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Is Mind-Mindedness Trait-Like or a Quality of Close Relationships? Evidence from Descriptions of Significant Others, Famous People, and Works of Art

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Cognition (2014), *130*, 417-427.

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Abstract

The four studies reported here sought to explore the nature of the construct of mind-mindedness. In Study 1, involving 37 mothers of 5- to 8-year-old children, mothers' verbal mind-minded descriptions of their children were positively correlated with their mind-minded descriptions of their current romantic partner. Participants in Studies 2 (*N*=114), 3 (*N*=173), and 4 (*N*=153) were young adults who provided written descriptions of: a close friend and their current romantic partner (Study 2); two specified famous people, two works of art, and a close friend (Study 3); a specified famous person, a famous person of the participant's choice, and a close friend (Study 4). Study 2 obtained paper-and-pen written descriptions, whereas participants completed descriptions in electronic format in Studies 3 and 4. Mind-minded descriptions of friends and partners were positively correlated, but there was no relation between mind-minded descriptions of a friend and the tendency to describe famous people or works of art in mind-minded terms. Levels of mind-mindedness were higher in descriptions of friends compared with descriptions of famous people or works of art. Administration format was unrelated to individuals' mind-mindedness scores. The results suggest that mind-mindedness is a facet of personal relationships rather than a trait-like quality.

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1.1 General Introduction

Interpreting other people's behavior in terms of its underlying mental states has been shown to be an important factor in development (e.g., Fonagy, Gergely, Jurist, & Target, 2002). Caregiver mind-mindedness (Meins, 1997) is an index of individual differences in caregivers' capacity to take the intentional stance with regard to their young children. Defined as the proclivity to treat one's young child as an individual with a mind, mind-mindedness has been operationalized in terms of caregivers' tendency (a) to focus on mental attributes when given an open-ended invitation to describe their child (Meins, Fernyhough, Russell, & Clark-Carter, 1998); (b) to attribute meaning to infants' early non-word vocalizations (Meins, 1998; Meins & Fernyhough, 1999); and (c) to comment either appropriately or in a non-attuned manner on infants' putative thoughts and feelings when interacting with them in the first year of life (Meins et al., 2012; Meins, Fernyhough, Fradley, & Tuckey, 2001). These studies by Meins and colleagues showed that, across different assessment methods, caregivers vary widely in their levels of mind-mindedness. Mind-mindedness has not only been investigated in caregiver–child relationships. Meins, Harris-Waller, and Lloyd (2008) explored individual differences in mind-mindedness in adults' written descriptions of a close friend, and Meins, Fernyhough, Johnson, and Lidstone (2006) investigated mind-mindedness in children's verbal descriptions of their best friend. As in the previous studies on mind-mindedness in caregivers, individual differences were found in adults' and children's tendency to describe a close friend with reference to their mental characteristics.

While there has been a considerable amount of research on how caregivers' mind-mindedness facilitates their children's development and understanding of mind (e.g., Laranjo, Bernier, Meins, & Carlson, 2010; Meins & Fernyhough, 1999; Meins et al., 1998, 2002, 2003,

2013), much less is known about why such wide-ranging differences in adults' mind-mindedness occur. It has been argued that the observed individual differences in mind-mindedness suggest a form of 'competence–performance gap' in the use of internal-state understanding to interpret behavior in everyday situations (Apperly, 2012; Meins et al., 2006). Although typically developing individuals have the basic capacity to represent and understand other people's thoughts and feelings, not everyone spontaneously recruits this capacity when describing people or interpreting or explaining their behavior.

The aim of the studies reported here was to explore the underlying nature of the construct of mind-mindedness. Given that previous studies on mind-mindedness have involved typically developing adults, it seems unlikely that differences in underlying mentalizing competence or intellectual ability can explain the observed variance in mind-mindedness. One possibility is that mind-mindedness may be a quality that applies specifically to close relationships. On this account, one would expect concordance in mind-mindedness across different close relationships, but no relation between mind-minded descriptions of someone with whom one has a close relationship and those of other people or stimuli.

This characterization of mind-mindedness as a relational construct shares common ground with theoretical work on the role played by individuals' capacity to reflect in mental terms on people's behavior (so-called reflective functioning) in the formation and transmission of attachment relationships (e.g., Fonagy, Steele, Moran, Steele, & Higgitt, 1991; Fonagy & Target, 1997; Fonagy, Target, Steele, & Steele, 1998; Sharp & Fonagy, 2008). Reflective functioning is assessed from an individual's discourse during interviews such as the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996). A number of studies have demonstrated the discriminant validity of individuals' discourse style when talking about close relationships during the AAI. Discourse style during the AAI was found to be unrelated to individuals' recall of autobiographical material not

associated with attachment issues (Bakermans-Kranenburg & van IJzendoorn, 1993; Sagi et al., 1994) and with their style of discourse when interviewed about their employment experiences (Crowell et al., 1996). These findings suggest that individuals adopt discourse modes that are specific to their representations of relationships with significant others. Similarly, mind-mindedness may be a relational construct that applies specifically to representations of individuals with whom one has a close relationship. However, since no previous study has investigated mind-mindedness in relation to more than one target individual, the degree of concordance in mind-mindedness across different close relationships is unknown. Addressing this gap was the aim of Studies 1 and 2.

While concordance across different close relationships could be evidence for the relational nature of the mind-mindedness construct, such concordance would also be in line with an alternative proposal: mind-mindedness is a trait-like quality. If this were the case, neither the qualities of the individual being described nor experiential factors should influence mind-mindedness. In line with this proposal, the child's gender and general cognitive ability are not associated with the mother's tendency to describe him or her with reference to mental characteristics (McMahon & Meins, 2012; Meins et al., 1998). In addition, mothers' socioeconomic status and educational level are similarly unrelated to their mind-mindedness (Meins, Fernyhough, Arnott, Leekam, & Turner, 2011; Meins et al., 1998), as is their state of mental health. For example, in a large community sample, Meins et al. (2011) reported that mothers' scores for depression and perceived social support were both unrelated to their mind-mindedness when interacting with their infants. More strikingly, mind-mindedness in women hospitalized for a range of severe mental illnesses was found not to differ from that of a healthy comparison group (Pawlby et al., 2010). However, recent research suggests that mothers' tendency to describe their 4-year-olds with reference to their mental characteristics is negatively related to concurrent parenting stress (McMahon & Meins, 2012).

In order to adjudicate between proposals that mind-mindedness is a relational construct or a trait-like quality that applies to representations of any entity, it is necessary to assess mind-mindedness beyond close relationships. This was the aim of Studies 3 and 4. If mind-mindedness is indeed a trait-like quality, one would predict that it would generalize not only across different close relationships, but to individuals' representations of people in general. Moreover, it is also possible that mind-mindedness generalizes not only across descriptions of different people, but across descriptions of any stimulus. On this account, one would predict concordance in mind-mindedness in individuals' descriptions of a wide range of stimuli, regardless of whether the target being described is known or unknown, animate or inanimate.

In summary, the four studies reported here aimed to address whether mind-mindedness is best characterized as (a) a trait-like quality, or (b) a relational construct, specific to representations of people with whom one has a close relationship.

2.1 Study 1

The main aim of Study 1 was to investigate whether a mother's mind-mindedness in relation to her child generalizes to her relationship with a romantic partner. Two studies have addressed whether caregivers' mind-mindedness with their infant relates to their tendency to reflect and comment on individuals' internal states in their other relationships. Arnott and Meins (2007) reported that parents' mind-mindedness when interacting with their 6-month-olds was positively associated with their reflective functioning scores on the AAI. Similarly, Demers, Bernier, Tarabulsy, and Provost (2010) found that mothers' tendency to describe their infants using positively-valenced mental characteristics was positively associated with scores on the coherence scale of the AAI. Study 1 was the first to assess concordance specifically in mind-mindedness across different relationships, and investigated this issue by asking the mother to describe both her child and her current romantic partner.

2.2 Method

2.2.1 Participants

Participants were 37 mothers who had children (21 girls) aged between 5 and 8 years (*M* = 81 months), and were recruited through the children's primary school. Of the 37 mothers' current partners, 34 were the child's biological father. The length of the relationship with the partner varied between 3 months and 26 years (*M* = 12.6 years), and all but one of the relationships were well-established, lasting for at least 3 years. All mothers were fluent in English, although two mothers were non-native English speakers.

2.2.2 Materials and Methods

Parents were sent a Project Information Sheet asking for mothers to volunteer for a study in which they would be asked general questions about their child and their current partner. The women's mind-mindedness was assessed through an interview which lasted between 10 and 15 minutes. The interview was conducted over the telephone, with each mother being called at home at a previously arranged time. The telephone conversations were tape-recorded using a two-way automatic telephone conversation recorder and were later transcribed verbatim. The experimenter began the interview by explaining to the mother that she was going to be asked a number of questions about her child, her partner, and her general values relating to her family. The experimenter clarified that there were no right or wrong answers to the questions, and that the mother was free to respond in any way she felt appropriate.

The questions were asked in the following order: (a) *Can you describe [child's name] for me?*, (b) *What would you say is the best thing about your child?*, (c) *What do you try and teach your child?*, (d) *Could you describe your current partner for me?*, (e) *What sort of things do you and your partner agree about?*, (f) *What sort of things do you disagree about?*, and (g) *What do you see as most important for your family's future?*

Mother–child mind-mindedness was assessed from the coded transcripts of the answers to the question describing the child, and mother–partner mind-mindedness was assessed from mothers' descriptions of their partner. Descriptions were first divided into discrete attributes, and then each attribute was placed into one of four exclusive and exhaustive categories using Meins and Fernyhough's (2012) coding manual: (a) *Mental:* Any reference to the individual's mental life, relating to will, mind, imagination, interest, intellect, or metacognition (e.g., 'inquisitive', 'imaginative', 'he's always aware of other people's feelings'). Any comment relating to desires, wishes, and emotions (but not merely in terms of describing the child's behavioral likes and dislikes) – for example, 'she wants to be like her sister' was classified as a mental characteristic, but 'he loves playing football' was characterized as a behavioral characteristic. Examples from partner descriptions were 'intelligent', 'very loving'; (b) *Behavioral*: Any reference to behavior, such as games, activities, and interactions with others on a behavioral level (e.g., 'very active, 'energetic'). Following Meins and Fernyhough's coding guidelines, the following were also classified as behavioral because a purely non-mental interpretation was possible: 'bubbly', 'lively', 'cheerful', 'fun', 'outgoing'. Examples from partner descriptions were 'he's good at practical things', 'does fun things with the children at weekends'; (c) *Physical*: Any physical characteristic, references to child/partner's age or position in the family (e.g., 'blonde hair', 'quite small for his age', 'my youngest'). Examples from descriptions of partner: 'tall', 'looks good in a suit', 'hairy'; (d) *General*: Any comments that did not fit into the preceding three categories (e.g., 'lovely', 'he's just gorgeous', 'great kid'). Examples from descriptions of partner: 'typical man', 'it was love at first sight'.

Each mother was given a score for the use of mental characteristics as a percentage of the total number of attributes used to describe her child/partner. Higher scores on the mental category are indicative of mind-mindedness. The interviews were coded by two researchers blind to all other

measures, and a randomly selected third of the interviews was coded for inter-rater agreement: for agreement across the mental, behavioral, physical, and general categories, $\kappa = 0.86$ for child and $\kappa = 0.84$ for partner.

2.3 Results

2.3.1 Descriptive Statistics and Preliminary Analyses

Table 1 shows the descriptive statistics. Mothers' mental descriptions of their children were unrelated to children's age, $r(38) = -0.03$, n.s., and gender (boys: M=23.00, SD=19.52; girls: M=32.83, SD=15.25), $t(38) = 1.77$, n.s., $d = 0.56$. Mothers' mental descriptions of their partners were unrelated to the length of the relationship, $r(35) = -0.19$, n.s.

2.3.2 Table 1: Descriptive Statistics for Study 1

Variable	*M*	*SD*	Range
Mothers' Child Descriptions			
Mental total (percentage)	2.45 (43.63)	1.89 (22.03)	0–8 (0–73)
Total number of descriptions	7.54	3.55	2–19
Mothers' Partner Descriptions			
Mental total (percentage)	2.83 (41.90)	2.23 (28.58)	0–10 (0–100)
Total number of descriptions	7.28	3.34	2–15

2.3.3 Relations between Mothers' Descriptions of Child and of Partner

Mothers' mental descriptions of their child were positively correlated with their mental descriptions of their romantic partner, $r(35) = 0.42$, $p < .01$, suggesting that mothers who tend to focus on mental characteristics when given an open-ended invitation to describe their child show a similar emphasis on mental attributes when describing their romantic partner. Although mothers' overall number of descriptions for child and partner were positively correlated, $r(35) = 0.54$, $p <$

.001, their scores for behavioral, physical, and general descriptions of child and partner were unrelated (*r*s < .16).

A paired t test was used to investigate whether women were more likely to describe their partners or children with reference to mental attributes. The was no difference between mental description scores for partners and children, $t(36) = 0.38$, n.s., $d = 0.07$.

2.4 Discussion and Introduction to Study 2

The results of Study 1 provide support for the hypothesis that an individual's mind-mindedness generalizes across different close relationships. Mothers' mental descriptions of their children were positively associated with their tendency to describe their romantic partner with reference to mental and emotional characteristics. Interestingly, this concordance was seen only for mental descriptions, and not for mothers' tendency to describe children and partners with reference to behavioral, physical, or general attributes.

Study 1's findings show that there is concordance in mothers' mind-mindedness across descriptions of their child and partner. These results are thus consistent both with mind-mindedness being an individual trait-like quality and a construct specific to close relationships given that mother–child and mother–partner relationships would appear to involve comparable levels of intimacy and emotional intensity. The aim of Study 2 was thus to investigate whether the concordance observed in mothers' mind-minded descriptions of their children and their partners held for varying types of peer relationship in a different population, exploring young adults' mind-mindedness in two relationships that varied in intimacy and emotional intensity (friendship and romantic partnership). If mind-mindedness is a trait-like quality, one would predict that there will be concordance regardless of the precise nature of the relationship. Alternatively, if mind-mindedness is a relational construct, it may be moderated by the intimacy of the particular relationship; one might thus predict that individuals will focus more on mental characteristics when describing a

romantic partner than a friend. A final aim of Study 2 was to establish whether mind-mindedness could reliably be assessed in a self-report, written format rather than in an interview.

3.1 Study 2

3.1.1 Participants

Participants were 114 undergraduate students (79 women) aged between 18 and 35 years (M = 20.27, SD = 2.90) attending a British university. Participants were opportunity sampled in arts and sciences campus areas; none were parents. No incentive was offered for participation.

3.1.2 Materials and Methods

Meins et al.'s (2008) adaptation of Meins et al.'s (1998) mind-mindedness interview for use in questionnaire format was used. Participants provided written descriptions of (a) a close friend, and (b) their current romantic partner. Specific instructions were as follows: *Think of your current romantic partner/a person you regard as a very close friend. Please use the space below to tell us a little about this person.* A space of seven lines was provided for each description.

The resulting text was divided into phrases or single adjectives, each of which was placed into one of the following exclusive and exhaustive categories from Meins et al.'s (2008) coding system: (a) *Mental:* references to the mental life and intellect of the person being described, including references to shared mental characteristics (e.g. 'we think the same way'); (b) *Behavioral:* comments about activities or interactions with others that could be interpreted on a purely behavioral level, (c) *Physical:* references to any physical characteristics, including age; (d) *Self-Referential:* comments in which the primary reference was self-focused rather than describing the friend (e.g., 'he makes me smile'); (e) *Relationship*: comments focused on the relationship rather than either of the individuals involved (e.g., 'he's like a member of my family'); and (f) *Other:* miscellaneous comments not belonging to any of the above categories (e.g., where the person grew up, stating the person's name), including non-specific value judgements (e.g., 'he's great').

Participants' descriptions of friends were coded by a trained researcher blind to all other data, with a second researcher coding descriptions of romantic partners. These two researchers provided inter-rater agreement for one another on a randomly selected 25% of each type of description. Inter-rater reliability was $\kappa = 0.96$. To control for variation in length of description, scores were expressed as a percentage of total number of descriptions. Higher scores for mental descriptions indicate greater mind-mindedness.

3.2 Results

3.2.1 Descriptive Statistics and Preliminary Analyses

Table 2 shows the descriptive statistics. All variables were normally distributed, although 19 (17%) participants failed to include a mental description of their partner, and 31 (27%) failed to include a mental description of their close friend. Participants' gender was unrelated to their mind-mindedness scores when describing a best friend (men: M=21.98, SD=21.26; women: M=25.98, SD=19.95), $t(112) = 0.97$, n.s., $d = 0.19$, or romantic partner (men: M=30.36, SD=24.56; women: M=34.24, SD=22.73), $t(112) = 0.82$, n.s., $d = 0.16$, and is not considered further in the analyses.

3.2.2 Table 2: Descriptive Statistics for Study 2

Variable	*M*	*SD*	Range
Friend Descriptions			
Mental total (percentage)	1.59 (24.76)	1.44 (20.35)	0–6 (0–80)
Total number of descriptions	6.20	2.61	2–16
Partner Descriptions			
Mental total (percentage)	2.39 (33.05)	1.94 (23.27)	0–8 (0–100)
Total number of descriptions	7.25	3.19	2–21

3.2.3 Relations between Descriptions of Partner and Friend

Participants' mental descriptions of partner and friend were positively correlated, $r(112) = 0.42$, $p < .001$, showing that young adults who tended to focus on mental characteristics when describing their current romantic partner similarly emphasized such characteristics when describing a close friend. Note that the correlation coefficient here is identical to that reported in Study 1 for the relation between mothers' mental descriptions of her child and romantic partner.

A paired t test was used to investigate whether participants were more likely to describe their partners or close friends with reference to mental attributes. Mental characteristics were more likely to be focused on when participants described their current romantic partner than a close friend, $t(113) = 3.76$, $p < .001$, $d = 0.38$.

3.2.4 Comparison of Interview and Paper and Pen Format Descriptions of Partners

The mean scores for mental descriptions of partners in the two administration formats are shown in Table 1 (interview) and Table 2 (written). Adminstration format was unrelated to mental description scores, $t(149) = 1.90$, n.s., $d = .34$.

3.3 Discussion and Introduction to Study 3

The results of Study 2 show a robust positive correlation between participants' mental descriptions of a close friend and their current romantic partner. Comparing across Studies 1 and 2, there was no effect of administration format, and the correlation coefficients for relations between mind-mindedness in the different types of close relationship (child–partner, partner–friend) were identical. The observed concordance in mental descriptions of friends and partners is in line with the notion that mind-mindedness is trait-like. However, the fact that individuals were more likely to describe their romantic partners than their close friends with reference to mental characteristics suggests that the intimacy of the relationship influences the level of mind-mindedness.

In order to investigate further whether mind-mindedness is a trait-like quality or a relational construct, Study 3 assessed individuals' descriptions of a range of stimuli. In addition to describing a close friend, participants in Study 3 provided descriptions of famous people. If mind-mindedness is a relational construct, then one would predict that mind-minded descriptions of a friend will be unrelated to those of famous people. On this account individuals' tendency to refer to mental characteristics would also to be higher when describing someone with whom they had a close relationship than a famous person whom they had never met. In contrast, if mind-mindedness is a trait-like quality, mental descriptions should not vary as a function of the specific individual being described.

The second aim of Study 3 was to establish whether the concordance in mind-mindedness observed in Studies 1 and 2 would also be seen when individuals described stimuli other than people. To investigate this possibility, Study 3 assessed individuals' use of mental terms to describe both an abstract and a naturalistic painting. If mind-mindedness is a trait-like quality, then one would expect mental descriptions of paintings to be positively associated with those of famous people and a close friend. A final aim of Study 3 was to establish whether mind-mindedness could be reliably assessed in electronic questionnaire format given that such differences in response modality have been reported not to affect participant responses (Jones, Fernyhough, de-Wit, & Meins, 2008).

4.1 Study 3

4.1.1 Participants

Participants were 174 adults (111 women) aged between 18 and 51 years (M=21.83, SD=4.91). Participants were opportunity sampled via a link to an online questionnaire that was posted on a social networking site associated with a British university. No incentive was offered for participation.

4.1.2 Materials and Methods

When participants clicked onto the link for the study, they were presented with a brief summary explaining that they would be asked to describe various types of stimuli. They were told that they had the right to withdraw from the study at any time, and that if they did so, their data would not be saved. The descriptions were completed anonymously.

Participants viewed four still images, always presented in the same order. The first two images were photographs of two famous people: (a) Barack Obama (US President), and (b) Katie Price (a British model who has participated in a number of high-profile television programs). These individuals were chosen because they were likely to be very familiar to the target population and represented an individual known for his intellect and an individual famous for her physique. The next two images were paintings: (c) an abstract painting (*Lines of Beauty* by Chidi Okoye) which depicted an array of shapes and colors, and (d) a naturalistic painting (*Waiting Room* by William E. Rochfort) which showed realistic images of a man and boy reading in a doctor's surgery. These paintings were chosen specifically to be unfamiliar to the participants in order to assess their spontaneous style in describing an unfamiliar, inanimate target. Participants were required to provide written descriptions of each stimulus in a text box alongside the image which said: *Please use the space below to describe the picture. Feel free to use as much or as little of the space provided*. For the final description, participants were given a blank text box with the instruction to describe an individual whom they regarded as a close friend.

The resulting text for each description was divided into phrases or single adjectives and coded using Meins et al.'s (2008) scheme as described in Study 2 above. Examples for each of the description categories for the famous people and painting are as follows: (a) *Mental*: 'he enjoys high pressure', 'she seeks attention', 'exciting', 'the man is bored of the newspaper'; (b) *Behavioral*: 'great public speaker', 'model but also businesswoman', 'two heads talking to each other', 'waiting

for an appointment of some type'; (c) *Physical*: 'smart in his appearance', 'she has dark eye makeup on', 'colorful curved lines', 'there's a noticeboard'; (d) *Self-Referential*: 'I don't think this is an accurate perception', 'she annoys me with her constant attempts to gain the public eye', 'it makes me feel nervous', 'I see some humor in this'; (e) *Relationship*: 'married to Michelle', 'previously married to Peter André', 'it's a father and son'; (f) *Other*: naming Barack Obama or Katie Price, any descriptions of the surroundings in the images of Barack Obama or Katie Price, and non-specific value judgements relating to any of the images.

Participants' descriptions were coded by one of three trained coders blind to all other data, and a randomly selected 25% of each coder's descriptions was coded by a fourth blind coder. Average inter-rater reliability was $\kappa = 0.80$. As in Studies 1 and 2, scores for mental descriptions were expressed as a percentage of total number of descriptions.

4.2 Results

4.2.1 Descriptive Statistics and Preliminary Analyses

All of the participants' descriptions of Barack Obama and Katie Price demonstrated that they had accurately identified them both and were familiar with them, including their name or profession in their descriptions. Table 3 shows the descriptive statistics. All variables apart from the scores for mental descriptions of the close friend were positively skewed; non-parametric statistics were thus used for analyses involving these variables. The number of participants failing to include a mental description for each of the stimuli was as follows: Barack Obama = 116 (67%); Katie Price = 133 (76%); Abstract painting = 131 (75%); Naturalistic painting = 92 (53%); Close friend = 41 (24%).

Participant gender was unrelated to scores for mental descriptions of a close friend, $t(172) = 1.28$, n.s., $d = 0.20$, and to mental descriptions of the famous people and paintings as assessed using Mann-Whitney U (Zs < 1.95, n.s.). Gender is thus not considered further in the analyses.

4.2.2 Table 3: Descriptive Statistics for Study 3

Variable	*M*	*SD*	Range
Barack Obama Descriptions			
Mental total (percentage)	0.53 (9.75)	0.92 (17.07)	0–5 (0–75)
Total number of descriptions	5.18	2.56	1–15
Katie Price Descriptions			
Mental total (percentage)	0.36 (7.26)	0.80 (15.88)	0–5 (0–100)
Total number of descriptions	4.96	2.36	1–13
Abstract Painting Descriptions			
Mental total (percentage)	0.32 (6.21)	0.65 (13.18)	0–3 (0–75)
Total number of descriptions	4.82	2.74	1–17
Naturalistic Painting Descriptions			
Mental total (percentage)	0.77 (13.66)	1.23 (19.41)	0–10 (0–100)
Total number of descriptions	6.48	4.05	1–24
Close Friend Descriptions			
Mental total (percentage)	2.57 (27.15)	2.38 (23.19)	0–13 (0–100)
Total number of descriptions	9.61	5.43	1–39

Wilcoxon matched pairs tests showed that having an image of the target present did not result in participants focusing more on physical aspects of the image in their descriptions; indeed, participants included more physical descriptions of a close friend (for whom no image was provided) than of Barack Obama, $Z = 6.17$, $p < .001$, Katie Price, $Z = 6.16$, $p < .001$, and the naturalistic painting, $Z = 4.84$, $p < .001$, with no difference for the comparison with the abstract painting, $Z = 1.03$, $p = .304$.

4.2.3 Relations between Descriptions of Close Friend Versus Other Stimuli

Table 4 shows the correlations between scores for mental descriptions of the different stimuli, with α adjusted to .005 for multiple comparisons. As shown in Table 4, there were two significant correlations: mental descriptions of Barack Obama and Katie Price were positively correlated, and mental descriptions of the abstract and naturalistic paintings were also positively correlated.

4.2.4 Table 4: Correlations (Spearman's ρ) between Mental Description Scores in Study 3

	Barack Obama	Katie Price	Abstract painting	Naturalistic painting
Katie Price	.27**			
Abstract painting	.04	.14		
Naturalistic painting	.12	.20	.22*	
Close friend	.13	.17	.16	.11

* $p < .005$, ** $p < .001$.

We tested whether the correlation between mental descriptions of partner and close friend reported in Study 2 ($r = .42$) was significantly different from the correlations between mental descriptions of a close friend and of the other stimuli used in Study 3. The Study 2 correlation was larger than the correlation between mental descriptions of a close friend and mental descriptions of (a) the naturalistic painting, $Z = 2.44$, $p < .025$, and (b) Barack Obama at trend level, $Z = 1.76$, $p = .079$. The Study 2 correlation was not greater than those between mental descriptions of a close friend and mental descriptions of (a) Katie Price, $Z = 1.59$, $p = .115$, and (b) the abstract painting, $Z = 1.57$, $p = .116$.

Scores for the percentage of mental descriptions of a close friend were compared with those for each of the other stimuli using Wilcoxon's matched pairs. Participants included a higher percentage of mental characteristics in describing a close friend than they used in describing (a)

Barack Obama, $Z = 7.73$, $p < .001$; (b) Katie Price, $Z = 8.47$, $p < .001$; (c) the abstract painting, $Z = 9.09$, $p < .001$; and (d) the naturalistic painting, $Z = 6.08$, $p < .001$.

4.2.5 Comparison between Paper and Pen and Electronic Formats for Friend Descriptions

The mean scores for percentage of mental descriptions of a close friend in the two administration formats are shown in Table 3 (paper and pen format) and Table 4 (electronic format). Scores did not differ as a function of administration format, $t(284) = 0.90$, n.s., $d = .11$.

4.3 Discussion and Introduction to Study 4

Study 3 addressed how mind-mindedness related to personal knowledge of the individual and the nature of the target being described. Mind-minded descriptions of a close friend were unrelated to those of famous people. The results also showed that individuals were more likely to refer to mental characteristics when describing someone with whom they had a close relationship than when describing famous people whom they had never met. Moreover, the results of Study 3 showed that mental descriptions of a close friend were unrelated to those of two paintings, suggesting that mind-mindedness is not trait-like. There was no evidence that providing participants with a visual image biased them toward describing physical aspects of the person or painting, since physical descriptions tended to be more common for the close friend (for whom no image was provided) than for the famous figures or works of art.

Together with the findings of Studies 1 and 2, Study 3 suggests that mind-mindedness is a quality most frequently seen in close relationships. However, comparing the data across studies, the correlation between mental descriptions of two known social partners (friend and romantic partner) reported in Study 2 was not significantly larger than that between mental descriptions of a close friend and such descriptions of three out of four of the stimuli used in Study 3. Contrary to Study 3's simple correlational findings, these results do not unequivocally support the proposal that mind-mindedness is a relational construct. Comparing the descriptions of a close friend across Studies 2

and 3 showed that electronic versus paper and pen administration format was unrelated to individuals' tendency to focus on the friend's mental characteristics.

One difference between the famous people and close friend that participants described in Study 3 was that the two famous people were selected for participants, whereas they were free to choose the person with whom they had a close relationship. Thus, the lack of relation between tending to focus on mental characteristics when describing a famous person versus someone known personally, and the greater proportion of mental descriptors of a close friend than of a famous person, may be due to fact that participants were not familiar with or interested in the famous figures chosen for them in Study 3. To address this issue, Study 4 enabled participants to describe a famous person of their own choice in addition to describing a specified famous figure and a close friend. If mind-mindedness is a relational construct, then one would predict that mental descriptions of the self-selected and specified famous people will be unrelated to those of the close friend. However, if the null findings of Study 3 were due to the fact that participants were not free to choose a famous person about whom they were knowledgeable, mental descriptions of the self-selected famous person should be positively correlated with those of the close friend. Such a finding would be in line with the notion that mind-mindedness is trait-like with regard to individuals' descriptions of people.

5.1 Study 4

5.1.1 Participants

Participants were 153 adults (121 women) aged between 16 and 60 years (M=20.78, SD=6.08). Participants were opportunity sampled via a link to an online questionnaire that was posted on a social networking site associated with a British university. No incentive was offered for participation.

5.1.2 Materials and Methods

The procedure was identical to that used in Study 3, with participants clicking onto a link for the study, and being presented with a brief summary explaining that they would be asked to describe various types of stimuli. They were told that they had the right to withdraw from the study at any time, and that if they did so, their data would not be saved. The descriptions were completed anonymously.

Participants were required to describe three individuals, with all participants completing the descriptions in the same order: (a) Barack Obama, (b) a famous figure of their own choice, and (c) a close friend. Participants were required to provide written descriptions of each individual. Study 4 used the same photograph of Barack Obama that was used in Study 3, with a text box alongside the image which said: *Please use the space below to describe this person. Feel free to use as much or as little of the space provided*. For the self-selected famous person, instructions were as follows: *Please choose a famous person who you would like to describe*. Participants then entered the name of the chosen person and described him/her in a text box. For the final description, participants were given a blank text box with the instruction to describe an individual whom they regarded as a close friend. The resulting text for each description was divided into phrases or single adjectives and coded using Meins et al.'s (2008) scheme as described in Studies 2 and 3 above.

Descriptions were coded by a trained individual who was blind to participants' scores on the other description sections. A randomly selected 25% of descriptions was coded by a second blind coder; inter-rater reliability was $\kappa = .92$.

5.2 Results

5.2.1 Descriptive Statistics and Preliminary Analyses

Table 5 shows the descriptive statistics for Study 4. Participants selected a wide range of famous people to describe, including writers, actors, sports stars, scientists, historic figures, pop stars, and politicians. Percentage scores for mental descriptions for Barack Obama and the self-

selected famous person were positively skewed, but those for the close friend were normally distributed. Of the 153 participants, 107 (70%) failed to include a mental description of Barack Obama, 115 (66%) failed to include a mental description of their chosen famous person, and 29 (19%) failed to include a mental description of a close friend. Non-parametric analyses are thus used for analyses involving the non-normally distributed variables.

5.2.2 Table 5: Descriptive Statistics for Study 4

Variable	*M*	*SD*	Range
Barack Obama Descriptions			
Mental total (percentage)	0.53 (9.72)	0.97 (17.88)	0–4 (0–75)
Total number of descriptions	4.70	2.78	1–14
Famous Person Descriptions			
Mental total (percentage)	0.42 (7.20)	0.92 (16.11)	0–5 (0–100)
Total number of descriptions	5.07	2.89	1–13
Close Friend Descriptions			
Mental total (percentage)	2.62 (38.12)	2.49 (28.20)	0–15 (0–100)
Total number of descriptions	6.59	4.09	1–24

Participant gender was unrelated to scores for mental descriptions of Barack Obama, $Z = .37$, n.s., the self-selected famous person, $Z = 1.50$, n.s., and the close friend, $t(151) = 0.71$, n.s., and is not considered further in the analyses.

5.2.3 Relations between Mental Descriptions of Famous People and a Close Friend

Table 6 shows the correlation matrix for the relations between the different mental description scores. Alpha was adjusted to .017 for multiple comparisons. As shown in Table 6, scores for mental descriptions of Barack Obama were positively correlated with those for the self-

selected famous person, but there were no significant correlations with scores for mental descriptions of a close friend. These correlations with mental descriptions of a close friend were smaller than the correlation (r = .42) reported in Study 2 between mental descriptions of a romantic partner and of a close friend for both Barack Obama, Z = 2.17, p < .05, and the self-selected famous person, Z = 2.12, p < .05.

5.2.4 Table 6: Correlations (Spearman's ρ) between Mental Description Scores in Study 4

	Barack Obama	Famous person
Famous person	.37*	
Close friend	.17	.18

* p < .001.

Scores for the percentage of mental descriptions of a close friend were compared with those for the two famous people using Wilcoxon's matched pairs. Replicating the results of Study 3, participants included a higher percentage of mental characteristics in describing a close friend than they used in describing Barack Obama, Z = 8.63, p < .001. Percentage scores for mental characteristics for close friend descriptions were also higher than those for the self-selected famous person, Z = 9.08, p < .001. There was a non-significant trend for participants to include a higher percentage of mental descriptions in describing Barack Obama than in describing the self-selected famous person, Z = 1.92, p = .055.

6.1 General Discussion

The main aim of the four studies reported here was to explore how best to characterize the mind-mindedness construct. The first two studies found strong support for the hypothesis that mind-mindedness generalizes across different close relationships: mothers' mind-minded descriptions of their children were positively correlated with mind-minded descriptions of their current romantic

partners, and there were positive associations between young adults' tendency to describe a close friend and a romantic partner in mind-minded terms. Taken together, these results are in line with the notion that mind-mindedness is a facet of individuals' representations of close relationships. However, the results of Studies 1 and 2 are also consistent with the suggestion that mind-mindedness is a trait-like quality that influences an individual's general tendency to use cognitions and emotions to describe, explain, and interpret people's behavior.

The results of Study 2 showed that scores for mind-mindedness were higher for descriptions of a romantic partner than of a close friend. This finding suggests that greater intimacy in the relationship may result in an increase in the individual's tendency to focus on social partners' mental attributes when given an open-ended invitation to describe them. It seems reasonable to hypothesize that increased intimacy results in greater knowledge of the person's interests, dislikes, and feelings, which is reflected in the tendency to focus on mental attributes when asked to describe the person. Although the results of Study 1 showed that the length of the relationship was not related to the women's tendency to focus on mental characteristics when describing their romantic partners, this null finding may have arisen because all but one of the relationships in this study were well-established, thus providing insufficient variability for the detection of such an effect. Future research should explore the relation between mind-mindedness and the closeness and intimacy of the relationship in greater detail. For example, one could investigate how individuals' independent self-report of emotional intimacy and closeness in the relationship relates to their tendency to describe the friend or partner in mind-minded terms. It would also be interesting to investigate levels of mind-mindedness in newly-formed versus well-established relationships.

In contrast to the observed positive associations in individuals' mind-minded descriptions of partners involved in different types of close relationship, we failed to find any relation between individuals' tendency to focus on mental characteristics when describing famous people and people

they knew. In Study 3, mental descriptions of a close friend were unrelated to participants' mental descriptions of two specified famous figures, although mental descriptions of the two famous figures were positively correlated. These findings were replicated in Study 4 when participants were free to choose a famous person to describe: mental descriptions of the specified and self-chosen famous person were positively correlated, but were both unrelated to mental descriptions of a close friend. Comparing the size of correlations across studies, the correlation in Study 2 between mental descriptions of two individuals who were known personally (romantic partner and close friend) was larger than that between mental descriptions of a close friend and those of the naturalistic painting and Barack Obama (at trend level). In contrast, the size of the Study 2 correlation did not differ from those of the correlations between mental descriptions of a close friend and of the other targets (Katie Price and the abstract painting), raising questions over the conclusion that mind-mindedness is a quality associated with close personal relationships. However, the comparisons of the correlations across Studies 2 and 4 were unequivocal: the correlation between mental descriptions of the romantic partner and close friend was larger than those between mental descriptions of a close friend and (a) a specified famous person, and (b) a self-selected famous person.

The results of Studies 3 and 4 thus point to mind-mindedness being a relational construct, and not a trait-like quality. Anecdotally, the choice of famous figure appeared to have little impact on the extent to which participants focused on mental characteristics. For example, several participants chose figures noted for their intellect, creativity, and innovation (e.g., Einstein, Leonardo da Vinci, Newton) and yet failed to mention a single mental characteristic. In contrast, others chose figures distinguished by qualities other than intellectual prowess (e.g., pop stars, sports stars), but nevertheless described them with reference to their mental attributes. This suggests that the actual qualities of the individual being described are unrelated to the describer's mind-mindedness, and are in line with Meins et al.'s (1998) finding that mothers' mind-mindedness was

not related to their children's general cognitive ability. Exploring how individuals' interest in and knowledge of a famous figure relates to their mind-mindedness would, however, be an interesting avenue for future research.

The results of Study 3 further showed that mind-mindedness does not appear to be trait-like by virtue of the lack of association between participants' mental descriptions of works of art and such descriptions of a close friend. If individual differences in mind-mindedness merely indexed a general tendency to describe any stimulus with reference to mental characteristics, then positive associations should have been found across the descriptions of all of the different stimuli in Study 3. The fact that some of the associations in Studies 3 and 4 were significant suggests that the null findings for relations with mental descriptions of a close friend were not due to lack of power. For example, there were positive correlations between individuals' mental descriptions of the two famous figures and of the two works of art. These findings suggest a degree of stability in people's mental descriptions of particular types of stimuli that is distinct from their mind-mindedness in relation to people with whom they have close relationships.

The studies reported here also provide important information on assessment methods for mind-mindedness. Across the four studies, three different modes of assessment were used: interview, paper and pen written format, and electronic written format. Our results showed that mode of administration was unrelated to participants' mental description scores, suggesting that the way in which participants provide their descriptions of individuals does not impact on their response. Demonstrating the reliability of written and particularly electronic formats for collecting mind-mindedness data means that future research in this area can be done more efficiently, given that these modes of administration yield data that are comparable to those obtained through the more labor-intensive interview transcription procedure.

The number of people failing to mention a single mental descriptor for specific types of stimuli across the four studies is worthy of further discussion. While all of the mothers in Study 1 provided at least one mental description of both their children and their partners, a number of participants in Studies 2, 3, and 4 failed to include mental descriptions. The pattern of findings across the studies was surprisingly consistent: two-thirds to three-quarters of people failed to mention a mental characteristic when describing a famous person, whereas only a fifth to a quarter of people did not include a mental characteristic in their descriptions of close friends. Rather than viewing these results as indicating floor effects in the data, we propose that they are a valid representation of individual differences in adults' spontaneous mentalizing abilities, and reflect the fact that a notable minority fail to engage with individuals' mentalistic qualities even when focusing on someone they know very well. The finding that a sizeable minority of undergraduate students fail to focus on mental characteristics when describing a close friend or partner is in line with the proposal that there is a competence–performance gap between the ability to understand that people have complex internal states (i.e., theory of mind) and the tendency spontaneously to invoke such states (i.e., mind-mindedness) when describing an individual (Apperly, 2012; Meins et al., 2006).

What implications might the observed individual differences in mind-mindedness in relation to partners and close friends have for the quality and success of the relationship? In the adult attachment literature, the ability to reflect on the motivations and intentions underlying people's behavior (as indicated by individuals' reflective functioning) is positively associated with secure representations of attachment relationships (e.g., Fonagy et al., 1991). Similarly, maternal mind-mindedness is positively related to secure infant–mother attachment (Meins et al., 2001, 2012). It thus seems reasonable to predict that levels of mind-mindedness in adult–partner or adult–friend relationships will be positively associated with relationship success and satisfaction, and future research should test this prediction. Such research could also explore whether the relation between

mind-mindedness and relationship satisfaction/success is linear. For example, it may be that there is an optimal level of mind-mindedness beyond which focusing on the individual's mental qualities does not contribute to improving relationship quality. Indeed, it may be that a tendency to focus almost exclusively on the friend's or partner's mental qualities may be an indicator of the individual being over-involved with trying to please the person in order to make the relationship work. A further important factor in establishing the relation between mind-mindedness and relationship quality and success may be the emotional valence of the characteristics used to describe the friend or partner. For example, critical and negative descriptions are likely to be associated with perceiving the relationship to be unsatisfactory and may predict subsequent relationship breakdown. Longitudinal research on whether levels of mind-mindedness change over the course of a relationship and how the level of mind-mindedness relates to relationship satisfaction and success would thus be worthwhile.

As well as contributing to our understanding of mind-mindedness as a facet of individuals' representations of people with whom they have close relationships, our results may shed light on observed variation in spontaneous recruitment of theory of mind reasoning in adulthood. Evidence suggests that typically developing adults do not automatically infer belief states when observing people's behavior. Empirical studies by Apperly and colleagues (Apperly, Riggs, Simpson, Chiavarino, & Samson, 2006; Back & Apperly, 2010) have shown that adults react more slowly when probed about belief states compared with reality in conditions where they are not explicitly instructed to track the protagonist's beliefs. Neuroimaging data also suggest that adults only process people's belief states when instructed to do so. For example, Saxe, Schultz, and Jiang (2006) reported activation in brain regions associated with reasoning about beliefs only when participants were instructed to reason about a character's belief about an object's location; instructions to reason about a character's spatial orientation did not result in activation in these brain regions, consistent

with the view that participants did not automatically engage with the character's likely belief states. However, these studies have not explored individual differences in adults' tendency spontaneously to process a character's belief states, focusing instead on group differences across the different instruction conditions.

As our findings show, adults are much more likely to invoke internal states when describing someone they know personally, with the vast majority of the participants in the studies reported here failing to mention a single mental characteristic of individuals with whom they do not have a personal relationship. It may be that the lack of automaticity in belief state reasoning in previous studies might be due to the fact that participants have no knowledge of the individuals involved in the scenarios. It would thus be interesting to investigate whether belief state reasoning is more automatic when one observes the behavior of someone one knows. Our results thus point to promising avenues for future research in exploring (a) how individuals' mind-minded descriptions relate to their performance on tasks that assess adults' deployment of theory of mind abilities, and (b) the extent to which brain regions associated with belief state reasoning are activated when describing an individual with reference to their mental characteristics. Such research could shed further light on the relation between having the capacity to understand mental states and spontaneously using it in everyday life.

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