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## Short Communication

## How daydreaming relates to life satisfaction, loneliness, and social support: The importance of gender and daydream content

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## ABSTRACT

Daydreaming appears to have a complex relationship with life satisfaction and happiness. Here we demonstrate that the facets of daydreaming that predict life satisfaction differ between men and women (Study 1;  $N = 421$ ), that the content of daydreams tends to be social others (Study 2;  $N = 17,556$ ), and that who we daydream about influences the relation between daydreaming and happiness variables like life satisfaction, loneliness, and perceived social support (Study 3;  $N = 361$ ). Specifically, daydreaming about people not close to us predicts more loneliness and less perceived social support, whereas daydreaming about close others predicts greater life satisfaction. Importantly, these patterns hold even when actual social network depth and breadth are statistically controlled, although these associations tend to be small in magnitude. Individual differences and the content of daydreams are thus important to consider when examining how happiness relates to spontaneous thoughts.

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## 1. Introduction

Both empirical evidence and everyday experience reveal we have a mind with a penchant for simulating alternative realities (Smallwood & Schooler, 2006). Almost everyone reports engaging in some form of daydreaming on a daily basis (96%; Singer & McRaven, 1961), with estimates of how much of our day is devoted to daydreaming ranging from 30% to 50% (Killingsworth & Gilbert, 2010; Klinger & Cox, 1987). Yet there is no consensus on the role of daydreaming in emotional well-being.

On the one hand, daydreaming provides a helpful means for escaping a banal existence. People commonly report deliberately launching into vivid daydreams to ease boredom at work, for example (Fisher, 1987; Singer, 1961). Daydreaming also alleviates emotional stress, conflict, and physical pain (Lang, 1995). In fact, individuals with a proclivity for daydreaming exhibit less physiological reactivity to stressful events (Singer & Antrobus, 1972), and asking people to daydream results in a less acute stress response for those anticipating an electric shock compared to those without such instructions (Rowe, 1963). In medical patients, guided daydreaming reduces the need for pain medication and shortens hospital visits (Antall & Kresevic, 2004), as well as promotes greater overall well-being during recovery (Frick et al., 2008). Daydreaming has also been associated with other positive qualities that might promote happiness. Children with a disposition for internal musings exhibit more self-control and patience than children who have no such inclination (Singer, 1961), for example.

On the other hand, daydreaming may be a symptom of dissatisfaction with one's life. In fact, many clinical psychologists consider daydreaming a manifestation of frustration and a hallmark for a slew of mental illnesses (Freud, 1959; Rapaport,

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1951). Specifically, dissociative and schizotypal disorders are associated with a tendency to fantasize excessively and difficulties separating daydreaming from reality (Wilson & Barber, 1982). Dysphoria has also been linked to mind-wandering (Carriere, Cheyne, & Smilek, 2008; Smallwood, O'Connor, Sudbery, & Obonsawin, 2007; Watts & Sharrock, 1985), with childhood loneliness predicting fantasy proneness (Rhue & Lynn, 1987) and fantasy proneness in turn predicting a wide range of psychopathologies (Muris, Merckelbach, & Peeters, 2003; Waldo & Merritt, 2000). In extreme cases, the uncontrollable nature of these fantasies can cause distress, even when the fantasies themselves are often enjoyable (Schupak & Rosenthal, 2009).

Much of the work linking daydreaming to negative clinical outcomes has conflated a number of related constructs, however, such as fantasy proneness and dissociative experiences (Klinger, Henning, & Janssen, 2009). It is only recently that research has been done on how normal daily daydreaming relates to subjective well-being. Killingsworth and Gilbert (2010) used an experience-sampling method to examine 2250 adults and found that mind-wandering was negatively related to happiness in the moment (cf. Kane et al., 2007), leading them to conclude that “a wandering mind is an unhappy mind.” Although their data argue that mind-wandering causes negative moods, an earlier study found the opposite can be true (Smallwood, Fitzgerald, Miles, & Phillips, 2009). Moreover, a mind wandering from a task can be seen as distinct from daydreaming in a number of ways. Daydreaming, for example, can occur when there is no particular task at hand. As well, mind-wandering is typically defined as thinking about something despite having no intention to do so (Smallwood & Schooler, 2006), whereas daydreaming can often be undertaken intentionally, as a willful respite from the present. Consistent with these observations, previous research has found that attentiveness to relevant stimuli in the environment (being “on-task”) is almost unrelated to spontaneous thoughts (akin to mind-wandering) and only weakly related to variables associated with daydreaming (Klinger & Cox, 1987).<sup>1</sup> This illustrates the fact that related forms of spontaneous thought are separable and unique, so previous work on the affective correlates of mind-wandering should not necessarily be interpreted as comments on daydreaming.

After considering the available research the relationship between daily daydreaming and happiness remains somewhat unclear. In an attempt to further explore how daydreaming and happiness relate, we examined individual differences such as gender and age along with the content of these daydreams.

## 2. Study 1

In order to examine the relation between daydreaming and life satisfaction, we turned to a large, publicly available dataset known as the Eugene Springfield Community Sample (ESCS; Goldberg, 1999).

### 2.1. Participants

The ESCS is a large community sample that was initially recruited in 1993 and consists of individuals who volunteered to complete questionnaires for at least 5–10 years. A total of 421 participants (253 women and 168 men), ranging in age from 18 to 85 ( $M = 50.2$ ,  $SD = 13.0$ ) completed the materials relevant to the current study and were used in our analyses.

### 2.2. Materials and procedure

#### 2.2.1. Daydreaming

In order to measure individual differences in daydreaming tendencies, we drew items from the Curious Experiences Questionnaire (CEQ; Merckelbach, Horselenberg, & Muris, 2001). Initially developed to measure fantasy proneness, the CEQ contains several items that directly pertain to daydreaming. These items tap two separate aspects of daydreaming, the frequency with which daydreams occur and how vividly these daydreams are imagined by the individual. Examining both frequency and vividness allows us to examine the phenomenon of daydreaming in greater detail, as either aspect (or both) could predict life satisfaction.

Two items were selected that pertain to frequency of daydreaming: (1) “[I] spend much of the day fantasizing or daydreaming” and (2) “[I] rarely get bored because I start daydreaming when things get boring,” Cronbach's  $\alpha = .43$ . Four items pertaining to the vividness of daydreaming were also selected: (1) “Many of my friends and relatives do not know that I have such detailed fantasies,” (2) “Many of my fantasies are lifelike,” (3) “Many of my fantasies are just as lively as a good movie,” and (4) “Confuse fantasies with real memories,”  $\alpha = .73$ . Using a five-point Likert scale, ranging from *very inaccurate* to *very accurate*, respondents rated the extent to which each phrase was self-descriptive.

#### 2.2.2. Life satisfaction

Life satisfaction was measured using the Satisfaction with Life Scale (SWLS; Pavot & Diener, 1993). Included in this measure are items such as “I am satisfied with my life” and “I would change nothing about my life.” Respondents indicated their agreement with these statements using a seven-point Likert scale, ranging from *strongly disagree* to *strongly agree*. This

<sup>1</sup> We thank an anonymous reviewer for this helpful observation.

measure has demonstrated good internal reliability ( $\alpha$ s from .79 to .89), test–retest reliability, and a single factor structure (Pavot & Diener, 1993). In our sample, internal reliability was high,  $\alpha = .88$ .

### 2.3. Results

In addition to creating subscales for frequency and vividness, the six daydreaming items were averaged to create a composite daydreaming measure,  $M = 2.29$ ,  $SD = 0.73$ ;  $\alpha = .74$ . To examine the relation between daydreaming and life satisfaction, correlations were calculated between these measures and the SWLS. This composite daydreaming measure was negatively correlated with life satisfaction,  $r = -.13$ ,  $p = .008$ . Frequency and vividness of daydreaming were related to one another ( $r = .42$ ,  $p < .001$ ) and higher scores on both predicted less life satisfaction, Frequency:  $r = -.12$ ,  $p = .017$ ; Vividness:  $r = -.10$ ,  $p = .037$ . So, the more daydreaming people reported, and the more vivid these daydreams were, the lower their life satisfaction.

In order to expand our investigation, we next examined individual differences, conducting partial correlations to rule out the involvement of gender and age in these associations. Partial correlations controlling for gender and age revealed the same general pattern, with more daydreaming predicting lower life satisfaction across all facets of daydreaming, Total:  $pr = -.13$ ,  $p = .006$ ; Frequency:  $pr = -.12$ ,  $p = .015$ ; Vividness:  $pr = -.11$ ,  $p = .031$ .

Examining men and women separately, however, revealed some unique relations. For males, the negative relation between daydreaming and life satisfaction was true for frequency but not vividness, Frequency:  $r = -.22$ ,  $p = .005$ ; Vividness:  $r = -.01$ ,  $p = .863$ . For females, vividness but not frequency predicted less life satisfaction: Frequency:  $r = -.04$ ,  $p = .494$ ; Vividness:  $r = -.17$ ,  $p = .006$ . These gender differences in association were found to be statistically significant for Frequency, and on the verge of statistical significance for Vividness (Cohen & Cohen, 1983), Frequency:  $Z = -1.83$ ,  $p = .034$ ; Vividness:  $Z = 1.61$ ,  $p = .054$ . Moreover, these differences cannot be attributed to differences in internal reliability since the less reliable measure (Frequency) is a stronger predictor in one case (Males) but weaker in the other (Females). In sum, men and women exhibited different patterns of relations between life satisfaction and the aspects of daydreaming.

### 2.4. Discussion

The gender differences found in our study illustrate the importance of looking deeper into the relation between daydreaming and happiness, by considering individual differences. Although the data from Study 1 are informative in providing a nuanced examination of how different aspects of daydreaming relate to happiness, one thing we do not know from this study is what people are daydreaming about. We hypothesized that, as social animals, humans likely spend most of their daydreaming thinking about other people; this hypothesis was examined in Study 2. We also hypothesized that whom people are daydreaming about will influence how this daydreaming relates to personal happiness, which was examined Study 3.

## 3. Study 2

The bulk of the research on daydreaming has focused on the temporal nature of daydreams: whether people daydream about the future or about the past (D'Argembeau, Renaud, & van der Linden, 2011; Mason, Bar, & Macrae, 2007; cf. Smallwood, Nind, & O'Connor, 2009). Insufficient attention has been directed at what people are actually daydreaming about and how this content might influence their feelings of well-being. Because humans are innately social in nature, the degree to which the content of our daydreams is also social seems likely to be related to our life satisfaction. To determine if the content of people's daydreams are primarily social (i.e., pertaining to other people), we posted a short survey on the *New York Times* TiernyLab science blog (<http://tierneylab.blogs.nytimes.com/>). The results of this study were then used to inform an investigation of how the content of daydreams influences the relation between daydreaming and life satisfaction, in Study 3.

### 3.1. Participants

Respondents ( $N = 17,556$  respondents; 9,972 female, 9 not reporting) answered our survey from May 2007 to April 2010, and ranged in age from 6 to 99 ( $M = 33.0$ ,  $SD = 14.2$ ).

### 3.2. Materials and procedure

Participants were administered a short questionnaire designed to tap various aspects of daydreaming. Questions relevant to the current study dealt with the content of daydreams. Specifically, items measured whether daydreams tended to be about the future ("I often imagine what my life will be like in the future"), the past ("I sometimes daydream about people and places I was familiar with when I was young"), or pure fantasy situations ("Most of my daydreams are about really unusual people or about events that could hardly ever happen"). The question of greatest interest was whether people tend to daydream about social peers ("My internal thoughts involve other people [e.g., friends, acquaintances, strangers]").

Participants were instructed to indicate the extent to which the statements were true using a five-point Likert scale that ranged from “never” to “always.” In exchange for answering these questions, participants were provided with feedback about how their daydreaming style compared to the style of others.

### 3.3. Results

The primary goal was to determine how common it is for people to imagine a social interaction while daydreaming. Only 0.8% indicated that the content of their daydreams was never social in nature. In contrast, 21.5% reported that they always daydream about social peers while 51.7% said that they frequently do so. Thus, almost three-quarters of individuals (73.2%) say they “frequently” or “always” think of other people when they are alone with their thoughts. In contrast, only 41.3% reported thinking about the future “always” or “frequently” (7.6% “never”). Thoughts about the personal past or purely fantastical things were similarly less commonly reported as “always” or “frequently” the case whilst daydreaming, Fantasy: 29.6% (13.9% “never”); Past: 28.8% (11.7% “never”).

Null-hypothesis statistical testing with samples this large is somewhat inappropriate, since even the tiniest of differences will be statistically significant given the enormous power afforded any analysis. Effect-sizes were therefore employed to examine possible gender differences. Females were more likely to report social daydreaming ( $M = 4.01$ ,  $SD = .77$ ) than men ( $M = 3.74$ ,  $SD = .82$ ;  $d = .34$ ), and this difference was larger than that found for daydreaming about the future, Females:  $M = 3.20$ ,  $SD = 1.30$ ; Males:  $M = 3.07$ ,  $SD = 1.24$ ;  $d = .10$ . In contrast, females reported less daydreaming about the past and about fantastical things compared to men, although these differences were small, Fantasy:  $d = -.08$ ; Females (Fantasy):  $M = 2.74$ ,  $SD = 1.26$ ; Males (Fantasy):  $M = 2.84$ ,  $SD = 1.27$ ; Past:  $d = -.06$ ; Females (Past):  $M = 2.75$ ,  $SD = 1.14$ ; Males (Past):  $M = 2.82$ ,  $SD = 1.15$ .<sup>2</sup>

### 3.4. Discussion

Study 2 demonstrates that people commonly reflect on social interactions while daydreaming. Although participants reported thinking of social peers while daydreaming more so than thinking about their future or past, or engaging in pure fantasy, it is important to point out that these categories are not mutually exclusive. That is, thoughts about the future or past could easily include thoughts of other people. Interestingly, that the contents of daydreaming tend to be largely social concords well with a recent proposal that the purpose of consciousness is to simulate social interactions (Baumeister & Masicampo, 2010).

With the knowledge that daydreams are primarily social in nature, we sought to explore whether a relationship exists between life satisfaction and the tendency to simulate different types of social interactions. To explore this possibility, we administered a survey on social daydreaming to a group of individuals from an undergraduate population.

## 4. Study 3

In order to further investigate the relation between daydreaming and life satisfaction, we decided to deconstruct the social nature of daydreams. Specifically, we hypothesized that thinking about people with whom we are close while daydreaming might remind us of available social support, resulting in greater feelings of well-being. Conversely, thinking about people with whom we wish to be close but cannot—feelings of longing toward a desired but unavailable romantic partner, for example—could be related to lower feelings of well-being. To properly examine this hypothesis it is important to control for how socially embedded a person actually is, so that any results cannot be attributed to differences in actual social contact. In order to achieve this, we measured variables pertaining to the breadth and depth of a person’s social network, and these were then statistically controlled for in the analyses. Lastly, we expanded our measurement of life satisfaction to include the related constructs of loneliness and perceived social support.

### 4.1. Participants

A total of 361 undergraduate students completed an online survey. Those who took, on average, a very short time to respond to each item (<4 s) were removed as possible inattentive responders, resulting in a final sample of 319 people (238 female, 77 male, 4 not reporting) who ranged in age from 18 to 43 years,  $M = 20.2$ ,  $SD = 3.8$ , 4 not reporting.

### 4.2. Materials and procedure

#### 4.2.1. Social daydreaming

A series of questions probed the contents of respondents’ daydreaming. Two items measured daydreaming about people in general (“My internal thoughts involve other people [e.g., acquaintances, strangers, friends, etc.]” and “When I am

<sup>2</sup> Also interesting to note is that age and social daydreaming were negatively related ( $r = -.11$ ,  $p < .001$ ), indicating that older respondents tended to report socializing internally less than their younger counterparts. Similar relationships were found for daydreaming about the future and about purely fantastical things, Future:  $r = -.27$ ,  $p < .001$ ; Fantasy:  $r = -.19$ ,  $p < .001$ . A small positive correlation, however, was found between age and daydreaming about one’s youth,  $r = .06$ ,  $p < .001$ .

**Table 1**

Correlations and partial correlations between different forms of mind-wandering and socioemotional variables (Study 3).

	People in general		Past or potential romantic		Strangers and acquaintances		Fictional characters		Close friends and family	
	<i>r</i> (/pr)	<i>p</i>	<i>r</i> (/pr)	<i>p</i>	<i>r</i> (/pr)	<i>p</i>	<i>r</i> (/pr)	<i>p</i>	<i>r</i> (/pr)	<i>p</i>
Loneliness	.21 (.18)	<.001 (.002)	.14 (.15)	.012 (.013)	.26 (.27)	<.001 (<.001)	.19 (.23)	.001 (<.001)	.06 (.11)	.325 (.064)
Social support	–.10 (–.11)	.078 (.082)	–.16 (–.18)	.004 (.003)	–.27 (–.27)	<.001 (<.001)	–.15 (–.20)	.006 (.001)	.12 (.05)	.033 (.390)
Life satisfaction	–.09 (–.06)	.118 (.303)	–.10 (–.08)	.080 (.163)	–.13 (–.09)	.019 (.122)	–.10 (–.12)	.087 (.047)	.15 (.13)	.007 (.034)

Note: Partial correlations in parentheses, controlling for gender, age, social network size, and number of social roles.

daydreaming, I imagine detailed interactions with people [e.g., complete conversations].”;  $\alpha = .42$ ), and two items measured daydreaming about close family and friends who are likely to provide some social comfort (“My internal thoughts involve my close friends [/close family] whom I see/interact with often.”;  $\alpha = .64$ ). Questions were also included that measured daydreaming more likely to be associated with longing and negative affect, such as daydreaming about past or potential romantic partners (“My internal thoughts involve my past romantic partners,” and “My internal thoughts involve people I am interested in romantically, but whom I am not currently involved with.”;  $\alpha = .58$ ), two questions about strangers or acquaintances (“My internal thoughts involve strangers [/acquaintances] whom I do not know at all.”;  $\alpha = .73$ ), and three questions about fictional characters (“When daydreaming, my internal thoughts involve characters from television [/books/film].”;  $\alpha = .84$ ). Responses were provided on a seven-point Likert scale ranging from *never/not at all true* to *always/very true*. An eighth option allowed respondents to indicate that the question was not applicable or that they did not know the answer. These responses were coded as missing values.

#### 4.2.2. Life satisfaction

Life satisfaction was measured as in Study 1. The internal reliability in this sample was high,  $\alpha = .87$ .

#### 4.2.3. Loneliness

In order to expand our examination of life satisfaction, the related construct of loneliness was measured using 10 face-valid items. Example items include “How often do you feel you have nobody to talk to?”; “How often do you feel completely alone?”; and “How often do you feel starved for company?” Responses were given on a four-point Likert scale, ranging from *often* to *never*. The internal reliability of this measure was high,  $\alpha = .89$ .

#### 4.2.4. Social support

Perceived social support is another construct related to life satisfaction, measured in this study by the 12-item short form of the Interpersonal Support Evaluation List 12 (ISEL-12, Cohen & Hoberman, 1983; see <http://www.psy.cmu.edu/~scohen/scales.html>). A four-point Likert scale was used to record responses, ranging from *definitely false* to *definitely true*. The internal reliability across all items was high,  $\alpha = .85$ .

#### 4.2.5. Social network

In order to ensure that any relationship between daydreaming and life satisfaction is not due simply to having fewer peers, we measured the breadth and depth of respondents' social network using the Social Network Index (SNI; Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997). The SNI measures both the number of peers (e.g., friends and family) that exist in a person's social network as well as the number of social roles that a person occupies.

### 4.3. Results

Although our measure of perceived social support (ISEL-12) contains three subscales we chose to analyze the total score for ease of reporting. All of the subscales were highly correlated with this total measure (Tangible:  $r = .81$ ,  $p < .001$ ; Belonging:  $r = .85$ ,  $p < .001$ ; Appraisal:  $r = .80$ ,  $p < .001$ ) and the patterns for all results were roughly equivalent (details available upon request). The number of peers estimated by the SNI contained a number of outliers, as identified using a box-plot ( $N = 19$ ); these were coded as missing values.<sup>3</sup>

We were interested in how daydreaming tendencies related to personal happiness, taking into account the content of these daydreams. Correlations were calculated between the daydreaming measures and the measures of socio-emotional well-being (Table 1). Daydreaming about people in general was negatively related to socio-emotional well-being, with a po-

<sup>3</sup> Another option would be to re-code these as the maximum value for the variable. We chose not to take this approach because doing so would have led to a skewed distribution. While employing the missing values approach lowers our overall power for analyses using these variables, thus decreasing the chances of finding any result, our sample size affords more than sufficient power even with these values omitted.



sitive relation to loneliness and weak negative relations to social support and life satisfaction (social support and life satisfaction both statistically nonsignificant).

Closer examination revealed that more daydreaming about people with whom we cannot be close (i.e., past or potential romantic partners, strangers, or fictional characters) exhibited a similar pattern of negative relations with well-being, characterized by more loneliness, less social support, and weak relations with lower life satisfaction (life satisfaction statistically nonsignificant in the case of Romantic and Fictional).

In contrast, daydreaming about close friends and family showed an opposite pattern. More thoughts about those with whom we are close predicted greater socioemotional well-being, with greater life satisfaction and more perceived social support, and no strong relation with loneliness.

In order to rule out the possibility that these findings are due to gender, age, or breadth and depth of social network, we conducted partial correlations (Parenthetical correlations in Table 1). Daydreaming tendencies were used to predict socioemotional outcomes, controlling for gender, age, size of social network, and number of social roles. In this way, any relation observed between social daydreaming and well-being cannot be attributed to these demographic variables or degree of actual social contact.

The results of these analyses confirm the previous ones. More daydreaming about other people predicted greater loneliness after controlling for these other variables, with a weak relation to less social support and no statistically significant relation with life satisfaction. Similarly, more daydreaming about people one is not close to (i.e., past or potential romantic partners, strangers, or fictional characters) was associated with more loneliness, less perceived social support, and weak negative relations with life satisfaction (life satisfaction statistically nonsignificant for Romantic and Strangers).

In contrast to the results for people with whom respondents were not close, the same analysis of daydreaming about close friends and family found quite a different pattern. Controlling for demographic and social network variables, daydreaming about close others predicted greater life satisfaction and no statistically significant relations to loneliness or perceived social support (although loneliness neared significance).

#### 4.4. Discussion

Although daydreaming about people in general was associated with negative socio-emotional outcomes, this association was revealed to be more complex by examining who exactly was being daydreamed about. Daydreaming about close family and friends predicted greater life satisfaction. In contrast, daydreaming about past or potential romantic partners, strangers, or fictional characters was associated with more loneliness and less social support (with a trend toward less overall life satisfaction). Importantly, these patterns of relations tended to persist when important individual differences were controlled for, including the breadth and depth of the person's social network.

It is possible that rumination, repetitive thoughts related to negative affect, might play some role in these relations (Smith & Alloy, 2009). As well, the relation between loneliness and daydreaming about strangers might reflect a dissatisfaction with one's social network and a motivation to change one's friends, consistent with the theory of current concerns (Klinger & Cox, 2004).<sup>1</sup> Causal direction cannot be inferred from this data, however, and it is also possible that the act of daydreaming about strangers is a reminder of dissatisfaction with one's social life, fostering greater feelings of loneliness. The relationship may also be bi-directional, or mediated by some third variable.

#### 5. Conclusions

We found a negative relation between daydreaming and happiness, but demonstrated that it is the frequency of daydreams that drives this association for men and the vividness of daydreams for women. The content of daydreams were found to be primarily social in nature and, importantly, whom people tend to daydream about affects the relation between daydreaming and happiness. Specifically, daydreaming about close friends and family predicted satisfaction with one's life, whereas daydreaming about those one is not close to predicted more loneliness and less perceived social support. These patterns persisted even when we took into account gender, age, and the person's actual social network, resulting in a very conservative analysis. It is important to highlight the fact that these associations tended to be quite small in magnitude, however. Moreover, our studies relied on retrospective reports of daydreaming habits rather than an experience-sampling approach, so there is uncertainty as to whether the same pattern of associations would be observed if actual daydreaming behavior was explored. The major strengths of these three studies are the large and diverse samples and the consistent results observed across these samples. Moreover, by using partial correlations and controlling for social network variables, we also know that these findings cannot be attributed to actual social contact. Individual differences such as gender and whom we tend to daydream about are therefore important to consider when examining how spontaneous thoughts relate to mood and personal happiness.

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