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Understanding but unhelpful: Do grateful people value responsiveness or perceived benefit when receiving help?

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5 Understanding but Unhelpful: Do Grateful People Value Responsiveness or Perceived Benefit

6 When Receiving Help?

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12   **Abstract**

13   Two studies examined the links between the grateful disposition, cognitive appraisals (perceived

14   value and perceived responsiveness), state gratitude, and affiliative intentions (one's desire to

15   build or maintain relationships with his/her benefactor). In Study 1, 248 participants went

16   through a guided scenario task where they recalled help experiences that were helpful and not so

17   helpful. Dispositional gratitude predicted perceived value and perceived responsiveness (H1A

18   and H1B). These cognitive appraisals in turn predicted state gratitude (H2 and H3). Finally, state

19   gratitude predicted affiliative intentions (H4). Supporting H5A and H5B, cognitive appraisals

20   and state gratitude mediated the link between dispositional gratitude and affiliative intentions.

21   Study 2 tested whether grateful individuals place more weight on perceived value versus

22   perceived responsiveness in their desire to affiliate with a helper (H6 and H7). Nine hundred

23   sixty-eight participants were randomly assigned to read a vignette in which they received help

24   from a colleague who was either low versus high on responsiveness. The help they received was

25   either good (high value) or bad (low value). Dispositional gratitude did not interact with either

26   manipulated responsiveness or manipulated value failing to support H6 and H7. However,

27   exploratory analyses using participants' ratings of perceived responsiveness and value provided

28   partial support for the hypotheses. Perceived value had a positive effect on the desire to affiliate

29   for both grateful individuals and ingrates when responsiveness was low (supporting H7) and

30   when responsiveness was high. Although H6 predicted that dispositionally grateful individuals

31   would desire to affiliate with highly responsive helpers regardless of the value of help, whereas

32   ingrates would place more weight on value—the predicted interaction was not obtained.

33   Nevertheless, results support the notion that cognitive appraisals play an instrumental role in the

34   experience of gratitude as well as social motivations such as affiliative intentions.

35   *Keywords:* dispositional gratitude, value of help, responsiveness of helper, state gratitude, desire

36   to affiliate

37   **Understanding but Unhelpful: Do Grateful People Value Responsiveness or Perceived**

38   **Benefit When Receiving Help?**

39   Neglected in psychological research until more recently, gratitude is a moral virtue that is

40   essential to humans and social animals (Emmons et al., 2004). Although it has been defined in

41   different ways, it is helpful to distinguish gratitude in different levels – as an affective trait,

42   mood, and emotion (McCullough et al., 2004). While gratitude as an affective trait is a stable

43   predisposition towards experiencing grateful emotion, gratitude as an emotion refers to an acute,

44   intense, and typically brief experience that occurs as a response to a meaningful situation in

45   one's environment, such as being a recipient of an intentionally rendered benefit that is valuable

46   to the beneficiary and costly to the benefactor (McCullough et al., 2004). Regardless of how

47   gratitude has been studied, it has been associated with better outcomes (McCullough et al.,

48   2004). For instance, dispositionally grateful individuals are more likely to experience better

49   physical and psychological health (Wood et al., 2010), and higher quality relationships (Wood,

50   Maltby, Gillett, et al., 2008). In dyadic studies, gratitude has also been found to increase

51   relationship satisfaction (Leong et al., 2020).

52   Beyond the mere reciprocation of favors, experiencing gratitude might also motivate

53   individuals to capitalize on the opportunity to improve interpersonal connection (Algoe, 2012).

54   Feelings of gratitude prompt subsequent behaviors that facilitate the building and maintenance of

55   relationships (Bartlett et al., 2012; Nai, 2017). For instance, individuals induced to feel grateful

56   may desire to spend more time with their benefactor and engage in socially inclusive behaviours

57   toward their benefactor, even at a cost to oneself (Bartlett et al., 2012). Dispositionally grateful

58   individuals also perceive more benefits from their friends compared with ingrates (individuals

59   low in dispositional gratitude), and these perceptions marginally mediated the relationship

60   between dispositional gratitude and relationship satisfaction (Nai, 2017).

61   This research is interested in the study of the relational implications of gratitude, in

62   particular, the factors that influence grateful individuals' decision to affiliate with someone who

63   has helped them. I focus on how the value of the help provided and the responsiveness of the

64   helper influence the relation between dispositional gratitude and affiliative intentions. The model

65   that was tested is presented in Figure 1. It assumes that individual differences in dispositional

66   gratitude are associated with greater tendencies to (i) value the help received, and (ii) perceive

67   the helper as responsive. These appraisal tendencies trigger feelings of appreciation and

68   thankfulness (state gratitude), which then strengthen the desire to affiliate with the helper. This

69   research also sought to explore which factor—the value of help or the responsiveness of the

70   helper—plays a more influential role linking gratitude to the desire to affiliate.

71   **Figure 1**

72   *Proposed Mediation Model to Examine the Mediating Influence of Perceived Value of Help and*

73   *Responsiveness of Helper*
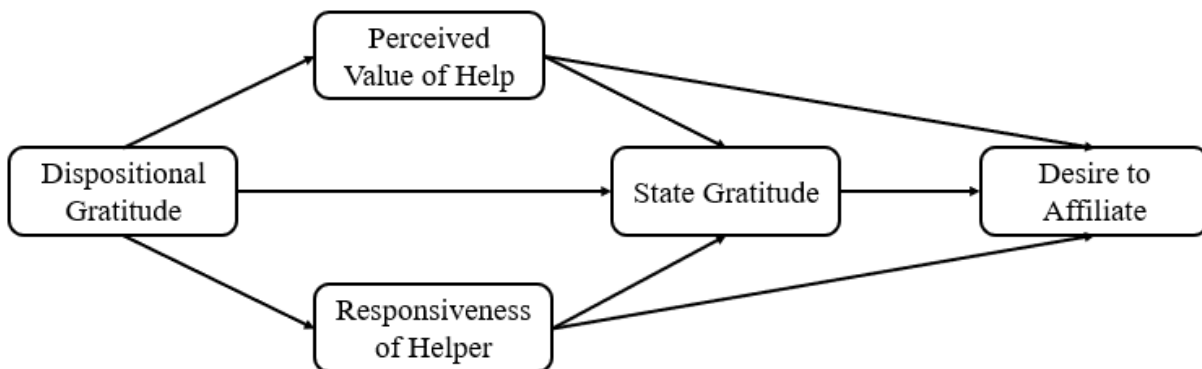
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75   **Cognitive Appraisals Underlying Gratitude**

76 **Value of Help**

77   The value of help or benefit received is typically studied from the perspective of the

78 recipient, and is one of the three factors identified in past research as shaping the experience of

79 gratitude, other than cost to the benefactor and the intentions of the benefactor (Wood et al.,

80 2010). Perceived value is subjective, and concerns how valuable the recipient views the help or

81 benefit that was provided. When recipients perceive a higher value of help, they experience

82 higher levels of state gratitude (Tesser et al., 1968; Wood, Maltby, Stewart, et al., 2008) and

83 report more positive feelings towards their benefactor (Algoe et al., 2008; Weinstein et al.,

84 2010). It would thus follow that when the value of help provided is high, individuals would

85 experience higher levels of state gratitude and better relational outcomes.

86 **Responsiveness of Helper**

87   The perceived responsiveness of a partner, which is the perception that one's partner is

88 understanding, validating, and caring is central to creating intimacy and closeness (Maisel &

89 Gable, 2009; Reis et al., 2004). Perceptions of partner responsiveness are associated with

90 increased closeness, satisfaction, and commitment to relationships (Reis et al., 2004). In contrast,

91 when partners are low in responsiveness, people report greater sadness and reduced

92 connectedness when receiving support (Maisel & Gable, 2009). The perceived responsiveness of

93 a partner could influence how one experiences state gratitude, as state gratitude often arises from

94 a need being met (Weinstein et al., 2010), or from a responsive act (Algoe, 2012). In a study of

95 "Big Sister Week" at a sorority, perceptions of how thoughtful senior sisters were in planning

96 and delivering a gift to junior sisters predicted feelings of gratitude (Algoe et al., 2008). These

97 feelings of gratitude also predicted perceptions of closeness and liking toward the senior, as well

98   as feeling understood by them. Thus, when perceived responsiveness of the helper is high,

99   individuals tend to experience higher levels of state gratitude and better relational outcomes.

Dispositional Gratitude

101   When examined at the trait (dispositional) level, gratitude is conceptualized as a general

102   tendency to recognize and respond with grateful emotion as a result of positive experiences and

103   outcomes which can be due to benevolent acts of others (McCullough et al., 2002), or part of a

104   wider life orientation towards noticing and appreciating the positive in the world (Wood et al.,

105   2010). For instance, individuals characterized as high in dispositional gratitude are more likely to

106   perceive higher levels of social support over time (Wood, Maltby, Gillett, et al., 2008),

107   experience lower levels of malicious envy and higher levels of benign envy (Xiang et al., 2018),

108   and perceive their relationships to be of higher quality (Wood et al., 2010).

109   Individual differences in appraisal tendencies have been proposed as an underlying cause

110   for why one develops a stable inclination to experience particular emotions (Kuppens & Tong,

111   2010). For example, dispositional gratitude could reflect a tendency for individuals to appraise

112   events in a more positive manner, or reduce one's threshold for experiencing grateful emotions

113   (McCullough et al., 2002). Individuals high in dispositional gratitude tend to perceive help

114   rendered as more valuable, costly to provide and altruistically intended; these appraisals may

115   lead them to experience higher levels of state gratitude (Wood, Maltby, Stewart, et al., 2008).

116   As such, while a higher value of help and higher responsiveness of the helper would lead

117   to higher levels of state gratitude, dispositional gratitude may predispose an individual to

118   perceive greater value in help and perceive a helper to be more responsive. Given that these

119   appraisals are proposed to be key antecedents of grateful feelings (Algoe, 2012), dispositionally

120   grateful individuals should then experience a higher frequency and intensity of state gratitude.

121   H1A: Dispositional gratitude will be associated with the tendency to perceive greater

122   value of help.

123   H1B: Dispositional gratitude will be associated with the tendency to perceive greater

124   responsiveness of the helper.

125   H2: Perceived value of help will be positively associated with higher levels of state

126   gratitude.

127   H3: Perceived responsiveness of the helper will be positively associated with higher

128   levels of state gratitude.

129   **State Gratitude and Affiliative Intentions**

130   State gratitude is an emotion that often occurs after a person has been helped, motivating

131   the reciprocation of aid (Wood, Maltby, Stewart, et al., 2008). However, the effects of state

132   gratitude are not limited to reciprocity; they include a host of relationship-enhancing cognitions

133   and maintenance behaviours (Algoe, 2012; Bartlett et al., 2012; Gordon et al., 2012; Nai, 2017).

134   For instance, individuals who experience gratitude are more likely to increase prosocial behavior

135   toward those who help them (Tsang, 2006), notice positive qualities in their benefactors, and

136   express a desire to spend time with them when the opportunity arose (Bartlett et al., 2012).

137   Individuals who experienced more gratitude upon receiving help also tend to hold more positive

138   attributions and cognitive beliefs about their benefactors (Nai, 2017), and feel closer to them

139   when the benefactor is perceived to be intrinsically motivated to help (Weinstein et al., 2010).

140   The relational implications of gratitude are consistent with the find-remind-and-bind

141   theory (Algoe, 2012), which proposes that gratitude serves to develop and maintain relationships

142   through the (i) identification of a high-quality relationship partner and (ii) a coordinated response

143   to develop or improve the relationship. In short, state gratitude enhances *affiliative intentions*—

144   an individual's desire to associate and form interpersonal bonds with one's benefactor (Algoe,

145   2012).

146   H4: State gratitude will be positively associated with a stronger desire to affiliate with

147   benefactors.

148   Given that dispositional gratitude predisposes one to appraise events more positively as

149   reviewed above (McCullough et al., 2002; Wood, Maltby, Stewart, et al., 2008), it is expected

150   that perceptions of the value of help and responsiveness of the helper will mediate the relation

151   between dispositional gratitude and desire to affiliate.

152   H5A: Effects of dispositional gratitude on the desire to affiliate are mediated by the

153   perceived value of help and state gratitude.

154   H5B: Effects of dispositional gratitude on the desire to affiliate are mediated by the

155   perceived responsiveness of the helper and state gratitude.

156   **Relative Influence of Value and Responsiveness on Affiliative Intentions**

157   The grateful disposition reduces one's threshold for recognizing and responding with

158   grateful emotion (McCullough et al., 2002), which is associated with relationship building and

159   maintenance behaviors (Bartlett et al., 2012; Gordon et al., 2012; Nai, 2017). As reviewed above,

160   specific appraisals, such as the value of the benefit received and the responsiveness of the helper

161   could play a vital role in the experience of state gratitude (Algoe, 2012). This would then

162   influence how grateful individuals (versus ingrates) form and maintain their relationships.

163   Appraisals that arise from receiving a benefit could influence state gratitude and

164   subsequent thought processes and behaviours to a different extent. Algoe (2012) proposed that

165   relational appraisals, such as whether the benefactor was perceived to be responsive, could

166   predict gratitude above and beyond perceptions of cost, value, and repayment behavior. Indeed,

167   the value of the benefit and perceived responsiveness of the benefactor were both robust

168   predictors of state gratitude (Algoe et al., 2008), indicating that the two appraisals are distinct. In

169   a dyadic month-long intervention study, perceived partner responsiveness moderated the effect

170   of the experimental condition (gratitude expression vs. control) on relationship satisfaction

171   (Algoe & Zhaoyang, 2016). When the perceived responsiveness of a partner was high,

172   participants instructed to express gratitude reported higher relationship satisfaction than the

173   control group. However, when the perceived responsiveness of a partner was low, expressing

174   gratitude had no effect on relationship satisfaction.

175   While much research has focused on appraisals made by those receiving help, there are

176   instances where one might not necessarily be aware of the help provided, or might not perceive

177   the help rendered as a form of support. Known as indirect (invisible) support, researchers found

178   that this form of social support was predictive of more positive outcomes compared to visible

179   support (Bolger et al., 2000). Similar to visible support, invisible support acts would be able to

180   buffer the negative effects of stress. However, invisible support provides an additional benefit:

181   alleviating the costs to self-esteem or self-efficacy that can arise when people are aware that they

182   are being helped (Bolger et al., 2000; Bolger & Amarel, 2007). Various mechanisms, such as the

183   perceived responsiveness of the helper (Maisel & Gable, 2009), or the empathetic accuracy of

184   the helper (Howland, 2015), may moderate the extent to which support yields positive outcomes

185   such as better coping with stress or greater relationship quality. For instance, Maisel and Gable

186   (2009) demonstrated that providing support that demonstrated responsiveness was sufficient to

187   buffer against the costs of being a recipient of visible social support. This provides a basis for the

188   notion that the provision of help might not be as crucial as the more general perception that

189   support is available or that one's partner is responsive.

190   Given that the perceived responsiveness of the partner directly signals that the partner

191   understands, approves, or cares about the self (Algoe, 2012), it is plausible that the

192   responsiveness of help could play a more important role than the value of the help in relationship

193   formation and maintenance. Building on the find-remind-bind theory, which proposes that the

194   function of gratitude functions to identify high-quality relationship partners (Algoe, 2012),

195   dispositional gratitude may draw special attention to the responsiveness of one's benefactor,

196   which then prompts the individual to build a new relationship, or improve an ongoing one

197   (Algoe, 2012). In other words, dispositionally grateful people should be more sensitive to the

198   responsiveness of helpers than to the value of the help when deciding whether to affiliate with

199   them. Specifically, a three-way interaction is hypothesized between responsiveness, value, and

200   dispositional gratitude.

201   H6A: When the responsiveness of the helper is high, dispositionally grateful individuals

202   should desire to affiliate with the helper regardless of the value of help.

203   H6B: When the responsiveness of the helper is high, ingrates (i.e., those low on

204   dispositional gratitude) should desire to affiliate with the helper more when the value of help is

205   high than when it is low.

206   H7: When the responsiveness of the helper is low, both grateful people and ingrates will

207   desire to affiliate with the helper more when the value of help is high than when it is low.

208   These predictions are depicted in Figure 2.

209   **Figure 2**

210   *Predicted Interaction of Dispositional Gratitude and Value of Help on Desire to Affiliate When*

211   *Helper Responsiveness is High (H6A and H6B; A) versus Low (H7; B)*
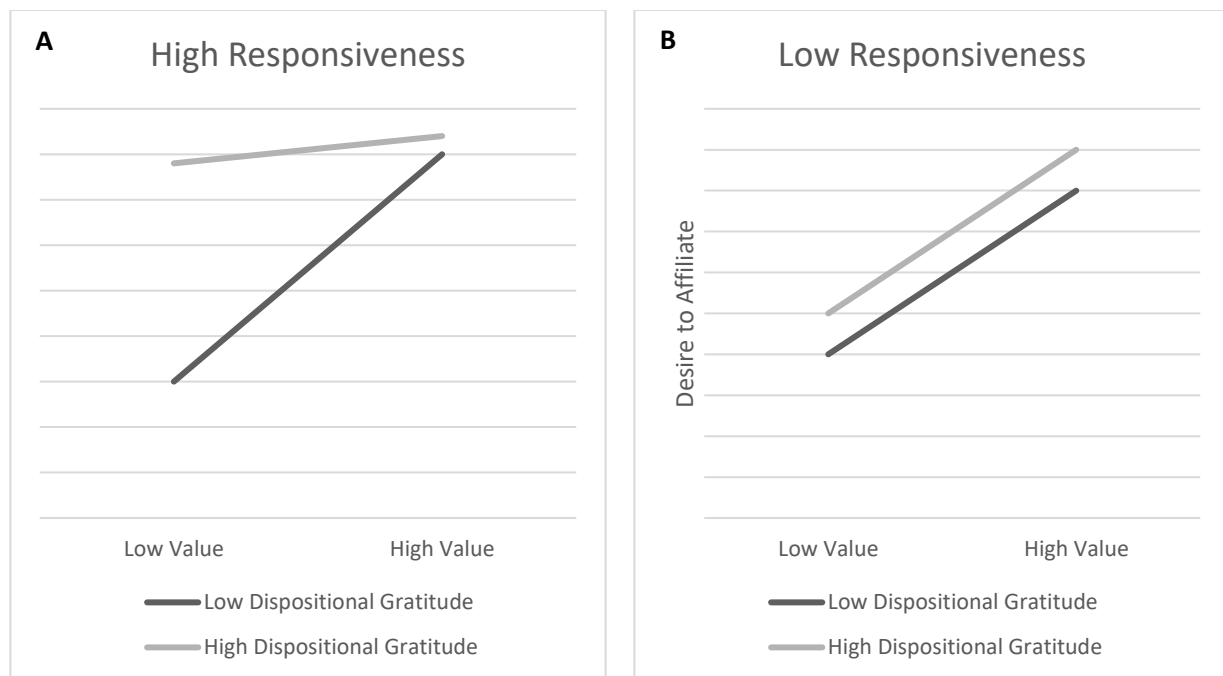
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213   **Overview**

214   Two studies were conducted. Study 1 was designed to test H1-H5; Study 2 tested H6-H7.

215   The main purpose of Study 1 was to examine the influence of dispositional gratitude on the

216   perceived value of help (H1A) and the perceived responsiveness of the helper (H1B), how these

217   appraisals influence state gratitude (H2 and H3), and how state gratitude relates with the desire to

218   affiliate (H4). The main purpose of Study 2 was an experiment to investigate if the value of help

219   or the responsiveness of the helper played a more instrumental role in linking dispositional

220   gratitude to affiliative intentions (H6 and H7). Because value and responsiveness are likely to be

221   correlated in most helping situations, Study 2 used a scenario-based manipulation to better

222   separate their effects. In addition, past studies of gratitude examined the value of help from low

223   value to high value (Algoe et al., 2008; Tesser et al., 1968; Weinstein et al., 2010), where "low

224   value" help was still generally a neutral at worst. As discussed by Lane and Anderson (1976),

225   even when value of help is low, gratitude can still be experienced if the benefactor had good

226   intentions. Study 2 seeks to extend past findings by examining "low value" help that is not liked,

227   signaling negative value.

Study 1

229   Study 1 examined the mediating influence of the perceived value of help and the

230   perceived responsiveness of the helper on the relation between dispositional gratitude and state

231   gratitude through a guided recall task. In addition, desire to affiliate with the helper was assessed,

232   while also considering the effects of communal orientation. While affiliative intentions towards

233   the helper represent a more immediate short-term measure of the desire to affiliate, a communal

234   orientation toward the helper may reflect the desire to follow the norms associated with

235   communal (versus exchange) relationships—such as being mutually responsive to the needs of

236   each other (Clark & Barbara, 1985). Individuals who are communally-oriented towards their

237   helpers are more likely to feel grateful towards them, and desire to build a relationship with them

238   (Algoe, 2012). They are also more likely to help someone in need (Clark et al., 1987) and

239   express their emotions more (Clark & Finkel, 2005). To more clearly isolate the effects of

240   dispositional gratitude on desire to affiliate, additional analyses control for communal

241   orientation.

Method

Participants

244   A Monte Carlo simulation approach was used to empirically determine the observed

245   power to detect the indirect effects of dispositional gratitude on the desire to affiliate for Study 1

246   based on parameter estimates from a pilot study that collected similar variables. Drawing 1000

247   simulations at varying sample sizes, sufficient power for detecting the hypothesized indirect

248   effects was attained at 450 observations. The power for the indirect effect of dispositional

249   gratitude on the desire to affiliate through the value of help and state gratitude was 100%, while

250   the power for the indirect effect of dispositional gratitude on the desire to affiliate through the

251   perceived responsiveness of the helper and state gratitude was 85%.

252   Two hundred and fifty-three participants were recruited from Singapore Management

253   University – with each participant providing ratings of two help-receiving experiences (253 x 2 =

254   506 observations). A larger number of observations was collected than suggested by the power

255   analysis (506 vs 450) in anticipation that standard errors will be larger after correction for

256   clustered responses (via generalized estimating equations). Participants were awarded 1

257   psychology course credit for completing the study. Two participants were excluded due to

258   irrelevant responses to the scenario questions. Three responses were excluded from the final

259   analyses due to either incomplete responses or participants reporting they were unable to think of

260   the relevant scenario. The final sample consisted of 248 participants (45 males, 203 females).

Procedure

262   Participants first went through a guided scenario recall task where they thought of and

263   described different kinds of experiences that they might have had when receiving help from

264   others according to two prompts, with the order of presentation being randomized.

265   "In the following section of the survey, we would like you to spend some time thinking

266   about different kinds of experiences you may have had when receiving help from others. These

267   experiences are sometimes helpful, and sometimes not so helpful, and the help provided could be

268   big or small. Because we are interested in the variety of experiences you have had when

269   receiving help from another person, we would like you to please think of TWO different

270   examples of being helped by TWO different people, one instance where the experience was

271   helpful, and one instance where the experience was not so helpful. After describing each

272   experience, a few questions pertaining to how you felt about the experience will be asked."

273   Prompt 1: "Now, please detail an instance where the experience was **<u>helpful</u>**. Please

274   describe what happened, in as much detail as possible. Examples of details include what

275   the person did for you, and how you felt about the situation before help was rendered,

276   during the rendering of help, and after help was rendered. (Note: you will not be able to

277   move to the next page until 1 minute has elapsed)"

278   Prompt 2: "Now, please detail an instance where the experience was **<u>not so helpful</u>**.

279   Please describe what happened, in as much detail as possible. Examples of details include

280   what the person did for you, and how you felt about the situation before help was

281   rendered, during the rendering of help, and after help was rendered. (Note: you will not

282   be able to move to the next page until 1 minute has elapsed)"

283   After each prompt, participants were asked questions about the emotions they

284   experienced, their affiliative intentions towards the helper for the recalled experience, and

285   gratitude-relevant appraisals. Thereafter, they were randomly assigned to one of four

286   experimental conditions as part of the procedure for Study 2 (to be explained later). Finally,

287   participants completed measures of personality and demographic questions.

288   *Measures*

289   **Gratitude Adjective Checklist (GAC).** Participants were asked to rate the extent to

290   which they felt several emotions after receiving help (i.e. *grateful, thankful, appreciative*),

291   ranging from 1 (*not at all*) to 5 (*extremely*) (McCullough et al., 2002; see Appendix A). Scores

292   for state gratitude were summed up for each help-receiving experience recalled, and higher

293   scores denote the experience of more positive emotions. These items demonstrated high

294   reliability (Cronbach's alpha) with one another (Helpful experience: $\alpha = 0.88$, Unhelpful

295   experience: $\alpha = 0.93$).

296   Negative emotion items (i.e. *indebted, obligated, guilt*) were added to the GAC given that

297   the emotional states of gratitude and indebtedness are distinct but occur as a result of being a

298   recipient of a benefit, and because the other two emotions are correlated with indebtedness

299   (Watkins et al., 2006). Scores for these emotions were summed up for each help-receiving

300   experience recalled, and higher scores denote the experience of more negative emotions. The

301   items demonstrated moderate reliability (Cronbach's alpha) with one another (Helpful

302   experience: $\alpha = 0.66$, Unhelpful experience: $\alpha = 0.66$).

303   **Affiliative Intentions Towards Helper.** Participants were asked to indicate how they

304   feel or think about the helper to assess affiliative intentions, on a scale ranging from 1 (*not at all*)

305   to 5 (*extremely*). A sample item was: "How much would you feel like staying close to X?", with

306   "X" referring to the person who rendered help in the scenario just recalled. Scores for affiliative

307   intentions were summed up for each help-receiving experience recalled, and higher scores

308   denoted a stronger desire to affiliate (see Appendix B for list of questions). These 7 items

309   demonstrated high reliability (Cronbach's alpha) with one another (Helpful experience: $\alpha = 0.92$,

310   Unhelpful experience: $\alpha = 0.94$).

311   Additional questions were also included to explore participants' perceptions about what

312   the person who helped them thought about their relationship and the help rendered. A sample

313   item was: "How much did you think "X" values his/her relationship with you?"

314   **Perceived Value of Help.** Participants were asked to indicate how valuable they

315   perceived the help rendered to be, on a scale ranging from (*not at all*) to 5 (*extremely*). The

316   question was: "How much would you value the favour that "X" did?," with "X" referring to the

317   person who rendered help in the scenario just recalled.

318   **Perceived Responsiveness of Helper.** Participants were asked to indicate how

319   responsive they perceived the helper to be, on a scale ranging from (*not at all*) to 5 (*extremely*).

320   The question was: "How much would you feel that "X" was responsive to you in providing the

321   help?," with "X" referring to the person who rendered help in the scenario just recalled.

322   **Communal Orientation Toward Helper.** The questions, adapted from Clark and

323   Barbara (1985), were designed to measure how communal-oriented or exchange-oriented

324   participants were towards the person who rendered help. A sample communal-oriented item from

325   the questionnaire is: "How much do you think that you and "X" would be likely to fulfil each

326   other's needs?", and a sample exchange-oriented item from the questionnaire is: "How much do

327   you feel obligated to specifically repay the aid received?," with "X" referring to the person who

328   rendered help in the scenario just recalled. The average of the exchange-oriented questions was

329   subtracted from the average of the communal-oriented questions to derive an index of how

330   communal participants perceived the relationship with the helper to be (see Appendix C for list

331   of questions). The items designed to measure communal orientation demonstrated high reliability

332   (Cronbach's alpha) with one another (Helpful experience: $\alpha = 0.94$, Unhelpful experience: $\alpha =$

333   0.95). Similarly, the items designed to measure exchange orientation demonstrated high

334   reliability (Cronbach's alpha) with one another (Helpful experience: $\alpha = 0.87$, Unhelpful

335   experience: $\alpha = 0.89$).

336   **Gratitude Questionnaire (GQ-6).** The GQ-6 is a six-item self-report questionnaire, on a

337   scale ranging from 1 *(strongly disagree)* to 7 *(strongly agree)* (McCullough et al., 2002; see

338   Appendix D). A sample of the questionnaire is as follows: "I have so much in life to be thankful

339   for." Higher scores reflect higher dispositional gratitude. The scale demonstrated high reliability

340   ($\alpha = 0.80$).

341   **Possible Covariates.** Dispositional gratitude may be associated with other traits that

342   influence relational appraisals. The following relevant measures were included to establish the

343   unique contribution of dispositional gratitude to affiliative intention.

344   *Subjective Happiness Scale (SHS).* The SHS is a 4-item scale that measures global

345   subjective happiness (Lyubomirsky & Lepper, 1999; see Appendix E). An example item is "In

346   general, I consider myself:.", followed by a response scale ranging from 1 (*less happy*) to 7

347   (*more happy*). Higher scores reflect greater happiness. The rationale for including this measure is

348   to control for happiness, as the effect of dispositional gratitude could be due to a general

349   tendency to experience positive emotions and be happy (Kausar, 2018; Wood et al., 2010). The

350   items demonstrated high reliability (Cronbach's alpha) with one another ($\alpha = 0.87$).

351   *Mini-IPIP.* The Mini-IPIP consists of 20 items that assess the Big 5 personality traits.

352   The scale ranges from 1 (*very inaccurate*) to 5 (*very accurate*) (Donnellan et al., 2006; see

353   Appendix F). Sample items include: "Am the life of the party" for extraversion subscale, and

354   "Sympathize with others' feelings" for agreeableness subscale. Inclusion of the Mini-IPIP is to

355   control for personality traits that are associated with gratitude which could influence social

356   perceptions and behaviours (Schueller, 2012; Wood et al., 2010). Personality traits such as

357   extraversion, agreeableness, and neuroticism have also been associated with satisfaction across

358   different types of relationships (Tov et al., 2016). These items demonstrated moderate to high

359   reliability (Cronbach's alpha) with one another (Extraversion: $\alpha = 0.83$, Conscientiousness: $\alpha =$

360   0.70, Agreeableness: $\alpha = 0.75$, Neuroticism: $\alpha = 0.73$, Imagination: $\alpha = 0.69$).

361   **Demographics**. The demographic information included questions about the participant's

362   gender, age and ethnicity.

363   **Results**

364   To test H1-H5, a series of generalized estimating equations (GEE) models was tested. A

365   summary of the direct effects is presented in Figure 3 and a summary of the results of the

366   hypotheses testing is outlined in Table 1. The inclusion of subjective happiness and personality

367   traits in additional exploratory analyses was also conducted to explore the degree to which the

368   above effects are independent of relevant individual differences.

369   **Main analyses.** Given that the two types of help-receiving experiences (helpful and

370   unhelpful) would elicit different feelings and thoughts, all analyses include the type of

371   experience as a covariate in all models.

372   To test H1A, perceived value of help was regressed on dispositional gratitude. Supporting

373   H1A, dispositional gratitude significantly predicted perceived value ($b = 0.04, p < .001$). To test

374   H1B, perceived responsiveness of the helper was regressed on dispositional gratitude.

375   Supporting H1B, dispositional gratitude significantly predicted perceived responsiveness of help

376   ($b = 0.04, p < .001$).

377   To test H2 and H3, state gratitude was regressed on perceived value of help, and

378   perceived responsiveness of the helper, and dispositional gratitude. Supporting H2 and H3, both

379   perceived value ($b = .46, p < .001$) and perceived responsiveness ($b = .17, p < .001$) predicted

380   levels of state gratitude.

381   To test H4, desire to affiliate was regressed on state gratitude, perceived value of help,

382   perceived responsiveness of the helper, and dispositional gratitude. Supporting H4, state

383   gratitude significantly predicted the desire to affiliate ($b = .20, p < .001$).

384   To test H5A and H5B, I computed the indirect effect of dispositional gratitude through

385   two parallel mediators (perceived value and perceived responsiveness), which in turn predicted

386   state gratitude, and the latter predicting the desire to affiliate. Results from the mediation

387   analyses were bootstrapped using the R package "boot" (Canty, 2002), using 10,000 iterations

388   and the adjusted bootstrap percentile (BCa) method, to calculate 95% confidence intervals.

389   Supporting H5A, the indirect effect of dispositional gratitude through perceived value to

390   state gratitude to desire to affiliate was significant, 95% CI[0.0016, 0.0074]. Supporting H5B,

391   the indirect effect of dispositional gratitude through perceived responsiveness to state gratitude to

392   desire to affiliate was also significant, 95% CI[0.0005, 0.0030].

393   Figure 3. Statistical model depicting the mediating influence of perceived value of help,

394   responsiveness of helper, and state gratitude on the desire to affiliate.

395
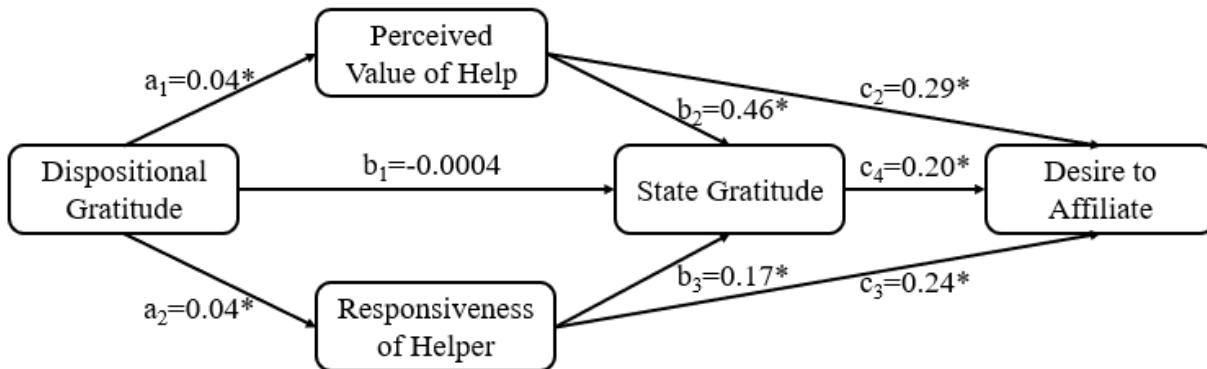
396   Table 1. Summary of results for hypotheses testing in Study 1.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[0.0001,0.0266]	Significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	<0.001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	<0.001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	<0.001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	<0.001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	<0.001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.0065,0.0207]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.009	0.003	[0.0043,0.0157]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.00009	0.001	[-0.0026,0.0022]	Not significant
	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0457,0.1488]	Significant

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0158,0.0678]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0016,0.0074]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0005,0.0030]	Supported

397   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected.

398   **Effects of dispositional gratitude controlling for other traits.** Subjective happiness,

399   communal orientation, and personality traits (i.e. extraversion, agreeableness, conscientiousness,

400   neuroticism, imagination) did not significantly predict perceived value of help, responsiveness of

401   helper, state gratitude, or the desire to affiliate when included in the respective models testing

402   hypotheses 1A to 5B. For reference, the summary of the direct effects of each analysis have been

403   added in Appendix H (Figures A1 to A7), and a summary of the results of the hypotheses testing

404   is outlined in Tables A1 to A7. Additionally, while gender did not significantly predict perceived

405   value of help, responsiveness of the helper, or state gratitude, gender significantly predicted the

406   desire to affiliate ($b = 0.19$, $p = .02$) (Figure A8 and Table A8 in appendix).

407   **Study 1 Discussion**

408   Results from the analyses show an overall support for the hypotheses, in that cognitive

409   appraisals of a help-receiving event influence the link between dispositional gratitude and

410   relationship building and maintenance behaviours. Supporting H1A and H1B, dispositional

411   gratitude predicted perceived value of help (H1A) and perceived responsiveness of help (H1B).

412   Supporting H2 and H3, perceived value of help and perceived responsiveness of the helper

413   predicted state gratitude. Supporting H4, state gratitude predicted the desire to affiliate.

414   Supporting H5A, the effects of dispositional gratitude on the desire to affiliate was mediated by

415   perceived value of help and state gratitude. Supporting H5B, the effects of dispositional gratitude

416   on the desire to affiliate was also mediated by perceived responsiveness of the helper and state

417   gratitude. The effects of the cognitive appraisals and state gratitude in the respective models held

418   even after controlling for subjective happiness, personality traits (i.e. extraversion,

419   agreeableness, conscientiousness, neuroticism, imagination), communal orientation, and gender

420   differences.

421   Of note, the mediation analysis testing H5A and H5B demonstrated that perceived value

422 of help, perceived responsiveness of the helper, and state gratitude partially explained why

423 dispositionally grateful individuals were more likely to desire to affiliate with the helper.

424 Dispositionally grateful individuals perceived the value of help and the responsiveness of the

425 helper to be higher, which was related to the experience of higher state gratitude, and a stronger

426 desire to affiliate. Even though the effect was smaller, dispositionally grateful individuals were

427 also more likely to experience a stronger desire to affiliate.

428   A limitation for Study 1 pertains to the disproportionate ratio of male and female

429 participants in the study arising from the convenience sampling method utilized in this study.

430 While gender differences have been observed in the experience of gratitude (Kashdan et al.,

431 2009), the inclusion of gender in analyses did not affect the overall conclusions regarding H1 –

432 H5.

433   As seen in Figure 3, the effect of the perceived value of help on state gratitude and on the

434 desire to affiliate appears to be stronger than the perceived responsiveness of the helper,

435 suggesting that perceived value of help might play a more instrumental role compared to the

436 responsiveness of the helper. As a result, the indirect effect of dispositional gratitude on desire to

437 affiliate was larger through perceived value, 95% CI[0.0016, 0.0074], than through perceived

438 responsiveness, 95% CI[0.0005, 0.0030], although the difference is not statistically significant

439 due to overlapping confidence intervals. One difficulty of interpreting these results is that

440 perceived responsiveness and perceived value are strongly correlated with each other ($r(496) =$

441 $0.82, p < .001$). When a benefactor provides help that is extremely valuable, it is likely that they

442 will also be perceived as highly responsive and keenly aware of the person's needs. Thus, to

443 better determine the effects of value and responsiveness on state gratitude and desire to affiliate

444   and their interaction with dispositional gratitude, Study 2 experimentally manipulated value and

445   responsiveness.

Study 2

446

447   **Method**

448   *Participants*

449   Monte Carlo simulation approach was used to empirically determine the observed power to

450   detect the three-way interaction between dispositional gratitude, value of help, and perceived

451   responsiveness of the helper using simulated data in R based on the variables in a pilot study.

452   The data was simulated based on the predicted pattern of means for each cell of a 2 x 2 x 2

453   design, and mean differences between high and low value of help were set at a large effect size

454   (Cohen's d = 0.80). The assumption of a large effect of value is made for practical and

455   theoretical considerations. First, detecting a three-way interaction for a smaller effect would

456   require a much larger sample size (> 5000 based on our simulations). Second, a large effect

457   might generally be of more interest to researchers in terms of identifying the key factors that

458   influence gratitude. Drawing 1000 simulations of 950 observations, the models tested provided

459   80% power to detect the three-way interaction. As such, 970 participants were recruited. To

460   offset the costs of recruiting such a large sample, participants in Study 1 (n = 248) also

461   completed the experimental procedure. The remaining 722 participants were recruited from an

462   online survey platform in the U.S. Two participants failed the attention check, and were thus

463   omitted from analyses, resulting in a final sample of 968 participants (502 males, 466 females).

464   *Procedure*

465   The study adopted a 2 (value of help: low vs. high) x 2 (responsiveness of helper: low vs.

466   high) between-subjects design. Participants read a vignette in which they imagined asking a

467   coworker to purchase a specific beverage at a local café. In all conditions, the specific beverage

468   was unavailable and the coworker decided to purchase a different beverage as a substitute. The

469   responsiveness of the helper (i.e., the coworker) was manipulated through the helper putting

470   more effort into selecting a substitute beverage that the participant might like (high

471   responsiveness) as opposed to simply purchasing another beverage out of convenience (low

472   responsiveness). In addition, the beverage purchased was either liked (high value) or disliked

473   (low value) by the participant. Thereafter, participants were asked questions about the emotions

474   they experienced in response to the scenario, and affiliative intentions towards the helper in the

475   scenario. They also completed manipulation checks, and measures for dispositional gratitude and

476   other individual difference variables.

477   *Measures*

478   A subset of the measures from Study 1[1] was administered in Study 2. These include

479   dispositional gratitude ($\alpha = 0.84$), perceived value, and perceived responsiveness, state gratitude

480   ($\alpha = 0.90$ to 0.93, depending on condition), negative emotion ($\alpha = 0.68$ to 0.76), desire to affiliate

481   ($\alpha = 0.89$ to 0.92), and communal orientation ($\alpha = 0.72$ to 0.83).

482   **Additional purchaser details.** Participants were asked "As you read the scenario and

483   answered the previous questions, how did you imagine the gender of the coworker that bought

484   you a beverage?", and "As you read the scenario and answered the previous questions, did you

485   assume that you paid for the beverage, or the coworker paid for the beverage?" These questions

---

[1] A subset of questions from this measure was utilized for the second part of Study 1, and for Study 2. Questions
used are marked with * in the Appendix; refer to Appendix B, Appendix C, and Appendix E.

486   were included as part of the survey to account for potential individual differences that could

487   influence perceptions regarding the scenario.

Results

      Manipulation checks.

      Manipulation check for value of help. A two-way ANOVA was conducted to examine

491   the effect of manipulating both value and responsiveness of the helper on the perceived value of

492   help (Table 2). Participants valued the help more when the value was high than when it was low

493   ($\eta_p^2 = .092$, $p < .001$), and when responsiveness of the helper was high than when it was low (η_p^2

494    $= .084$, $p < .001$). There was also a statistically significant interaction between manipulated value

495   and responsiveness on the perceived value of help, $F(1,964) = 8.07$, $p = .005$, $\eta_p^2 = .008$. The

496   effect of manipulated value was stronger when manipulated responsiveness was low ($d = 0.77$)

497   than when it was high ($d = 0.48$).

Table 2

Effects of Manipulated Value and Responsiveness on Perceived Value of Help

	Low Value		High Value	
	M	*SD*	*M*	*SD*
Low Responsiveness	2.85#	1.11	3.65	0.96
High Responsiveness	3.62#	0.97	4.07	0.89

500   *Note. N = 968, #significantly different from High Value (within rows), at p < .001*

      Manipulation check for responsiveness of helper. A two-way ANOVA was conducted

502   to examine the effect of manipulating both value and responsiveness of the helper on perceived

503   responsiveness of the helper (Table 3). Participants perceived the helper to be more responsive

504   when responsiveness was high than when it was low ($\eta_p^2 = .14$, $p < .001$), and when value of help

505   was high than when it was low ($\eta_p^2 = .05$, $p = .01$). There was also statistically significant

506   interaction between manipulated value and responsiveness on the perceived responsiveness of

507   helper, $F(1,964) = 12.51$, $p < .001$, $\eta_p^2 = .013$. The effect of manipulated responsiveness was

508   stronger when manipulated value was low ($d = 1.07$) than when it was high ($d = 0.76$).

509   **Table 3**

510   *Effects of Manipulated Value and Responsiveness on Perceived Responsiveness of Helper.*

	Low Responsiveness		High Responsiveness	
	M	*SD*	*M*	*SD*
Low Value	2.68#	1.07	3.75	0.92
High Value	3.38#	1.11	3.98	0.97

511   *Note. N = 968, #significantly different from High Responsiveness (within rows) at p < .001/.*

512   ***Difference between datasets.*** Participants from Study 1 (*n* = 248) were added to the

513   MTurk sample (*n* = 720) for Study 2. As such, an analysis to examine the four-way interaction

514   between dispositional gratitude, value, responsiveness, and dataset sample (dummy-coded) was

515   conducted. The four-way interaction was not significant, $b = -0.005$, $p = 0.91$, suggesting that the

516   sample variable did not moderate the hypothesized three-way interaction. Data from the two

517   samples were thus collapsed to be analyzed together.

518   **Main results.** To examine H6A to H7, moderation analyses using the PROCESS macro

519   (Model 3; Hayes, 2013) was conducted. Value of help was entered as the main predictor (X),

520   dispositional gratitude as the primary moderating variable (W), responsiveness of helper as

521 secondary moderating variable (Z), and desire to affiliate as outcome variable (Y). Significant

522 two-way interactions between dispositional gratitude and value, $t(967) = 2.32$, $b = 0.02$, $p = .02$,

523 value and responsiveness, $t(967) = -2.52$, $b = -0.30$, $p = .01$, and dispositional gratitude and

524 responsiveness, $t(967) = 2.77$, $b = 0.02$, $p = .006$, were observed. Value had a stronger effect on

525 affiliative intentions for dispositionally grateful individuals ($b = 0.58$, $p < .001$) compared to

526 ingrates ($b = 0.30$, $p < .001$). Responsiveness had a stronger effect on affiliative intentions when

527 value was low ($b = 0.65$, $p < .001$) compared to when it was high ($b = 0.35$, $p < .001$). Lastly,

528 responsiveness had a stronger effect on affiliative intentions for dispositionally grateful

529 individuals ($b = 0.66$, $p < .001$) compared to ingrates ($b = 0.33$, $p < .001$). A significant three-

530 way interaction was not observed, $t(967) = -0.72$, $b = -0.01$, $p = .47$. As such, further analyses

531 were not conducted to test H6A to H7.

532   ***Controlling for other traits or thought processes that influence appraisals.*** Additional

533 analyses were conducted, controlling for traits or thought processes that could influence

534 subsequent relational appraisal. Firstly, participants' perception of their subjective happiness was

535 added as a covariate, as it could influence the effect of dispositional gratitude and other relational

536 appraisals. Happier individuals reported a stronger desire to affiliate with the helper, $b = 0.15$, p

537 $< .001$. However, inclusion of this item did not alter the relationships between the variables; the

538 three-way interaction remained nonsignificant, $b = -0.02$, $p = .30$. Participants who were

539 communally oriented did not desire to affiliate with the helper more, $b = 0.010$, $p = .67$, and

540 controlling for communal orientation did not affect the three-way interaction.

541   **Testing H6 and H7 using perceived value and responsiveness.** An alternative test of

542 H6 and H7 was conducted using perceived value of help and responsiveness (i.e., the

543 manipulation check items). Perceived value of help was entered as the main predictor (X),

544   dispositional gratitude as the primary moderating variable (W), perceived responsiveness of

545   helper as secondary moderating variable (Z), and desire to affiliate as outcome variable (Y). A

546   significant three-way interaction was observed, $b = 0.005$, $p = 0.02$ (Figure 4). This three-way

547   interaction is further decomposed below.

548   ***Desire to affiliate when responsiveness is high.***   According to hypothesis 6A, at high

549   levels of responsiveness, a two-way interaction is expected between dispositional gratitude and

550   value on desire to affiliate. Specifically, dispositionally grateful individuals should desire to

551   affiliate with the helper regardless of the value of help. On the other hand, according to

552   hypothesis 6B, ingrates should desire to affiliate with the helper more when value of help was

553   high compared to when it is low. The two-way interaction between dispositional gratitude and

554   value on the desire to affiliate when perceived responsiveness was high was significant, $F(1,$

555   $960) = 14.55$, $p < .001$. Contrary to H6A, dispositionally grateful individuals desired to affiliate

556   more when the value of help was high compared to when the value of help was low, $t(967) =$

557   10.09, $p < .001$. Ingrates also desired to affiliate more when the value of help was high, $t(967) =$

558   6.19, $p < .001$ (as predicted by H6B). The interaction suggests that the effect of value on desire

559   to affiliate is stronger for dispositionally grateful individuals than for ingrates (contrary to the

560   predicted pattern in Figure 2.

561   ***Desire to affiliate when responsiveness is low.***   According to H7, at low levels of

562   responsiveness, the effect of value on desire to affiliate should be the same for both grateful

563   people and ingrates. In other words, the two-way interaction between value and dispositional

564   gratitude should not be significant at low levels of responsiveness. Although the two-way

565   interaction was significant, $F(1,960) = 4.13$, $p = .04$, both grateful individuals ($t_{grateful}[967] =$

566   13.41) and ingrates ($t_{ingrates}[967] = 11.78$) desired to affiliate with the helper more when the value

567   of help was high than when it was low, p's < .001. The interaction is similar to the one observed

568   when responsiveness was high: perceived value was more strongly associated with desire to

569   affiliate among grateful individuals versus ingrates.

570   Figure 4. Conditional effect of the value of help on the desire to affiliate as a function of

571   dispositional gratitude at high (H6A and H6B; A) versus low (H7; B) perceived responsiveness

572   of the helper.
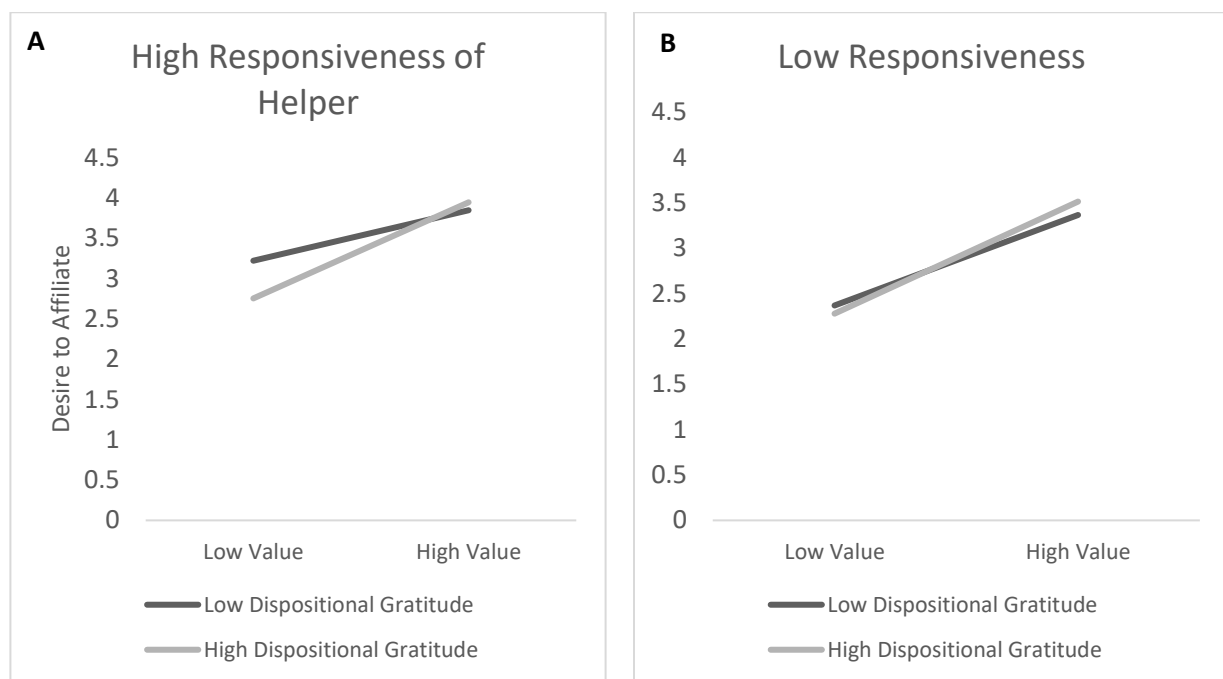
573

574   *Controlling for other traits or thought processes that influence appraisals.* Additional

575   analyses were conducted, controlling for traits or thought processes that could influence

576   subsequent appraisals. The three-way interaction remained significant after controlling for

577   subjective happiness (b = 0.005, p = 0.02) and communal orientation (b = 0.005, p = 0.02).

578   **Participants' assumptions about who paid for the beverage.**

579   Lastly, the analysis controlled for participants' assumptions regarding who paid for the

580   beverage in the scenario. While the experimental manipulation mentioned that the participant

581   was asking for a favour, it was not explicitly stated if the participant or the coworker in the

582   scenario paid for the beverage.

583   Because this question was added after data collection began, only a subset of participants

584   (n = 709) were asked about who they thought paid for the beverage in the scenario that they read

585   about. Four hundred and ninety-nine participants assumed that they paid for the beverage, while

586   210 participants assumed that the coworker paid for the beverage. Participants who thought that

587   the coworker paid for their beverage reported a stronger desire to affiliate with the helper, *b*

588   = .21, *p* = .007. Further analyses indicated that participants who assumed that they paid for the

589   beverage reported lower levels of state gratitude (*M* = 3.49, *SD* = 1.12) than participants who

590   assumed that their coworker paid for the beverage in state gratitude (*M* = 3.74, *SD* = 1.04), *t*(707)

591   = -2.80, *p* = .005. Participants who assumed that they paid for the beverage also reported lower

592   levels of subjective happiness (*M* = 4.99, *SD* = 1.49) compared with participants who assumed

593   that their coworker paid for the beverage (*M* = 5.30, *SD* = 1.57), *t*(707) = -2.50, *p* = .01. The

594   former group also reported a stronger desire to affiliate with the helper, *b* = 0.13, *p* = .02. The

595   two groups did not differ in dispositional gratitude (*t*[438.7] = 1.66, *p* = .10); communal

596   orientation (*t*[475.9] = -0.41, *p* = .68); perceptions of value (*t*[707] = -1.56, *p* = .12); or

597   responsiveness (*t*[707] = -1.12, *p* = .26).

598   H6 and H7 were re-evaluated by testing the three-way interaction between dispositional

599   gratitude, *manipulated* value, and *manipulated* responsiveness using only the subsample who

600   reported their assumptions about who paid for the beverage (which was included a covariate).

601   The three-way interaction remained nonsignificant, *b* = -.006, *p* = 0.77. When H6 and H7 were

602   tested using *perceived* value and responsiveness, the three-way interaction was no longer

603   nonsignificant, $b = 0.004$, $p = .10$. A potential reason for this could be due to the reduced sample

604   size, resulting in reduced power. Testing H6 and H7 again using perceived value and

605   responsiveness on the same subsample *without* controlling for any variables, also resulted in

606   nonsignificant three-way interaction, $b = 0.004$, $p = .10$.

607   **Study 2 Discussion**

608   Given that the three-way interaction was not significant between the manipulated value

609   and manipulated responsiveness of the helper, and dispositional gratitude, H6A to H7 could not

610   be formally tested, despite the manipulation checks indicating that the manipulation was

611   successful. The inclusion of covariates in the analyses (i.e. subjective happiness, communal

612   orientation, and assumption about the payment of beverage in the scenario) did not change the

613   results as well. Nevertheless, dispositional gratitude, value of help, and responsiveness of the

614   helper significantly predicted the desire to affiliate individually.

615   However, exploratory analyses on the three-way interaction between perceived value of

616   help, perceived responsiveness of the helper, and dispositional gratitude was significant, and

617   partially supported the hypotheses for Study 2. Perceived value had a positive effect on the desire

618   to affiliate and this effect of value held for both grateful individuals and ingrates when

619   responsiveness was low (consistent with H7) and when responsiveness was high (consistent

620   H6B). However, this finding is contrary to H6A, which predicted that dispositionally grateful

621   individuals would desire to affiliate with the highly responsive helpers regardless of the value of

622   help.

623   Lending support to results from Study 1, the effect of the value of help on desire to

624   affiliate also appears to be stronger than the effect of the responsiveness of the helper ($\eta_p^2 = 0.32$

625   versus 0.22 for value and responsiveness, respectively). While the results oppose the view that

626   responsiveness of help plays a more important role than the value of help in relationship

627   formation and maintenance, there are several possible reasons for why this was observed in the

628   current study. Firstly, the study manipulation focused on the provision of help that was unliked

629   as a "low value" help, signifying negative value. A "low value" help in prior studies were neutral

630   at worst, and this could explain why a stronger effect of value is seen in this study. Secondly, the

631   help rendered in this scenario was performed by a coworker, whom the participant might only

632   consider as a professional relationship with. Given that responsiveness signals that the partner

633   understands, approves, or cares about the self (Algoe, 2012), and is central to creating intimacy

634   and closeness (Maisel & Gabel, 2009), responsiveness of the helper in this scenario might not be

635   as relevant. On the other hand, value of help concerns how valuable the recipient perceives the

636   help or benefit that was provided, which is relevant across different types of relationships.

637   Lastly, significant interaction effects were observed for the manipulation checks to assess

638   perceived value and perceived responsiveness, where responsiveness influenced perceptions of

639   value more when value was low, and where value influenced perceptions of responsiveness more

640   when responsiveness was low compared to high. This might suggest the possibility of

641   compensatory effects between value and responsiveness. For example, if the help rendered was

642   low in value but the helper is perceived as responsive, the participant might still value the help

643   more than when the helper is *not* responsive. In other words, high responsiveness of the helper

644   may add value to the help received even if was actually not very good help. A similar

645   interpretation can be offered for high value compensating for low actual responsiveness in

646   perceptions of responsiveness. To add, the manipulation checks demonstrated that value and

647   responsiveness were successfully manipulated accordingly. Help was still evaluated more

648   positively when the value of help and responsiveness of the helper was high, compared to when

649   value of help was low and responsiveness of the helper was high, for example. The main effect

650   of each relational appraisal was also larger than the interactive effects ($\eta_p^2{}_{\text{main effects}} > .08$

651   compared to $\eta_p^2{}_{\text{interaction}} = .008$ for perceived value of help, and $\eta_p^2{}_{\text{main effects}} > .05$ compared to

652    $\eta_p^2{}_{\text{interaction}} = .01$ for perceived responsiveness of the helper.

Study 2 Limitation(s)

654   The experimental manipulation sought to separate the effects of value and responsiveness

655   on the link between dispositional gratitude and the desire to affiliate. However, a possible

656   limitation of the study manipulation is that it failed to account for the variability in assumption of

657   who paid for the beverage. When a subset of participants were asked about who they thought

658   paid for the beverage (n=709), 29.6% of them thought that the coworker paid for the beverage,

659   even though the experimental prime described that the participant asked for help in the purchase

660   of the beverage. While the three-way interaction was significant without controlling for most

661   covariates, controlling for the perception of who the participant thought paid for the beverage

662   resulted in the three-way interaction becoming nonsignificant when H6 and H7 were tested on

663   perceived value and responsiveness. When the analyses was conducted again, after excluding

664   participants who did not answer the question, the three-way interaction was also nonsignificant,

665   suggesting that the reduced sample size could have resulted in insufficient power to detect the

666   differences.

667   **Additional Analyses**

668   **Testing H5 in Study 2**

669   Hypotheses 5A and 5B were also tested using data from Study 2. Desire to affiliate was

670   regressed on dispositional gratitude, *perceived* value of help, *perceived* responsiveness of the

671   helper, state gratitude, and type of help-receiving experience in a regression model. Results from

672   the mediation analyses were then bootstrapped using the R package "boot" (Canty, 2002), using

673   10,000 iterations and the adjusted bootstrap percentile (BCa) method, to calculate 95%

674   confidence intervals. Given that value and responsiveness was also experimentally manipulated,

675   two dummy variables (i.e. value and responsiveness) were included as covariates in the analyses;

676   see Figure A9 and Table A9 in Appendix H for a summary of the results. To note, while the

677   effect sizes differed, exclusion of these covariates in the analyses revealed similar results. For

678   reference, the summary of the direct effects of have been added in the Appendix H (Figure A10),

679   and a summary of the results of the hypotheses tested is outlined in Table A10.

680   Supporting H5A, dispositionally grateful individuals perceived value of help to be higher,

681   which was related to the experience of higher state gratitude, and higher desire to affiliate,

682   indirect effect 95% CI [0.0030, 0.0060]. Supporting H5B, dispositionally grateful individuals

683   perceived responsiveness of the helper to be higher, which was related to the experience of

684   higher state gratitude, and higher desire to affiliate, indirect effect 95% CI [0.0002, 0.0020].

685   Because the confidence intervals do not overlap, this suggests that the indirect effect of

686   dispositional gratitude on desire to affiliate was significantly stronger through perceived value

687   than through perceived responsiveness.

688   **Alternative Model: Testing Serial Mediation**

689   While the present studies assumed that the two cognitive appraisals were distinct, the

690   interaction effects observed in the manipulation checks in Study 2 suggested that the cognitive

691   appraisals could influence each other. Additionally, a prior study also reported that cognitive

692   appraisals are not independent (Wood, Maltby, Stewart, et al., 2008). As such, on top of the

693   hypothesized parallel mediation, serial mediation analyses were conducted. Using data from

694   Study 2 because of its larger sample size, additional analyses were conducted to examine if each

695   relational appraisal served as a cue for the other relational appraisal, which then influenced

696   subsequent feelings of gratitude and affiliative intentions. To examine whether value could serve

697   as a cue for responsiveness, serial mediation analyses using the PROCESS macro (Model 6;

698   Hayes, 2013) was conducted. Dispositional gratitude was entered as the main predictor (X),

699   perceived value of help, perceived responsiveness of the helper, and state gratitude were entered

700   as the mediators, and desire to affiliate as outcome variable (Y).

701   A summary of the direct effects is presented in Figure 5 and a summary of the results is

702   outlined in Table 4. Dispositional gratitude predicted perceived value of help ($b = 0.03$, p

703     $< .001$), perceived value of help predicted perceived responsiveness of the helper ($b = 0.74$, p

704     $< .001$), perceived responsiveness of the helper predicted state gratitude ($b = 0.20$, $p < .001$), and

705   state gratitude predicted the desire to affiliate ($b = 0.24$, $p < .001$). The indirect effect of

706   dispositional gratitude through perceived value, perceived responsiveness, and state gratitude

707   was significant ($b = 0.001$, 95% CI [0.0006, 0.0017]). The direct effect of dispositional gratitude

708   on the desire to affiliate was nonsignificant, ($b = -0.002$, $p = .54$) indicating full mediation.

709   Figure 5. Serial mediation testing if perceived value of help influenced one's perception about

710   the helper's responsiveness, and subsequent feelings of gratitude and affiliative intentions.

711
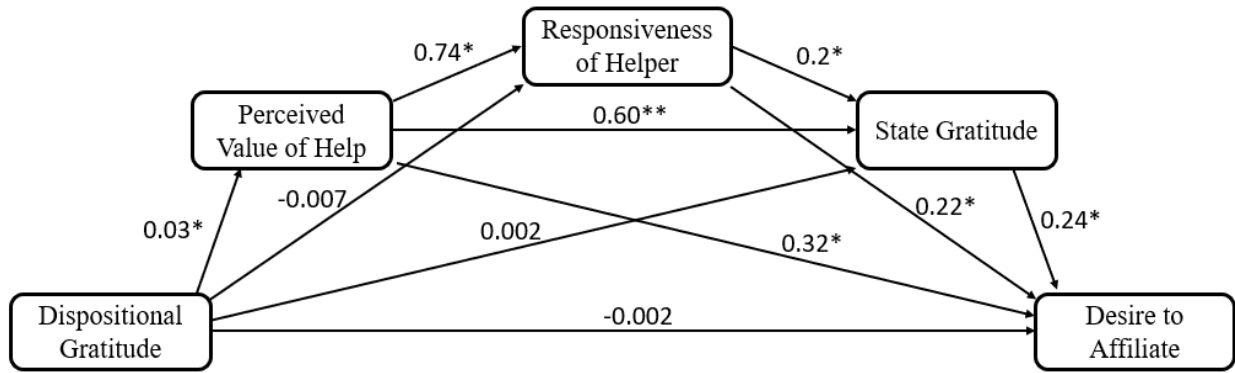
712   Table 4. Regression Coefficients, Standard Errors, and Model Summary Information for the Serial Mediation (Value to

713   Responsiveness)

Antecedent	Consequent			Consequent								
	M_1 (Value)			M_2 (Responsiveness)			M_3 (State Gratitude)			Y (Desire to Affiliate)		
	Coeff.	*SE*	*p*	Coeff.	*SE*	*p*	Coeff.	*SE*	*p*	Coeff.	*SE*	*p*
X (Dispositional Gratitude)	0.03	0.005	<.001	-0.007	0.004	0.09	0.002	0.003	0.59	-0.002	0.003	0.54
M_1 (Value)				0.74	0.03	<.001	0.60	0.03	<.001	0.32	0.03	<.001
M_2 (Responsiveness)							0.20	0.03	<.001	0.22	0.03	<.001
M_3 (State Gratitude)										0.24	0.03	<.001
Constant	2.52	0.16	<.001	1.04	0.14	<.001	0.74	0.12	<.001	0.45	0.12	<.001
	$R^2 = 0.04$			$R^2 = 0.48$			$R^2 = 0.59$			$R^2 = 0.59$		
	$F_{(1,966)} = 39.95, p < .001$			$F_{(2,965)} = 448.00, p < .001$			$F_{(3,964)} = 467.22, p < .001$			$F_{(4,963)} = 340.05, p < .001$		

714   To examine if responsiveness served as a cue for value, serial mediation analyses using

715   the PROCESS macro (Model 6; Hayes, 2013) was conducted. Dispositional gratitude was

716   entered as the main predictor (X), perceived responsiveness of the helper, perceived value of

717   help, and state gratitude were entered as the mediators, and desire to affiliate as outcome variable

718   (Y).

719   A summary of the direct effects is presented in Figure 6 and a summary of the results is

720   outlined in Table 5. Dispositional gratitude predicted perceived responsiveness of the helper (b =

721   0.02, p = .002), perceived responsiveness of the helper predicted perceived value of help (b =

722   0.65, p < .001), perceived value of help predicted state gratitude (b = 0.60, p < .001), and state

723   gratitude predicted the desire to affiliate (b = 0.24, p < .001). The indirect effect of dispositional

724   gratitude through perceived responsiveness, perceived value, and state gratitude was significant

725   (b = 0.002, 95% CI [0.0004,0.0027]). The direct effect of dispositional gratitude on the desire to

726   affiliate was non-significant, (b = -0.002, p = .54), indicating full mediation.

727   Figure 6. Serial mediation testing if perceived responsiveness of the helper influenced one's

728   perception about the value of help, and subsequent feelings of gratitude and affiliative intentions.

729
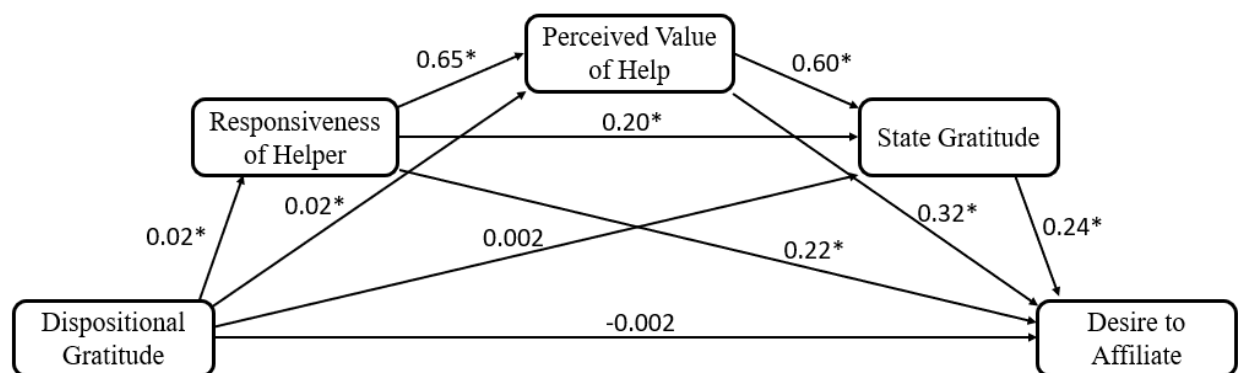
730   Table 5. Regression Coefficients, Standard Errors, and Model Summary Information for the Serial Mediator (Responsiveness to

731   Value)

	M₁ (Responsiveness)			Consequent M₂ (Value)			Consequent M₃ (State Gratitude)			Y (Desire to Affiliate)		
Antecedent	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
X (Dispositional Gratitude)	0.02	0.005	0.002	0.02	0.004	<.001	0.002	0.003	0.59	-0.002	0.003	0.54
M₁ (Responsiveness)				0.65	0.02	<.001	0.20	0.03	<.001	0.22	0.03	<.001
M₂ (Value)							0.60	0.03	<.001	0.32	0.03	<.001
M₃ (State Gratitude)										0.24	0.03	<.001
Constant	2.90	0.18	<.001	0.65	0.13	<.001	0.74	0.03	<.001	0.45	0.12	<.001
	$R^2 = 0.01$			$R^2 = 0.50$			$R^2 = 0.59$			$R^2 = 0.59$		
	$F(1,966) = 9.77, p = .002$			$F(2,965) = 476.77, p < .001$			$F(3,964) = 467.22, p < .001$			$F(4,963) = 340.05, p < .001$		

732   In summary, the alternative models where one relational appraisal was thought to serve as

733 a cue for the other relational appraisal demonstrated full mediation in each analysis, suggesting

734 that even though the current study views responsiveness and value of help as separate mediators

735 of dispositional gratitude, it is also plausible that the perceived value of help influences the

736 perceived responsiveness of the helper, and vice versa, in the relationship between dispositional

737 gratitude and affiliative intentions.

Testing H6 and 7 in Study 1

739   Hypotheses 6A to 7 were tested using data from Study 1. Moderation analyses using the

740 PROCESS macro (Model 3; Hayes, 2013) was conducted, with perceived value of help entered

741 as the main predictor (X), dispositional gratitude as the primary moderating variable (W),

742 perceived responsiveness of helper as secondary moderating variable (Z), and desire to affiliate

743 as outcome variable (Y). The type of experience was also included as a covariate in the model

744 given that the two types of help experiences would elicit different feelings and thoughts. Apart

745 from a significant two-way interaction between value and responsiveness, $t(495) = 3.89$, $b =$

746 0.07, $p < .001$, all other interactions were nonsignificant. Responsiveness had a stronger effect on

747 affiliative intentions when value was low ($b = 0.20$, $p < .001$) compared to when it was high ($b =$

748 0.42, $p < .001$). A significant three-way interaction was not observed, $t(495) = 0.92$, $b = 0.003$, p

749 $= .36$. As such, further analyses were not conducted to test H6A to H7 using data from Study 1.

Communal Orientation as Moderator

751   Moderation analyses were conducted to investigate if communal orientation moderated

752 the relationship between dispositional gratitude and affiliative intentions, given that communally

753 oriented individuals are more likely to feel grateful for others who helped them and would desire

754   to build a relationship with them (Algoe, 2012). While there was a main effect of responsiveness

755   ($b = 0.71$, $p < .001$) and communal orientation ($b = 0.03$, $p = .005$) on desire to affiliate, the

756   interaction was nonsignificant ($b < 0.0001$, $p = 1.0$). When the data were analyzed separately,

757   according to the helpful and unhelpful scenarios, respectively, the interaction remained

758   nonsignificant. When recalling the helpful experience, only the main effect of responsiveness

759   remained significant, $b = 0.65$, $p < .001$. On the other hand, the main effect of responsiveness (b

760   $= 0.46$, $p < .001$) and communal orientation ($b = 0.05$, $p = .004$) on desire to affiliate was

761   significant when recalling the unhelpful experience.

General Discussion

763   The relational implications of dispositional gratitude have been well discussed, such as

764   higher quality relationships and increased relationship satisfaction. Yet, little is known about the

765   mechanisms underlying how dispositional gratitude links to better relationship outcomes.

766   The current research sought to (i) investigate how dispositional gratitude influences the

767   appraisal of events, and (ii) understand the role of cognitive appraisals on the link between

768   dispositional gratitude and affiliative intentions across two studies. The results suggest that

769   dispositionally grateful individuals are more likely to appraise events positively. Apart from this

770   stable inclination to experience events in a more positive light, dispositionally grateful

771   individuals also hold stronger affiliative intentions towards those who help them and these

772   intentions may be initiated by their tendency to make positive appraisals and the state gratitude

773   that is likely to follow.

774   Importantly, as discussed in Study 1, the cognitive appraisals, together with state

775   gratitude, partially mediated the relationship between dispositional gratitude and the desire to

776   affiliate. However, the effects of these cognitive appraisals were greater than the effects of

777   dispositional gratitude. When exploratory analyses were conducted on the data from Study 2

778   testing the hypotheses from Study 1, cognitive appraisals and state gratitude fully mediated the

779   relationship between dispositional gratitude and affiliative intentions, providing added support to

780   the notion that cognitive appraisals might play an instrumental role in the link between

781   dispositional gratitude and behaviours. Together, they add support to prior findings that situation

782   and benefit appraisals account for more variance than dispositional gratitude in state gratitude

783   (Wood, Maltby, Stewart, et al., 2008). Additionally, Study 1 further extends prior research of the

784   broaden-and-build theory (Fredrickson, 2001) by demonstrating that cognitive appraisals that

785   enable positive emotions (e.g., gratitude) may motivate individuals to form and maintain

786   relationships.

787   That the effects of the cognitive appraisals were greater than the effects of dispositional

788   gratitude on state gratitude and affiliative intentions provides support for appraisal-based theories

789   of individual differences in emotion (Kuppens & Tong, 2010). As shown in Table 1, the indirect

790   pathway from dispositional gratitude to each relational appraisal to state gratitude was

791   significant. In contrast, the direct effect of dispositional gratitude to state gratitude (above and

792   beyond appraisals) were not significant. This suggests that the tendency for grateful individuals

793   to experience gratitude can largely be explained by their tendency to value the help they receive

794   and assume that others are responding to their needs. However, it is also important to note that

795   appraisals also mediated the effect of dispositional gratitude on the desire to affiliate —

796   independently of state gratitude (see Table 1). This might imply that the desire for dispositionally

797   grateful individuals to affiliate with others can occur through cognitive analysis, independently

798   of how grateful they actually feel. Thus, although grateful people tend to experience more

799   gratitude, not all of their behavior is motivated by this emotion.

800   Results did not support H6A, which predicted that dispositionally grateful individuals

801   should desire to affiliate with the helper regardless of the value of help when the perceived

802   responsiveness of the helper was high. Study 2 instead demonstrated that value had a stronger

803   effect on dispositionally grateful individuals' desire to affiliate with the helper compared with

804   ingrates whether responsiveness was high or low. Responsiveness also had a stronger effect on

805   dispositionally grateful individuals' desire to affiliate with the helper compared with ingrates.

806   Given that gratitude has been proposed to help individuals develop and maintain relationships

807   through the identification of a high-quality relationship partner (Algoe, 2012), it is possible that

808   dispositionally grateful individuals are more discerning of the value of help and responsiveness

809   of the helper compared to ingrates, which would thus translate to them experiencing a lower

810   desire to affiliate when the value of help and responsiveness of the helper was low. Supporting

811   this, prior research suggested that dispositionally grateful individuals have higher relationship

812   expectations (Nai, 2017), another factor that may lead them to further discriminate instances of

813   good versus bad help.

814   In both studies, the relative effects of the responsiveness of the helper seem small relative

815   to the effects of the value of the help. Explored through a recall of a good and bad helping

816   experience in Study 1, and in a more controlled manner through an experimental manipulation in

817   Study 2, perceived value of help might be more important in eliciting gratitude and the

818   subsequent desire to affiliate. In Study 1, the effect size of value of help on state gratitude ($b =$

819   0.29) was larger than the effect size of the responsiveness of the helper ($b = 0.24$). In Study 2,

820   regardless of the perceived responsiveness of the helper, participants desired to affiliate with the

821   helper more when help was of a higher value ($b_{value} = 0.47$, $b_{responsiveness} = 0.25$). While these two

822   cognitive appraisals have been shown to be important for better relational outcomes, a potential

823   explanation for the results observed in the two studies could be related to the type of scenario or

824   relationship explored. In Study 1, participants provided details of their personal experiences,

825   which included experiences involving various types of relationships. In Study 2, the relationship

826   explored was a relationship with a co-worker; professional relationship. In other types of

827   scenarios or relationships, responsiveness could play a more important role. For instance,

828   perceived responsiveness would play a more important role in relational outcomes in parent-

829   child relationships. For example, a young child might offer to help out with some household

830   chores for their parent who is tired. However, he/she might not be able to thoroughly wash the

831   dishes, for instance. Regardless, the offer to help out would be valued and contribute to better

832   relational outcomes since the parent would be able to recognize the capacity of their child, yet

833   appreciate the offer to help.

834   Study 2 additionally explored the effect of help that was negative in value (unliked). Past

835   research has generally explored value of help that is neutral at worst and found that individuals

836   report that they still experience gratitude if the benefactor had good intentions (Lane &

837   Anderson, 1976). The current study suggests that even when the value of help was negative in

838   value, individuals still experience more gratitude when the helper is perceives to be responsive

839   than when they are not. Moving forward, future research exploring the mechanisms behind why

840   gratitude is experienced when one is a recipient of "bad" help would be helpful in identifying the

841   essential elements that link dispositional gratitude to affiliative intentions.

842   The exploration of communal orientation as a moderator revealed some differences in

843   affiliative intentions depending on the type of experience recalled. When recalling an unhelpful

844   experience, communal orientation was predictive of affiliative intentions while it was not for

845   helpful experiences. This suggests that there are situations where communal orientation may not

846   translate into a desire to affiliate. Future studies could expand on other types of experiences and

847   social relationships to ascertain the types of circumstances in which one's communal orientation

848   would influence relational outcomes.

849   Alternative serial mediation models were tested, and suggested that each cognitive

850   appraisal could serve as a cue for the other appraisal. For instance, the compensating effect of

851   value could result in perceptions that the other individual is still responsive. While the two

852   studies provide initial evidence that serial mediation is plausible, it is difficult to draw a concrete

853   conclusion due to the current studies' design. Future studies could test the serial mediation

854   models through guided tasks, where one cognitive appraisal is made salient to participants,

855   before examining its influence on the other cognitive appraisal(s) and subsequent behaviours.

856   This observation might also be dependent on the type of relationship. As discussed, different

857   types of relational maintenance strategies are adopted across various types of relationships

858   (Canary et al., 1993). For example, the results of Study 2 might suggest that in a professional

859   setting, the value of help is a more crucial cue for relational outcomes.

860   Lastly, the current research focused on the effects of direct (visible) support. Although

861   responsiveness appeared to have a smaller effect than value on affiliative intentions, future work

862   might explore how perceptions of partner responsiveness influence relationship outcomes when

863   support is less visible (e.g., when the partner reports helping but the respondent is unaware of

864   specifically receiving help). Given that it can be more effective for partners to provide support

865   without engaging in overt behaviours (Bolger et al., 2000; Howland, 2015)., an important

866   question is whether invisible support contributes to perceptions of responsiveness or whether

867   both affect relationship outcomes independently.

868   A notable limitation of this research is that the focus is only on two cognitive appraisals.

869   Even though results from Study 1 suggest that these two appraisals are important for relationship

870   building and maintenance behaviours, other cognitive appraisals could potentially contribute to

871   the gratitude-relationship building behaviour link, given that full mediation was not observed in

872   Study 1. For instance, additional situation-specific cognitive appraisals, such as the perceived

873   generosity of the person providing help in Study 2 in this research, could play an important role

874   as well.

875   In conclusion, dispositional gratitude predisposes an individual to perceive greater value

876   of help and greater responsiveness of the help, which then translates to the experience of greater

877   feelings of state gratitude, and affiliative intentions. By demonstrating the link from dispositional

878   gratitude to cognitive appraisals, state gratitude, and affiliative intentions, this research can serve

879   as a starting point to investigate processes that link dispositional affect to social motivations

880   where one builds and maintains quality relationships.

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993

994   **Appendix A**

995   Gratitude Adjective Checklist

996   Think about how you felt after the experience that you just wrote about. Using a scale

997   from 1(not at all), 2 (a little), 3 (moderately), 4 (quite a bit), to 5 (extremely), please choose a

998   number to indicate your level of feeling the following:

	1	2	3	4	5
	Not at all	A little	Moderately	Quite a bit	Extremely
Grateful					
Thankful					
Appreciative					
Indebted					
Obligated					
Guilt					

999

1000   **Appendix B**

1001   Affiliative Intentions Towards Helper

1002   In the questions below, "X" refers to the person who offered you help in the experience that you have just wrote about. Following that

1003   experience, how much would you…:

	Not at all	Slightly	Moderately	Very	Extremely
… feel like staying close to "X"?*					
… feel like paying more attention to "X"?					
… feel like doing something for "X"?*					
… think positive thoughts about "X"?					
… feel like praising "X" when he/she is not around?					
… feel like spending time with this person?*					
… feel like initiating contact with "X"?*					
… feel motivated to reciprocate the favour?					
… value the favour that "X" did?*					
… feel that "X" was responsive to you in providing the help?*					
… feel cared for by "X"?					

	Not at all	Slightly	Moderately	Very	Extremely
… think "X" values his/her relationship with you?					
… think "X" expects something in return?					

1004

1005

1006

1007   **Appendix C**

1008   Communal Orientation Toward Helper

1009   In the questions below, "X" refers to the person who offered you help in the experience that you have just wrote about. Following that

1010   experience, how much do you…: Pertaining to the helping experience that you have , on a scale of 1 (not at all) to 7 (extremely)

1011   How much do you…:

	1	2	3	4	5	6	7
	Not at all						Extremely
… think that you and "X" would be likely to fulfil each other's needs?*							
… think that you and "X" would be likely to provide each other with things that would be pleasing to each other? … feel obligated to specifically repay the aid received?							

… want to return aid as quickly as possible

after receiving aid?*

1012

1013 **Appendix D**

1014 Gratitude Questionnaire (GQ-6)

1015 Using the scale below as a guide, please indicate how much you agree with each of the following:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I have so much in life to be thankful for.							
If I had to list everything that I felt grateful for, it would be a very long list.							
When I look at the world, I don't see much to be grateful for.							
I am grateful to a wide variety of people.							
As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history.							
Long amounts of time can go by before I feel grateful to something or someone.							

Appendix E

1017   Subjective Happiness Scale

1018   For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in

1019   describing you.

1020   1. In general, I consider myself:*

1	2	3	4	5	6	7
Not a very happy person						A very happy person

1021

1022   2. Compared to most of my peers, I consider myself:

1	2	3	4	5	6	7
Less happy						More happy

1023

1024   3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To

1025   what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						A great deal

1026

1027   4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To

1028   what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						A great deal

1029

1030

1031   **Appendix F**

1032   Mini-IPIP

1033   On a scale of 1 (very inaccurate) to 5 (very accurate), how well does each statement describe you?

	1	2	3	4	5
	Very inaccurate				Very accurate
Am the life of the party					
Sympathize with others' feelings					
Get chores done right away					
Have frequent mood swings					
Have a vivid imagination					
Don't talk a lot					
Am not interested in other people's problems					
Often forget to put things back in their proper place					

1034

	1	2	3	4	5
	Very inaccurate				Very accurate

Am relaxed most of the time

Am not interested in abstract ideas

Talk to a lot of different people at

parties

Feel others' emotions

Like order

Get upset easily

Have difficulty understanding

abstract ideas

Keep in the background

Am not really interested in others

Make a mess of things

Seldom feel blue

Do not have a good imagination

Appendix G

1036

1037   Experimental Manipulation for Study 2

1038   Participants received the following instructions for the scenario task:

1039   "In this section of the survey, you will be asked to read a scenario and think about it as if

1040   it happened to you. You will then be asked a few questions about how you would feel in such a

1041   scenario. (Note: you will not be able to move to the next page until 30 seconds have elapsed)"

1042   The four passages for each of the conditions are as follows:

1043   First Condition (low-responsive, low-value): "Imagine that you are working at a company

1044   along with several other coworkers. You were busy preparing for a meeting later in the day but

1045   felt like getting a beverage from the café. As your coworker happened to be going down to the

1046   café to get a snack, you asked your coworker to buy a specific beverage for you. At the cafe,

1047   your coworker didn't remember the flavour that you asked for, and instead of calling you back,

1048   your coworker bought a different flavour of beverage out of convenience. Upon tasting it, you

1049   realize that you do not like it, and still prefer the beverage you asked your coworker to buy."

1050   Second Condition (low-responsive, high-value): "Imagine that you are working at a

1051   company along with several other coworkers. You were busy preparing for a meeting later in the

1052   day but felt like getting a beverage from the café. As your coworker happened to be going down

1053   to the café to get a snack, you asked your coworker to buy a specific beverage for you. At the

1054   cafe, your coworker didn't remember the flavour that you asked for, and instead of calling you

1055   back, your coworker bought a different flavour of beverage out of convenience. Upon tasting it,

1056   you realize that you liked this flavour of beverage, even more than the flavour you asked your

1057   coworker to buy."

1058   Third Condition (high-responsive, low-value): "Imagine that you are working at a

1059   company along with several other coworkers. You were busy preparing for a meeting later in the

1060   day but felt like getting a beverage from the café. As your coworker happened to be going down

1061   to the café to get a snack, you asked your coworker to buy a specific beverage for you. Your

1062   coworker did try to buy the specific flavour for you, but it was unavailable and your coworker

1063   could not contact you as your phone ran out of battery. Nevertheless, they bought a different

1064   flavour of beverage which they thought you would like. Upon tasting it, you realize that you do

1065   not like it, and still prefer the beverage you asked your coworker to buy."

1066   Fourth Condition (high-responsive, high-value): "Imagine that you are working at a

1067   company along with several other coworkers. You were busy preparing for a meeting later in the

1068   day but felt like getting a beverage from the café. As your coworker happened to be going down

1069   to the café to get a snack, you asked your coworker to buy a specific beverage for you. Your

1070   coworker did try to buy the specific flavour for you, but it was unavailable and your coworker

1071   could not contact you as your phone ran out of battery. Nevertheless, they bought a different

1072   flavour of beverage which they thought you would like. Upon tasting it, you realize that you

1073   liked this flavour of beverage, even more than the flavour you asked your coworker to buy."

1074

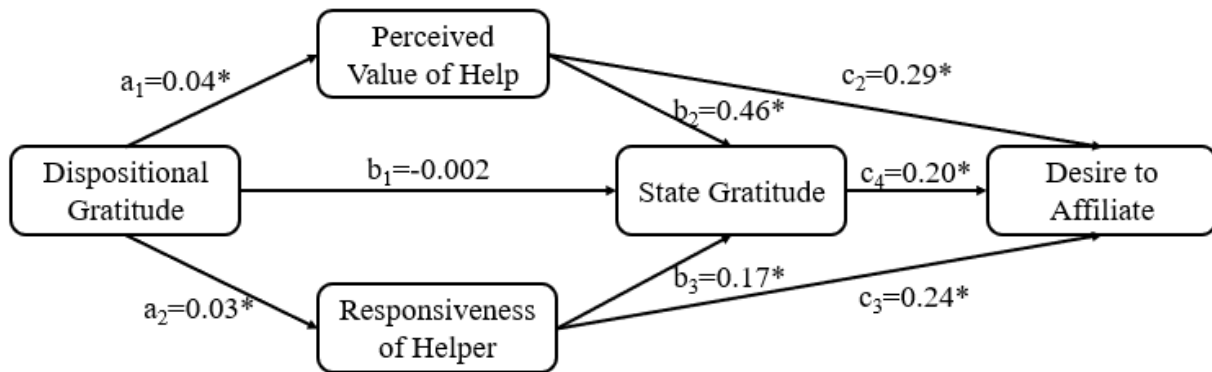1075   **Appendix H**

1076   Figure A1. Statistical Model depicting the mediating influence of perceived value of help,

1077   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for subjective
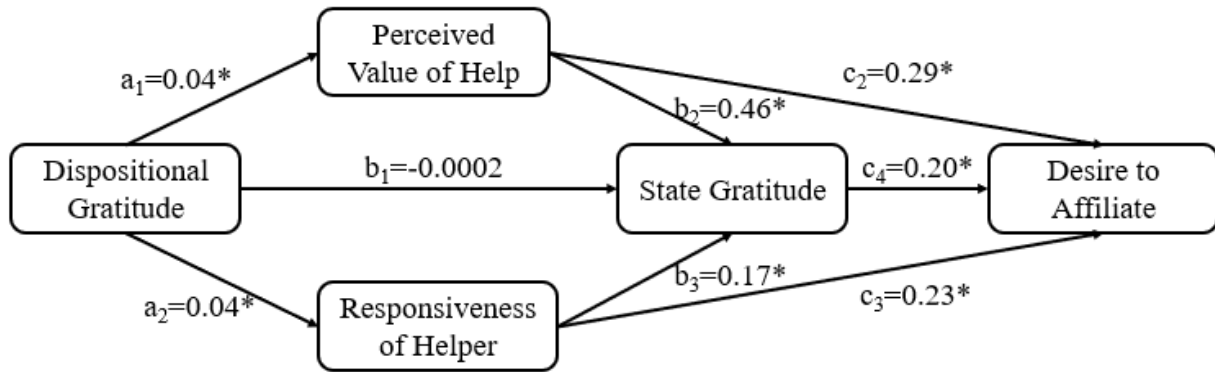
1078   happiness.

1079

1080

1081   Table A1. Summary of results for hypotheses testing in Study 1, controlling for subjective happiness.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[-0.0028,0.026]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.03	0.01	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	< .001	Supported
	a_1c_2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.004	[0.0055,0.0201]	Significant
	a_2c_3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.008	0.003	[0.0031,0.0146]	Significant

	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.0003	0.001	[-0.0031,0.0019]	Not significant
	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0454,0.1484]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0156,0.0678]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0014,0.0072]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0004,0.0028]	Supported

1082   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1083   Figure A2. Statistical Model depicting the mediating influence of perceived value of help,

1084   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for
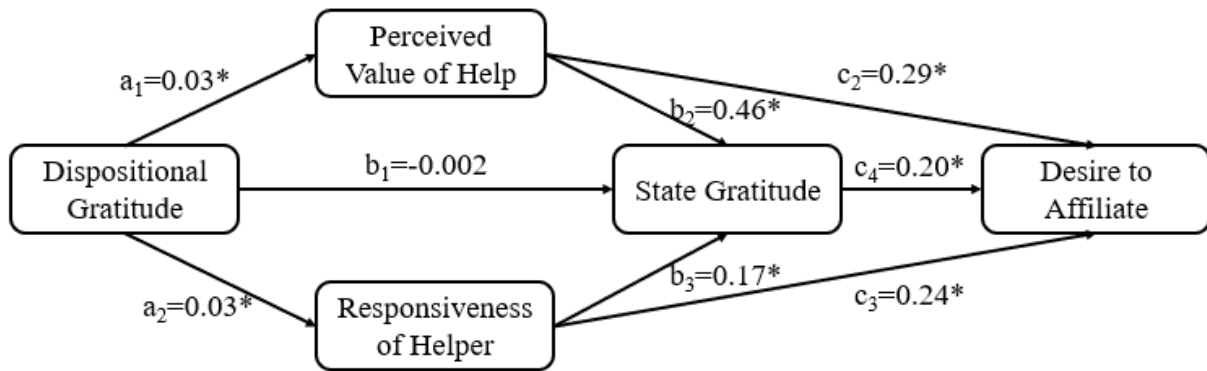
1085   extraversion.

1086

1087

1088

1089   Table A2. Summary of results for hypotheses testing in Study 1, controlling for extraversion.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[0.0013,0.0266]	Significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.0061,0.0201]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.008	0.003	[0.0038,0.0149]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.00005	0.001	[-0.0026,0.0023]	Not significant

	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0463,0.1488]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0158,0.0679]	Significant
H5A	a1b2c4: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0015,0.0073]	Supported
H5B	a2b3c4: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.005,0.0028]	Supported

1090   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1091   Figure A3. Statistical Model depicting the mediating influence of perceived value of help,

1092   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for
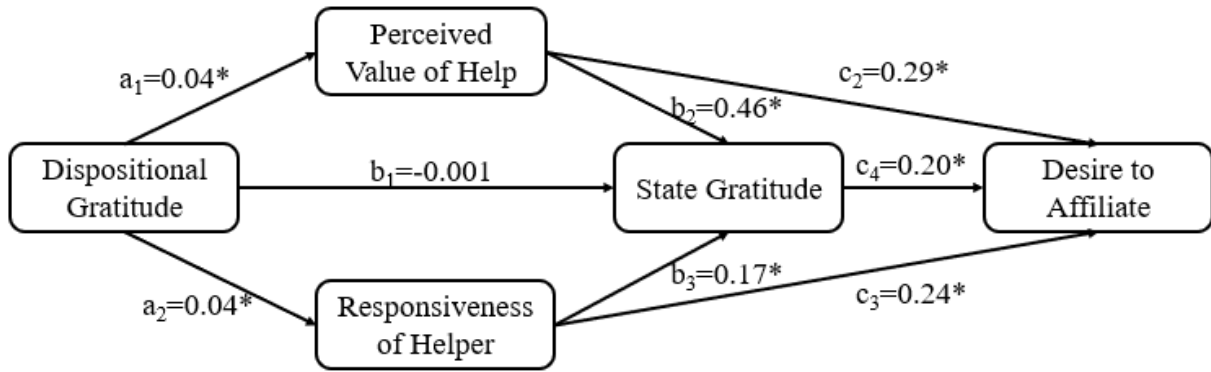
1093   agreeableness.

1094

1095

1096 Table A3. Summary of results for hypotheses testing in Study 1, controlling for agreeableness.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[-0.0026,0.0262]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.03	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.03	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.0048,0.0173]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.008	0.003	[0.0032,0.0139]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.0004	0.001	[-0.0031,0.0018]	Not significant

	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0452,0.148]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0156,0.0675]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.003	0.001	[0.0012,0.0065]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0005	[0.0004,0.0026]	Supported

1097   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1098   Figure A4. Statistical Model depicting the mediating influence of perceived value of help,

1099   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for
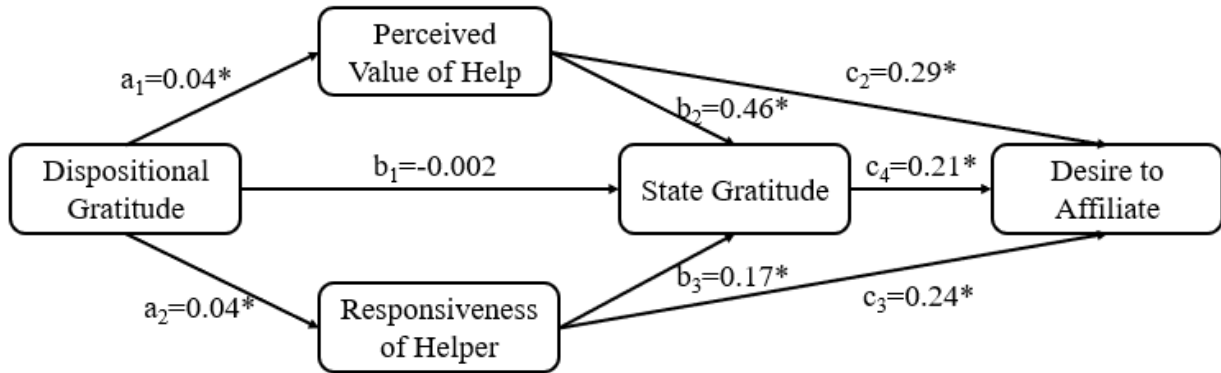
1100   conscientiousness.

1101

1102   Table A4. Summary of results for hypotheses testing in Study 1, controlling for conscientiousness.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[0.0009,0.0270]	Significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.004	[0.0066,0.0212]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.009	0.003	[0.0044,0.0159]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.0003	0.001	[-0.0029,0.0020]	Not significant
	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0469,0.1495]	Significant

	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0159,0.0680]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0017,0.0077]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0005,0.003]	Supported

1103   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1104   Figure A5. Statistical Model depicting the mediating influence of perceived value of help,

1105   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for neuroticism.
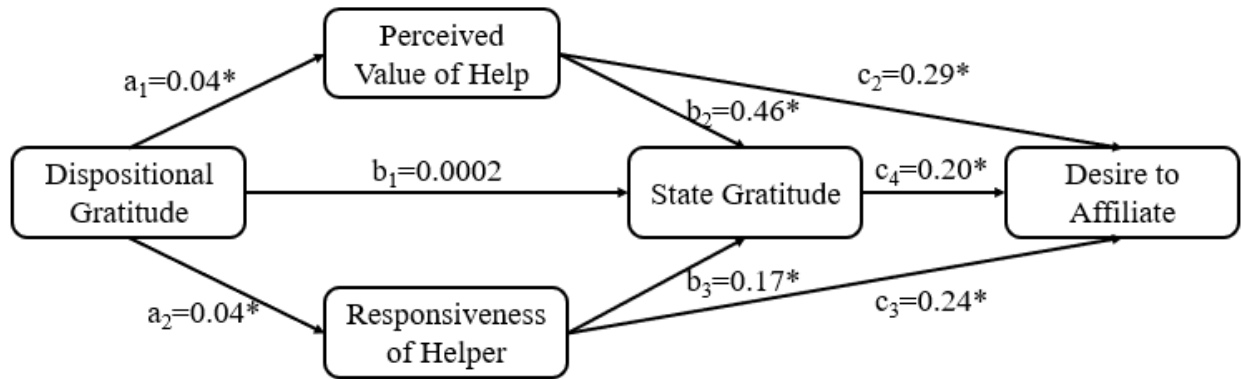

1106

1107

1108   Table A5. Summary of results for hypotheses testing in Study 1, controlling for neuroticism.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[0.0017,0.0281]	Significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.21	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.006,0.02]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.009	0.003	[0.004,0.0153]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.0004	0.001	[-0.0031,0.0019]	Not significant
	b2c4: Value of help → State gratitude → Desire to affiliate	0.10	0.03	[0.0472,0.1516]	Significant

	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.04	0.01	[0.0161,0.0691]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0016,0.0073]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.004,0.0153]	Supported

1109   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1110   Figure A6. Statistical Model depicting the mediating influence of perceived value of help,

1111   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for imagination.
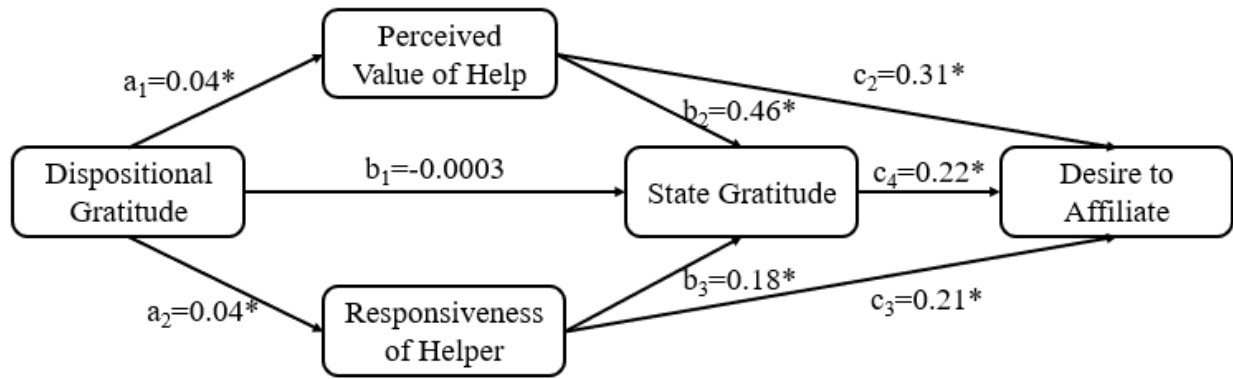

1112

1113

1114   Table A6. Summary of results for hypotheses testing in Study 1, controlling for imagination.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[0.0014,0.0285]	Significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.007,0.021]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.009	0.003	[0.0043,0.0158]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	0.00003	0.001	[-0.0025,0.0024]	Not significant
	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.04,0.15]	Significant

	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0156,0.0675]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0017,0.0075]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0005,0.003]	Supported

1115   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1116   Figure A7. Statistical Model depicting the mediating influence of perceived value of help,

1117   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for communal
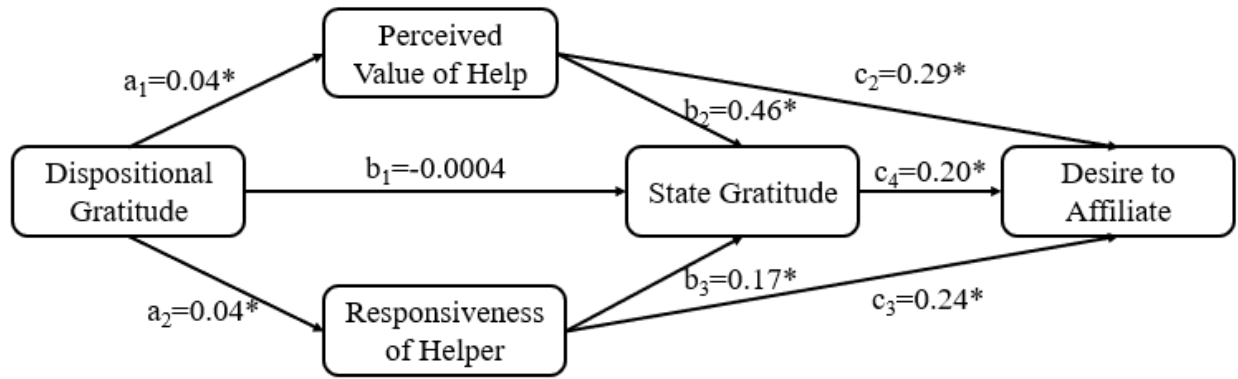
1118   orientation.

1119

1120   Table A7. Summary of results for hypotheses testing in Study 1, controlling for communal orientation.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.006	[0.0001,0.0256]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.18	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.22	0.05	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.0071,0.0215]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.008	0.003	[0.0036,0.0141]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.00006	0.001	[-0.0028,0.0025]	Not significant

	b2c4: Value of help → State gratitude → Desire to affiliate	0.10	0.03	[0.052,0.154]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.04	0.01	[0.0184,0.0722]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0019,0.0078]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0006,0.0032]	Supported

1121   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1122   Figure A8. Statistical Model depicting the mediating influence of perceived value of help,

1123   responsiveness of helper, and state gratitude on the desire to affiliate, controlling for gender.

1124

1125

1126   Table A8. Summary of results for hypotheses testing in Study 1, controlling for gender.
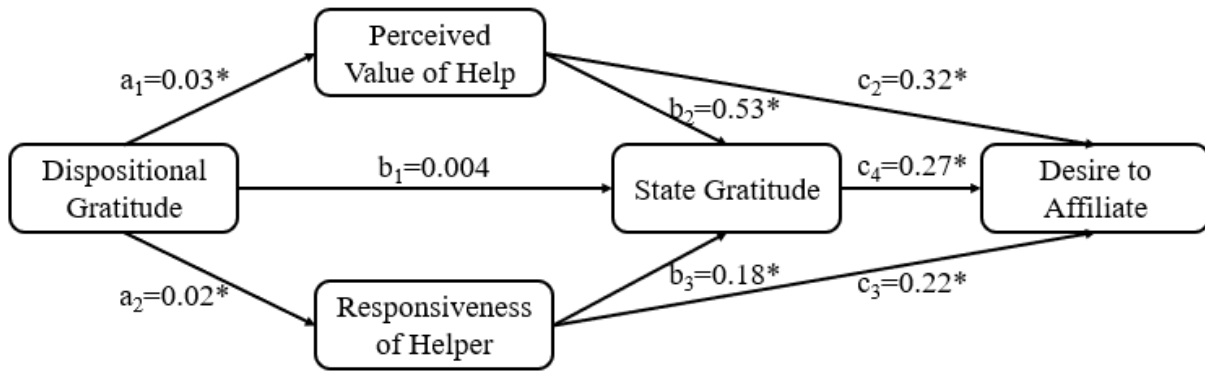
Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	0.01	0.007	[-0.0009,0.0252]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.04	0.009	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.04	0.009	< .001	Supported
H2	b_2: Value of help → State gratitude	0.46	0.04	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.17	0.04	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.20	0.09	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.003	[0.0065,0.0204]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.009	0.003	[0.0042,0.0156]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	-0.00009	0.001	[-0.0026,0.0022]	Not significant

	b2c4: Value of help → State gratitude → Desire to affiliate	0.09	0.03	[0.0456,0.1483]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.03	0.01	[0.0158,0.0674]	Significant
H5A	a₁b₂c₄: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.001	[0.0016,0.0074]	Supported
H5B	a₂b₃c₄: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.001	0.0006	[0.0005,0.003]	Supported

1127   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected

1128

1129   Figure A9. Statistical Model depicting the mediating influence of the perceived value of help,

1130   responsiveness of helper, and state gratitude on the desire to affiliate using data from Study 2,

1131   controlling for dummy-coded value and responsiveness.


1132

1133

1134   Table A9. Summary of results for hypotheses testing in Study 1 using data from Study 2, controlling for dummy-coded value and

1135   responsiveness.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	-0.003	0.003	[-0.009,0.0034]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.03	0.005	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.02	0.005	.002	Supported
H2	b_2: Value of help → State gratitude	0.53	0.03	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.18	0.03	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.27	0.03	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.01	0.002	[0.0063,0.0139]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.003	0.001	[0.001,0.0063]	Significant

	b_1c_4: Dispositional gratitude → State gratitude → Desire to affiliate	0.001	0.0009	[-0.0003,0.0031]	Not significant
	b_2c_4: Value of help → State gratitude → Desire to affiliate	0.14	0.02	[0.102,0.179]	Significant
	b_3c_4: Responsiveness of helper → State gratitude → Desire to affiliate	0.05	0.01	[0.0315,0.0716]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.0009	[0.0028,0.0063]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.0007	0.0003	[0.0002,0.0015]	Supported

1136   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected.

1137   Figure A10. Statistical Model depicting the mediating influence of the perceived value of help,

1138   responsiveness of helper, and state gratitude on the desire to affiliate using data from Study 2,

1139   with no control variables included.
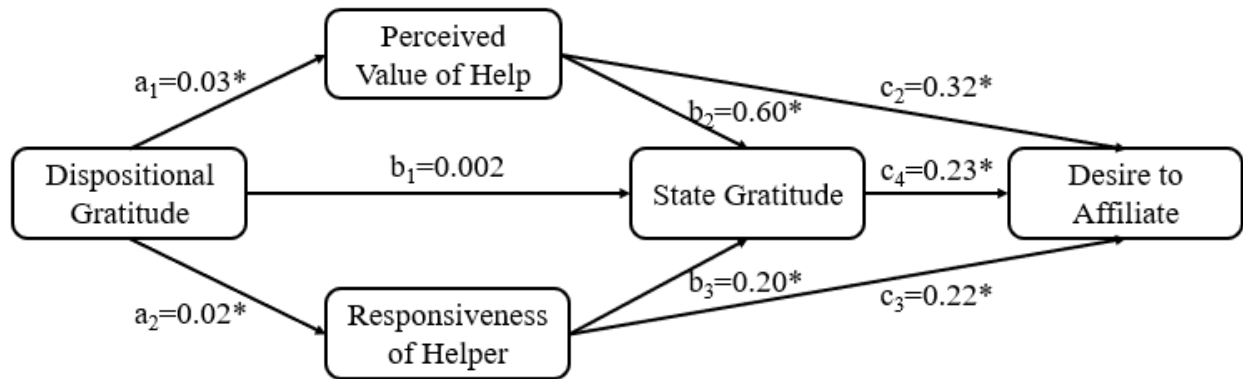
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1142   Table A10. Summary of results for hypotheses testing in Study 1 using data from Study 2, with no control variables included.

Hypotheses	Parameters	Effect	SE	95% CI / p-value	Remarks
	c'_1: Dispositional gratitude → Desire to affiliate	-0.003	0.003	[-0.0088,0.0037]	Not significant
H1A	a_1: Dispositional gratitude → Value of help	0.03	0.005	< .001	Supported
H1B	a_2: Dispositional gratitude → Responsiveness of helper	0.02	0.005	.002	Supported
H2	b_2: Value of help → State gratitude	0.60	0.03	< .001	Supported
H3	b_3: Responsiveness of helper → State gratitude	0.20	0.03	< .001	Supported
H4	c_4: State gratitude → Desire to affiliate	0.24	0.03	< .001	Supported
	a1c2: Dispositional gratitude → Value of help → Desire to affiliate	0.010	0.002	[0.0062,0.0139]	Significant
	a2c3: Dispositional gratitude → Responsiveness of helper → Desire to affiliate	0.003	0.001	[0.001,0.0063]	Significant
	b1c4: Dispositional gratitude → State gratitude → Desire to affiliate	0.001	0.0008	[-0.0004,0.0003]	Not significant

	b2c4: Value of help → State gratitude → Desire to affiliate	0.14	0.020	[0.103,0.18]	Significant
	b3c4: Responsiveness of helper → State gratitude → Desire to affiliate	0.05	0.010	[0.0307,0.0696]	Significant
H5A	$a_1b_2c_4$: Dispositional gratitude → Value of help → State gratitude → Desire to affiliate	0.004	0.0009	[0.0028,0.0064]	Supported
H5B	$a_2b_3c_4$: Dispositional gratitude → Responsiveness of helper → State gratitude → Desire to affiliate	0.0007	0.0003	[0.0002,0.0015]	Supported

1143   *Note:* Results were based on bootstrapping with 10,000 samples, and CI's were bias-corrected.