed no main effect of age for adolescents reporting on face-to-face contexts ($B = 0.009$, $SE = 0.08$, $p = 0.91$). When adolescents were in online contexts, we found a main effect of age ($B = -0.42$, $SE = 0.18$, $p = 0.02$). Thus, older adolescents experienced less state jealousy in response to online contexts compared to younger adolescents but not in face-to-face peer interactions (see Fig. 1b).

7.3.3. Evaluation in comparison to others

To examine how adolescents felt compared to others, we included only moments when adolescents were in the company of someone else. In contrast to our predictions, most of the time they felt equal to their company (horizontal comparison, 58%) or superior to their company (downward comparison, 40%). Only in 2% of the assessments did adolescents feel inferior to their company (upward comparison). A multilevel regression model revealed a negative relation between evaluation in comparison to others and state jealousy: as expected, when adolescents felt superior to their company, their state jealousy was significantly lower ($B = -0.10$, $SE = 0.05$, $p = 0.046$) than when they felt inferior ($Intercept = 1.57$, $SE = 0.11$, $p < 0.001$). Due to power limitations, because the distribution of comparisons was so unequal, we did not test any individual difference factors as moderators.

7.4. Associations of state jealousy and well-being

To examine whether intensity of jealousy was related to depressive symptoms and anxiety in our normative sample, we aggregated state jealousy within participants across all time points. Spearman's rank order correlations revealed a marginally positive relation between jealousy and depressive symptoms $r = 0.21$, $p = 0.09$ but not with anxiety $r = 0.05$, $p = 0.71$. Scatter plots summarize the results in Fig. 2.

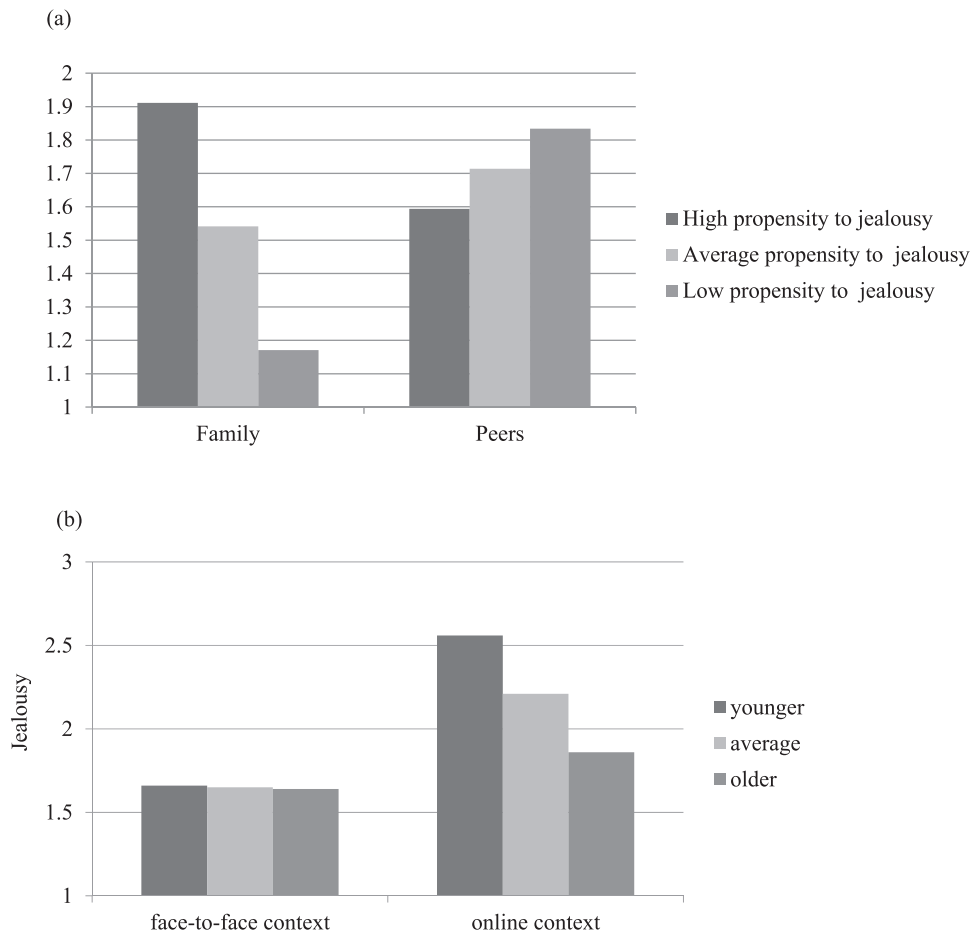


Fig. 1. (a) State jealousy by different interpersonal contexts, as moderated by propensity to jealousy. (b) State jealousy by different peer contexts as moderated by age. If participants were 1 standard deviation above or below the mean regarding propensity to jealousy or age they were classified as high jealous/low jealous or older/younger.

Table 3

State Jealousy regressed on (a) different peer contexts (Level-1 Only Model) and on the cross-level interactions between different peer contexts with (b) Propensity to jealousy, (c) Social Comparison Orientation (SCO), and (d) Age.

Level-2 variables		Jealousy
(a)	Face-to-face context <i>Intercept (SE)</i>	1.66 (0.27)***
	Online context <i>B (SE)</i>	0.59 (0.19)**
(b) Propensity to jealousy	Face-to-face context <i>Intercept (SE)</i>	1.65 (0.10)***
	Online context <i>B (SE)</i>	0.62 (0.18)**
	Propensity to jealousy <i>B (SE)</i>	0.19 (0.11) [†]
	Propensity to jealousy x online context <i>B (SE)</i>	0.22 (0.18)
(c) SCO	Face-to-face context <i>Intercept (SE)</i>	1.66 (0.11)***
	Online context <i>B (SE)</i>	0.60 (0.19)**
	SCO <i>B (SE)</i>	0.02 (0.02)
(d) Age	SCO x online context <i>B (SE)</i>	0.04 (0.02)
	Face-to-face context <i>Intercept (SE)</i>	1.65 (0.11)***
	Online context <i>B (SE)</i>	0.56 (0.18)***
	Age <i>B (SE)</i>	-0.01 (0.09)
	Age x online context <i>B (SE)</i>	-0.36 (0.14)*

Note. All person-level variables (propensity to jealousy, social comparison orientation, and age) were grand-mean centered.

[†] $p = 0.06$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

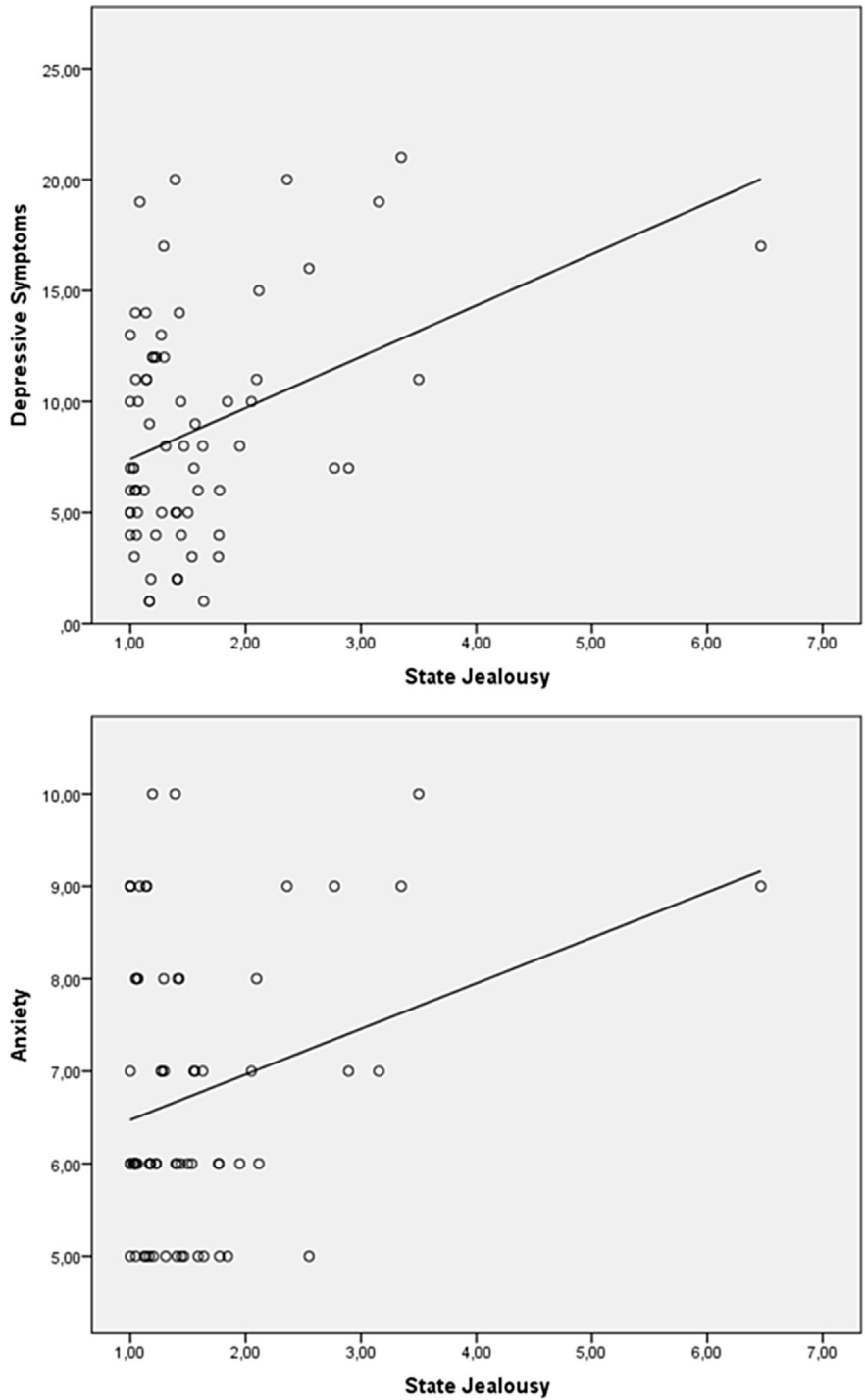


Fig. 2. Scatter plots representing the relation between state jealousy and depressive symptoms and anxiety respectively.

8. Discussion

To our knowledge, this is the first study to investigate everyday experiences of jealousy in adolescents, how state jealousy relates to their immediate interpersonal context, and the role individual differences - namely the propensity to feel jealousy, social comparison orientation, and age - play in that relation. Our results revealed that the vast majority of adolescents feel jealous during an ordinary weekend and that particular interpersonal contexts elicit more jealousy than others. Specifically,

adolescents were more jealous when they were with peers compared to when they were with family and being alone elicited the same amount of jealousy as being with family. Only propensity to jealousy moderated the relation between state jealousy and interpersonal context: Adolescents who were high on propensity to jealousy experienced more state jealousy when they were with family compared to adolescents who were low on propensity to jealousy. No such difference was found when they were with peers. Further, online contexts elicited more jealousy than face-to-face peer contexts did. Only age moderated the relation between state jealousy and online contexts: Older adolescents experienced less jealousy in online contexts than younger adolescents. Additionally, as expected, we found that when adolescents downward compared, they felt less jealousy. Finally, we found a marginally positive relation between higher intensity of jealousy and depressive symptoms but not with anxiety.

8.1. State jealousy

Jealousy is a common adolescent emotion. In our sample, 90% of adolescents experienced at least some amount of jealousy over the course of the weekend assessments. In fact, on average, adolescents reported some feelings of jealousy in one fifth of all assessments. Given how frequently and how many adolescents feel jealous in their everyday lives, and yet how little research exists on this topic, these findings point to a program of research that could yield fascinating future results (some of which are discussed further in this section). Clear individual differences emerged in adolescents' tendency to experience jealousy: some felt it rarely whereas others felt jealous almost all the time. This finding is in line with previous research on propensity to jealousy that also has demonstrated individual differences in the susceptibility of jealousy on a more general level (Bringle et al., 1983; Parker et al., 2005).

Next, in general, adolescents' jealousy was of mild or moderate intensity. Results are consistent with research showing that emotions reported in daily life are most often of mild intensity (Scherer, Wrانik, Sangsue, Tran, & Scherer, 2004). However, in almost 10% of all assessments, adolescents reported extreme jealousy. This range of intensity in feelings of jealousy raises interesting questions about the contexts in which these experiences happen. Therefore, we investigated different contexts that are likely to elicit jealous feelings, such as interpersonal context and evaluation in comparison to others.

8.2. Interpersonal context

Our hypothesis that adolescents would experience less jealousy when with family or alone than when they were with peers was confirmed. Adolescents generally feel an urgent need to belong to a peer group (B. B. Brown & Larson, 2009); and when this need is thwarted, or perceived to be blocked, jealousy may arise (e.g., seeing best friend laughing with someone else). Additionally, because adolescents are sensitive to their peers' evaluations, feelings of social rejection are likely to be triggered (Somerville, 2013), which, in turn, can influence the experience of jealousy. Unfortunately, from the data in this current study, we were unable to identify the precise reasons for why adolescents felt jealous at the moment they were assessed.

Interestingly, we found that propensity to jealousy moderated the relation between state jealousy and interpersonal context. Adolescents who were high on propensity to jealousy experienced more state jealousy when with family compared to adolescents who were low on propensity to jealousy. This was not the case for when they were with peers. This result is in line with the expectation that people high in propensity to jealousy experience more state jealousy. It is noteworthy that we only found this in the family context, not in the peer context. Recall that we found a main effect of peer context on jealousy. Seemingly, the peer context is such a strong elicitor of state jealousy that individual differences in propensity to jealousy do not play as important a role as they do in the family context. The fact that we did not find moderation effects for the other individual difference factors (social comparison orientation and age) highlights that jealousy is a situationally sensitive emotion. Given how frequently adolescents indeed feel jealous, future research could delve more deeply into the appraisals that accompany adolescents' feelings of jealousy in the context of their peer group. Appraisals of emotions assign valence to different situations (Scherer, 2001) and it is likely that different appraisals differ between individuals and situations. For example, the intensity or frequency of jealousy and the diverse regulation efforts they may engender (Harris & Darby, 2010) may vary according to diverse appraisals that trigger the emotion in the first place (e.g., jealousy triggered by appraisals of losing a relationship vs. appraisals of threats to self-esteem; (Mathes, 1991). Future research among adolescents could look more closely into that.

Further analyses revealed that online contexts elicited more jealousy than face-to-face peer contexts. This finding is in line with studies among young adults that showed that romantic jealousy increased (Muise et al., 2009) and their well-being decreased with more Facebook use (Kross et al., 2013). There are several reasons why online environments might pull for more jealousy from adolescents than offline experiences. First, in online contexts, adolescents are confronted simultaneously with what their peers are doing and what they are missing out on, and they have access to this information continuously if they choose to look for it (e.g., activities or social connection: Fear of Missing Out; Przybylski, Murayama, DeHaan, & Gladwell, 2013). Second, it is likely that individuals post skewed, overly-positive descriptions of their daily lives on social media sites for impression management purposes (Ellison et al., 2006; Turkle, 2011). Adolescents reading these posts may develop the impression that others lead exciting, perpetually happy lives which will necessarily contrast with their own (actually lived, not "presented") lives; these comparisons are likely to trigger jealousy.

The processes by which various online activities precisely influence different emotions remain unclear. One recent study showed that increased posting on Facebook was associated with less loneliness compared to normal posting behavior, possibly because participants felt more connected to their friends (Deters & Mehl, 2013), whereas mainly consuming others' experiences was associated with increased loneliness (Burke, Marlow, & Lento, 2010). These results suggest that sharing experiences with others buffers against negative emotions such as loneliness whereas only reading others' experiences enhances negative emotions. Similar processes may apply to jealousy. Individuals who frequently share their activities may be more likely to think that their own lives are of interest to others and would therefore feel less jealous when viewing other adolescents' profile pages. There seem to be multiple fruitful avenues for future research which could assess not only whether or not adolescents are online interacting with peers, but also what exactly they are doing and how often, with whom precisely they are sharing these online experiences, whether they indeed use more upwards social comparison compared to face-to-face interactions, and how these circumstances relate to both the elicitation of jealousy, and its possible resolution.

Interestingly, we found that age moderated the relation between online contexts and state jealousy. Younger adolescents felt more jealous when participating in online contexts than older adolescents did. This might have to do with the fact that older adolescents are better at evaluating information that they access on the internet. Given our discussion about the tendency for people to present ideal versions of themselves by posting selective and positive information (Ellison et al., 2006), older adolescents might be better able to evaluate and rationalize information posted by others (Steinberg, 2005), and realize that the posted information is overly positive and skewed. Perhaps older adolescents also have had more experience with these contexts and through positive and negative experiences have learned to better regulate their reactions to online stimuli just like they are better in regulating their emotions in response to social stimuli more generally (Silvers et al., 2012). Future research using a broader age range and more concrete probing of adolescents' online activities and contacts could be a very productive next research step.

8.3. Evaluation in comparison to others

Contrary to our hypothesis, the majority of adolescents used horizontal comparison and thus felt equal to those they spent time with. A possible explanation for this finding is that data collection took place during weekends. This is a period in which adolescents can spend time with their friends and friends are not typically people one compares oneself to negatively. Another substantial percentage of adolescents used downward comparison and evaluated themselves as better off than the person they were with. These results point to a positivity bias often observed in people in general, not just adolescents, who have the need to feel good about themselves and tend to see themselves positively (positivity bias; Moskowitz, 2005b) and better than average (Alicke, 1985; J. D.; Brown, 1986). These findings may thus reflect a perceptual and reporting bias. Another explanation is that changes in abstract thinking occur in adolescence, which lead to different cognitive distortions such as seeing themselves in the eyes of an "imaginary audience" and part of a "personal fable" (Elkind, 1967; Steinberg, 2011). Because adolescents feel that they are looked at and evaluated constantly (imaginary audience), they may get an inflated opinion of themselves (personal fable) as a result of taking themselves so seriously (Elkind, 2007). These cognitive distortions can create a feeling of being overly important and superior to the people they are with.

The relation of jealousy and evaluations in comparison to others was in line with our hypothesis. When adolescents used upward comparison, they experienced more state jealousy because feeling inferior to someone else could involve questioning their self-worth and how others view them. These results have to be interpreted with caution and warrant replication, as upward comparison occurred only a few times during the assessment period. Nevertheless, one possible mechanism in this relation is self-esteem (DeSteno et al., 2006). Individuals with higher self-esteem seem less likely to evaluate themselves as worse off than others, and may therefore experience less jealousy overall. In the current study, self-esteem was not assessed and this seems like a promising direction for future research.

8.4. Well-being

In line with our expectations, we found that adolescents who experienced more jealousy also tended to experience more depressive symptoms. Unexpectedly, no relation with anxiety emerged. This may be because problematic behaviors that are triggered by jealousy (e.g. rumination, Lavalley & Parker, 2009) are more relevant to depressive symptoms. Further, our measure of anxiety was not reliable and any result has to be treated cautiously. Importantly, our analysis is correlational and does not speak to the direction of effects. It is also possible that depressive symptoms produce jealousy because depressed adolescents may be less able to go out and may be jealous of how their healthy peers interact with each other or which activities they do. Nonetheless, these results suggest that there might be a threshold at which jealousy becomes maladaptive, even though experiencing some amount of jealousy is normative. Although we found this linear relation between jealousy and (less) well-being, it is important to recall that these findings come from a normative sample and do not directly implicate clinical impairments.

8.5. Limitations and future research

A few limitations of the current study have to be mentioned. First, we had information about adolescents' interpersonal context and comparison but we did not have descriptions of the situations that elicited their jealousy. Future research may

investigate which specific situations elicited these intense experiences of jealousy. Unfortunately, this information was beyond the scope of the current study, because we aimed to restrict assessment periods to very brief, 6-min maximum assessments in order to receive the most reliable, complete data possible. There may be advantages to using fewer assessment moments per day, but making the length of those assessments longer to get more in-depth descriptions of the contexts that elicit the greatest intensity of jealousy. As romantic relationships are potentially the strongest elicitors of jealousy, it seems important to investigate state jealousy in adolescent romantic relationships and its influence on relationship quality and adolescent well-being in particular.

Second, the sample size was quite small. This might not be so much of a problem for the ESM part, because of several measurements per person; however the missing data in the baseline measurement may have contributed to low power, which makes it difficult to detect moderation effects. Future studies may want to include more participants to replicate and further investigate jealousy in adolescence.

Further, this study could not compare adolescents' jealous experiences to those of children and adults and therefore we cannot conclude that adolescence is a time of heightened jealousy compared to childhood or adulthood as has been shown in a previous study (Pines & Aronson, 1983). Due to the social transitions that occur in adolescence it is very likely that there are ample opportunities in the lives of adolescents to experience jealousy and our data confirm that by showing that jealousy occurs often among (most) adolescents. Future research may compare how, when, and why individuals experience jealousy across different developmental periods to deepen our understanding of jealousy across the lifespan. Another limitation is that data collection took place during weekends only. This study thus missed out on assessing jealousy during school days, where adolescents spend a great deal of their time during the week. Even though this makes it impossible to generalize to behavior across the week, this sampling period also had several strengths: adolescents were relatively free to choose their activities and interpersonal contexts, and the data provided insights into how adolescents experience their free time. Also, our assessment period covered Friday and Saturday nights when adolescents most frequently meet friends and go out (Arnett, 2012).

Further, even though different words exist for feeling jealous and envious in Dutch, in colloquial language the word jealous (*jaloers*) is used interchangeably for both emotions. A similar potential conflation or confusion may be common in English, where the general public may not easily distinguish the two emotional states or, more importantly, do not do so in their everyday labeling of emotional experiences. In our study, this muddiness of meaning makes it impossible to distinguish to which of the two emotions adolescents responded. Envy is usually defined as wanting to possess something that someone else has (e.g., a mobile phone; Parrott & Smith, 1993), whereas jealousy is about the feeling that a relationship is threatened by someone else (e.g., best friend has her first boyfriend; Salovey & Rodin, 1988). The possibility that participants endorsed "jealousy" when they may have actually felt *either* jealous or envious may partially explain the high prevalence of jealousy in our sample. Also, jealousy has been shown to be more intense than envy (Salovey & Rodin, 1986) and this may explain the relatively low intensity of jealousy found in our study. In order to make sure one measures jealousy specifically, future research could ask adolescents to report on a range of negative emotions (i.e., jealous, angry, betrayed, and hurt) that together form an affective cluster that can be labeled jealousy, and that has been shown to differentiate envy from jealousy (Parrott & Smith, 1993).

8.6. Conclusion

Jealousy is a pervasive emotion in adolescents' lives. It is experienced at different frequencies and intensities. These differences occur mainly because of situational factors such as the interpersonal context or the evaluation in comparison to others. Further, jealousy and depressive symptoms seem to be related. The present study extended previous work by using momentary reports of adolescents' jealousy and described how and under what circumstances adolescents feel jealous. Peer contexts (face-to-face and online contexts) comprise an important field of research when investigating jealousy and it is worthwhile to investigate specific situations that lead to increased jealousy in daily life. Overall, this study identified circumstances in which adolescents experience jealousy and increased our understanding of one of the most fascinating human emotions. Given that there was a weak relation between jealousy and well-being, perhaps including a sample of adolescents with emotional difficulties at the more extreme end might clarify whether there is a level at which normative jealousy becomes a risk factor for future emotional adjustment. We are hoping to see new research that can extend these findings into a more detailed exploration of why adolescents feel jealous and how they negotiate and regulate this powerful emotion.

References

- Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management*, 39, 1490–1528. <http://dx.doi.org/10.1177/0149206313478188>.
- Ahmed, S. P., Bittencourt-Hewitt, A., & Sebastian, C. L. (2015). Neurocognitive bases of emotion regulation development in adolescence. *Developmental Cognitive Psychology*, 15, 11–25. <http://dx.doi.org/10.1016/j.dcn.2015.07.006>.
- Alicke, M. D. (1985). Global self-evaluation as determined by the desirability and controllability of trait adjectives. *Journal of Personality and Social Psychology*, 49, 1621–1630.
- Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, 54, 317–326.
- Arnett, J. J. (2012). *Adolescent psychology around the world*. New York: Psychology Press.
- Baumeister, R. F., Reis, H. T., & Delespaul, P. A. E. G. (1995). Subjective and experiential correlates of guilt in daily life. *Personality and Social Psychology Bulletin*, 21, 1256–1268. <http://dx.doi.org/10.1177/01461672952112002>.

- Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the screen for child anxiety related emotional disorders (SCARED): A replication study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 1230–1236. <http://dx.doi.org/10.1097/00004583-199910000-00011>.
- Bringle, R. G., Renner, P., Terry, R. L., & Davis, S. (1983). An analysis of situation and person components of jealousy. *Journal of Research in Personality*, 17, 354–368. [http://dx.doi.org/10.1016/0092-6566\(83\)90026-0](http://dx.doi.org/10.1016/0092-6566(83)90026-0).
- Brown, J. D. (1986). Evaluations of self and others: Self-enhancement biases in social judgements. *Social Cognition*, 4, 353–376.
- Brown, B. B. (1990). Peer groups and peer cultures. In S. S. Feldman, & G. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 171–196). Cambridge, MA: Harvard University Press.
- Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In R. M. Lerner, & L. Steinberg (Eds.), *Handbook of adolescent psychology*. John Wiley & Sons, Inc.
- Burke, M., Marlow, C., & Lento, T. (2010). Social network activity and social well-being. In *Paper presented at the proceedings of the 28th international conference on human factors in computing factors*, New York, NY.
- Buss, D. M. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry*, 6, 1–30. http://dx.doi.org/10.1207/s15327965pli0601_1.
- Collins, W. A., & Laursen, B. (2004a). Changing relationships, changing youth: Interpersonal contexts of adolescent development. *Journal of Early Adolescence*, 24, 55–62. <http://dx.doi.org/10.1177/0272431603260882>.
- Collins, W. A., & Laursen, B. (2004b). Parent-adolescent relationships and influence. In R. Lerner, & L. Steinberg (Eds.), *Handbook of adolescent psychology*. New York: John Wiley.
- Collins, W. A., Welsh, D. R., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology*, 60, 631–652. <http://dx.doi.org/10.1146/annurev.psych.60.110707.163459>.
- Connolly, J., Furman, W., & Konarski, R. (2000). The role of peers in the emergence of heterosexual romantic relationships in adolescence. *Child Development*, 71, 1395–1408. <http://dx.doi.org/10.1111/1467-8624.00235>.
- Connolly, J., & McIsaac, C. (2011). Romantic relationships in adolescence. In M. K. Underwood, & L. H. Rosen (Eds.), *Social Development Relationships in infancy, childhood, and adolescence*. New York: The Guilford Press.
- Csikszentmihalyi, M., & Hunter, J. (2003). Happiness in everyday life: The uses of experience sampling. *Journal of Happiness Studies*, 4, 185–199. <http://dx.doi.org/10.1023/a:1024409732742>.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the experience-sampling method. *Journal of Nervous and Mental Disease*, 175, 526–536. <http://dx.doi.org/10.1097/00005053-198709000-00004>.
- Culotta, C. M., & Goldstein, S. E. (2008). Adolescents' aggressive and prosocial behavior: Associations with jealousy and social anxiety. *Journal of Genetic Psychology*, 169, 21–33. <http://dx.doi.org/10.3200/Gntp.169.1.21-33>.
- Delespaul, P. A. E. G. (1995). *Assessing schizophrenia in daily life: The experience sampling method*. Maastricht: University of Maastricht.
- DeSteno, D., Valdesolo, P., & Bartlett, M. Y. (2006). Jealousy and the threatened self: Getting to the heart of the green-eyed monster. *Journal of Personality and Social Psychology*, 91, 626–641. <http://dx.doi.org/10.1037/0022-3514.91.4.626>.
- Detert, F. G., & Mehl, M. R. (2013). Does posting facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science*, 4, 579–586. <http://dx.doi.org/10.1177/1948550612469233>.
- Eccles, J. S. (1999). The development of children ages 6 to 14. *Future of Children*, 9, 30, 42.
- Elkind, D. (1967). Egocentrism in adolescence. *Child Development*, 38, 1025–1034.
- Elkind, D. (2007). *The hurried child: Growing up too fast too soon*. Cambridge, MA: Da Capo Press.
- Ellison, N., Heino, R., & Gibbs, J. (2006). Managing impressions online: Self-presentation processes in the online dating environment. *Journal of Computer-Mediated Communication*, 11, 415–441. <http://dx.doi.org/10.1111/j.1083-6101.2006.00020.x>.
- Erol, R. Y., & Orth, U. (2011). Self-esteem development from age 14 to 30 years: A longitudinal study. *Journal of Personality and Social Psychology*, 101, 607–619. <http://dx.doi.org/10.1037/a0024299>.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140. <http://dx.doi.org/10.1177/001872675400700202>.
- Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, 76, 129–142. <http://dx.doi.org/10.1037/0022-3514.76.1.129>.
- Goldbaum, S., Craig, W. M., Pepler, D., & Connolly, J. (2007). Developmental trajectories of victimization: Identifying risk and protective factors. In J. E. Zins, M. J. Elias, & C. A. Maher (Eds.), *Bullying, victimization, and peer harassment: A handbook of prevention and intervention* (pp. 143–160). New York: Haworth Press.
- Haferkamp, N., & Krämer, N. C. (2011). Social comparison 2.0: Examining the effects of online profiles on social-networking sites. *CyberPsychology, Behavior & Social Networking*, 14, 309–314. <http://dx.doi.org/10.1089/cyber.2010.0120>.
- Harris, C. R., & Darby, R. S. (2010). Jealousy in adulthood. In S. L. Hart, & M. Legerstee (Eds.), *Handbook of jealousy: Theory, research, and multidisciplinary approaches* (pp. 547–571). Wiley-Blackwell.
- Hektner, J. M., Schmidt, J. A., & Csikszentmihalyi, M. (2007). *Experience sampling method: Measuring the quality of everyday life*. Thousand Oaks, CA, US: Sage Publications, Inc.
- Hysing, M., Pallesen, S., Stormark, K. M., Jakobsen, R., Lundervold, A. J., & Sivertsen, B. (2015). Sleep and use of electronic devices in adolescence: Results from a large population-based study. *BMJ Open*, 5. <http://dx.doi.org/10.1136/bmjopen-2014-006748>.
- Jordan, A. H., Monin, B., Dweck, C. S., Lovett, B. J., John, O. P., & Gross, J. J. (2011). Misery has more company than people think: Underestimating the prevalence of others' negative emotions. *Personality and Social Psychology Bulletin*, 37, 120–135. <http://dx.doi.org/10.1177/0146167210390822>.
- Kovacs, M. (1985). The children's depression inventory (CDI). *Psychopharmacology Bulletin*, 21, 995–998.
- Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., ... Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *Plos One*, 8. doi: e6984110.1371/journal.pone.0069841.
- Larson, R. (1990). The solitary side of life: An examination of the time people spend alone from childhood to old-age. *Developmental Review*, 10, 155–183. [http://dx.doi.org/10.1016/0273-2297\(90\)90008-R](http://dx.doi.org/10.1016/0273-2297(90)90008-R).
- Larson, R., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development*, 62, 284–300. <http://dx.doi.org/10.1111/j.1467-8624.1991.tb01531>.
- Laursen, B. (1993). The perceived impact of conflict on adolescent relationships. *Merrill-Palmer Quarterly-Journal of Developmental Psychology*, 39, 535–550.
- Lavallee, K. L., & Parker, J. G. (2009). The role of inflexible friendship beliefs, rumination, and low self-worth in early adolescents' friendship jealousy and adjustment. *Journal of Abnormal Child Psychology*, 37, 873–885. <http://dx.doi.org/10.1007/s10802-009-9317-1>.
- Lenhart, A., Ling, R., Campbell, S. B., & Purcell, K. (2010). *Teens and mobile phones*. <http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx>. <http://www.pewinternet.org/2010/04/20/teens-and-mobile-phones/> (Pew Internet & American Life Project).
- Mathes, E. W. (1991). A cognitive theory of jealousy. In P. Salovey (Ed.), *The psychology of jealousy and envy* (pp. 271–286). New York: Guilford Press.
- Moskowitz, G. B. (2005a). *Dual-process models. Social Cognition: Understanding self and others* (pp. 193–232). New York: The Guilford Press.
- Moskowitz, G. B. (2005b). *Shortcomings and biases in person perception. Social Cognition: Understanding self and others* (pp. 310–352). New York: The Guilford Press.
- Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does facebook bring out the green-eyed monster of jealousy? *Cyberpsychology & Behavior*, 12, 441–444. <http://dx.doi.org/10.1089/cpb.2008.0263>.
- Muthén, L. K., & Muthén, B. O. (1998–2010). *Mplus User's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
- Palmier-Claus, J. E., Myin-Germeys, L., Barkus, E., Bentley, L., Udachina, A., Delespaul, P. A. E. G., ... Dunn, G. (2011). Experience sampling research in individuals with mental illness: Reflections and guidance. *Acta Psychiatrica Scandinavica*, 123, 12–20.

- Parker, J. G., Kruse, S. A., & Aikins, J. W. (2010). When friends have other friends. In *Handbook of Jealousy: Theory, Research, and Multidisciplinary Approaches* (pp. 516–546). Wiley-Blackwell.
- Parker, J. G., Low, C. M., Walker, A. R., & Gamm, B. K. (2005). Friendship jealousy in young adolescents: Individual differences and links to sex, self-esteem, aggression, and social adjustment. *Developmental Psychology, 41*, 235–250. <http://dx.doi.org/10.1037/0012-1649.41.1.235>.
- Parrott, W. G., & Smith, R. H. (1993). Distinguishing the experiences of envy and jealousy. *Journal of Personality and Social Psychology, 64*, 906–920. <http://dx.doi.org/10.1037/0022-3514.64.6.906>.
- Pines, A., & Aronson, E. (1983). Antecedents, correlates, and consequences of sexual jealousy. *Journal of Personality, 51*, 108–136. <http://dx.doi.org/10.1111/j.1467-6494.1983.tb00857.x>.
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior, 29*, 1841–1848. <http://dx.doi.org/10.1016/j.chb.2013.02.014>.
- Robins, R. W., Trzesniewski, K. H., Tracy, J. L., Gosling, S. D., & Potter, J. (2002). Global self-esteem across the life span. *Psychology and Aging, 17*, 423–434. <http://dx.doi.org/10.1037//0882-7974.17.3.423>.
- van Roekel, E., Goossens, L., Verhagen, M., Wouters, S., Engels, R. C. M. E., & Scholte, R. H. J. (2014). Loneliness, affect, and adolescents' appraisals of company: An experience sampling method study. *Journal of Research on Adolescence, 24*, 350–363. <http://dx.doi.org/10.1111/jora.12061>.
- Salovey, P., & Rodin, J. (1986). The differentiation of social-comparison jealousy and romantic jealousy. *Journal of Personality and Social Psychology, 50*, 1100–1112. <http://dx.doi.org/10.1037/0022-3514.50.6.1100>.
- Salovey, P., & Rodin, J. (1988). Coping with envy and jealousy. *Journal of Social and Clinical Psychology, 7*, 15–33. <http://dx.doi.org/10.1521/jscp.1988.7.1.15>.
- Scherer, K. R. (2001). Appraisal considered as a process of multi-level sequential checking. In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal processes in Emotion: Theory, methods, research* (pp. 92–120). New York and Oxford: Oxford University Press.
- Scherer, K. R., Wraniak, T., Sangsue, J., Tran, V., & Scherer, U. (2004). Emotions in everyday life: Probability of occurrence, risk factors, appraisal and reaction patterns. *Social Science Information Sur Les Sciences Sociales, 43*, 499–570. <http://dx.doi.org/10.1177/0539018404047701>.
- Schneiders, J., Nicolson, N. A., Berkhof, J., Feron, F. J., Devries, M. W., & van Os, J. (2007). Mood in daily contexts: Relationship with risk in early adolescence. *Journal of Research on Adolescence, 17*, 697–722.
- Silvers, J. A., McRae, K., Gabrieli, J. D., Gross, J. J., Remy, K. A., & Ochsner, K. N. (2012). Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion, 12*, 1235–1247. <http://dx.doi.org/10.1037/a0028297>.
- Smetana, J. G., Campione-Barr, N., & Metzger, A. (2006). Adolescent development in interpersonal and societal contexts. *Annual Review of Psychology, 57*, 255–284. <http://dx.doi.org/10.1146/annurev.psych.57.102904.190124>.
- Somerville, L. H. (2013). Special issue on the teenage brain: Sensitivity to social evaluation. *Current Directions in Psychological Science, 22*, 121–127. <http://dx.doi.org/10.1177/0963721413476512>.
- Steinberg, L. (2005). *Cognitive transitions adolescence* (7th ed.). Boston: McGraw-Hill: Higher Education.
- Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review, 28*, 78–106. <http://dx.doi.org/10.1016/j.Dr.2007.08.002>.
- Steinberg, L. (2011). *Adolescence* (9th ed.). Boston: McGraw-Hill Higher Education.
- Suls, J., Martin, R., & Wheeler, L. (2002). Social comparison: Why, with whom, and with what effect? *Current Directions in Psychological Science, 11*, 159–163. <http://dx.doi.org/10.1111/1467-8721.00191>.
- Turkle, S. (2011). *Alone together: Why we expect more from technology and less from each other*. New York: Basic Books.
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture, 3*, 206–222. <http://dx.doi.org/10.1037/ppm0000047>.
- Volling, B. L., Kennedy, D. E., & Jackey, L. M. (2010). The development of sibling jealousy. In S. L. Hart, & M. Legerstee (Eds.), *Handbook of jealousy: Theory, research, and multidisciplinary approaches* (pp. 387–417). West Sussex: Wiley Blackwell.
- Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology, 62*, 760–773. <http://dx.doi.org/10.1037/0022-3514.62.5.760>.
- Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 106*, 231–248.