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4 **Representing other minds: Mental state reference is moderated by group membership**

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Abstract

The ability to infer the psychological forces that drive others' behavior is a cornerstone of human cognition. This 'theory of mind' (ToM) we have has been extensively studied in its developmental stages and non-human forms. However, how the fully developed theory of mind functions on a daily basis is still the focus of ongoing research. One capacity stemming from theory of mind involves overt linguistic mental state reference. We propose that, rather than being a capacity that those with a fully developed ToM use consistently, mental state reference is a function of our social relationship to others: specifically, whether the other is perceived as an in-group or out-group member. We therefore examined spontaneous mental state reference during casual conversation as a function of group membership. Participants were divided into 'in-group' or 'out-group' pairs using a classic minimal group paradigm. Next, they were allowed to converse casually with their partner without the experimenter present and then subsequently asked to describe their partner in a written format after interactions. We scored participants' conversations and their written descriptions of each other for frequency and complexity of mental state reference. Results showed that, when interacting with presumed out-group members, participants referenced their partners' mental states significantly less often than when interacting with presumed in-group members. This effect was found both during conversations and in subsequent descriptions of the partner. Spontaneous mental state reference is apparently not a consistent psychological process but instead subject to social constructs, specifically group membership.

Key Words: theory of mind, inter-group, mental state attribution, mental state reference

Introduction

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Theory of mind, or the ability to infer unobservable mental states and to use these mental states to predict future behaviour, has long been investigated in its incomplete or premature forms. Both from a developmental perspective (Alison & Astington, 1988; e.g. Ensink & Mayes, 2010; Wellman, Cross, & Watson, 2001) and from an inter-species comparative perspective (e.g. Call & Tomasello, 2008; Heyes, 1998; Premack & Woodruff, 1978) the ‘non-normal’ theory of mind has been thoroughly canvassed, somewhat to the detriment of the study of the actual mechanism itself (Apperly et al., 2010; Apperly, Riggs, Simpson, Chiavarino, & Samson, 2006). The normally functioning adult theory of mind has received attention more recently in roughly the last decade. To date, evidence suggests that the use of a normally developed theory of mind (and a host of related processes) is heavily influenced by cognitive, cultural, and social factors.

First, in terms of the impact other cognitive processes have on theory of mind, people have difficulty interpreting another person’s perspective without using their own knowledge as a template (e.g. Fussell & Krauss, 1991; Keysar, Barr, Balin, & Brauner, 2000; Keysar, Lin, & Barr, 2003; Nickerson, Baddeley, & Freeman, 1987; Royzman, Cassidy, & Baron, 2003). This process, sometimes termed epistemic egocentrism, can lead to misjudgments about other’s knowledge and occurs even when people are motivated to make accurate inferences (Keysar, Ginzler, & Bazerman, 1995). People also encounter difficulties in interpreting others’ visual perspective in the face of high executive demands and distractions (Epley, Morewedge, & Keysar, 2004; Lin, Keysar, & Epley, 2010), as well as with lower moods (Converse, Lin, Keysar, & Epley, 2008). Furthermore, Apperly and colleagues have shown that questions requiring theory of mind usage are answered less quickly than non-mentalistic, reality-matching questions (Apperly et al., 2006) an indication that theory of mind processes may be a function of cognitive processing demands.

Second, cultural differences also seem to play a role in how effectively people take another’s perspective, as shown by a study in which Chinese and American participants were asked to infer a partner’s visual perspective (Wu & Keysar, 2007). The Chinese participants inferred their partner’s visual perspective more accurately than their American counterparts.

Third, social factors, specifically group membership, may also alter perception, making individuals less attendant to minds perceived as ‘other’ (Haslam, 2006) and more likely to stereotype those perceived as less similar (Ames, 2004). On the more extreme end,

93 people categorized as ‘other’, or out-group, may be infrahumanized and attributed fewer
94 uniquely human emotions (Leyens et al., 2001). Dehumanization research shows similar
95 effects, in that out-group members are attributed fewer human values and traits and more
96 animalistic qualities than are in-group members (for a review see Haslam, 2006).
97 Furthermore, Hackel and colleagues showed that out-group members are required to be more
98 human to be perceived as having a mind, in that shared group membership impacted how
99 participants perceived the presence of mind in not only actual humans but dolls as well
100 (Hackel, Looser, & Van Bavel, 2014). Group membership also affects how people empathise
101 with others: considerable research has shown that empathic responses are lowered when
102 observing out-group compared to in-group members (for a review see Cikara, Bruneau, &
103 Saxe, 2011).

104 The previously discussed evidence suggests that normal processing of others’ mental
105 states is neither automatic nor consistent, and that social factors play a role in how people
106 attribute emotions, perceive the presence of minds, and empathically respond. If group
107 membership can affect these processes related to theory of mind, we wanted to address
108 whether it would also impact the mechanism in its most basic and original form, the
109 attribution of mental states to others (Premack & Woodruff, 1978).

110 The present study attempts to address these gaps by investigating whether group
111 membership affects one aspect of theory of mind usage - mental state reference - in
112 cognitively normal adults during typical, daily interactions. Specifically, we were interested
113 in whether group membership plays a role in how people spontaneously reference others’
114 mental states. The aim of this study was to gather data from the most natural contexts
115 possible: unlike previous studies, we did not want to prompt theory of mind usage but rather
116 to gauge one of its natural manifestations. We therefore examined natural social interactions
117 for evidence of one manifestation of theory of mind usage, spontaneous mental state
118 reference during casual conversation. We began by categorizing pairs of people using a
119 classic minimal group paradigm based on estimation abilities into in-group and out-group
120 pairs (Tajfel, Billig, Bundy, & Flament, 1971). After categorization participants were
121 allowed to freely converse with each other, after which we asked participants to describe their
122 partner in a written format.

123 Our aim was to compare participants’ conversations and their descriptions of each
124 other to assess the impact of group membership on spontaneous mental state reference.
125 Linguistic reference to mental states has long been considered an indication of developmental

126 processes children go through as they learn to form and use mental representations of others'
127 mental states (Piaget & Inhelder, 1966). Even the usage of simple mental state verbs, such as
128 'to remember' or 'to hope', requires that the user form a mental representation of the target's
129 mental state, specifically, what is being remembered or hoped (Antonietti, Liverta-Sempio,
130 Marchetti, & Astington, 2006). As such, this type of reference has been used to study
131 children's developing theory of mind (e.g. Meins, Fernyhough, Johnson, & Lidstone, 2006;
132 Meins et al., 2002). This link between language and theory of mind has been exploited by
133 researchers to develop the 'Spontaneous Theory of Mind Protocol' (STOMP), which
134 measures spontaneous descriptions of the mental states of characters in videos to show that it
135 correlates with thickness of certain cortical areas of the brain (Rice & Redcay, 2014). The
136 STOMP approach used trained coders to differentiate between physical and mental state
137 reference, whereas our design used a finite list of mental state reference words, based on and
138 including words used to study mental-reference in children (Jenkins, Turrell, Kogushi, Lollis,
139 & Ross, 2003) as well as the 'state verbs' used in the linguistic category model (LCM)
140 approach (Semin & Fiedler, 1988). We used this list to examine participants' conversations
141 and their subsequent written descriptions of each other to compare how participants
142 referenced the mental states of in-group and out-group partners.

143

144 **Method**

145

146 **Participants**

147

148 Participants were recruited using noticeboards around the University of St Andrews after the
149 study was approved by the university's Ethics Committee. Participants from all departments
150 except psychology were accepted to take part in the study. 86 female undergraduates (age
151 range 17 – 20) took part in the study to form a total of 43 pairs. In this way we controlled for
152 the gender of our participants in order to avoid gender effects, or the possibility that
153 participants would use gender to categorise themselves on top of our group manipulation (Ito
154 & Urland, 2003).

155 Two pairs of participants were discarded from analysis: one because one of the
156 participants had previous experience with minimal group paradigms, and another because the
157 recording equipment did not function during the trial. In total this produced 41 pairs: 21 in
158 the out-group condition and 20 in the in-group condition. All participants were tested in a

159 single session lasting approximately 30 minutes. All participants were naïve to the
160 experimental hypothesis, told that their data would be treated confidentially and used
161 anonymously in publication, gave informed consent, were fully debriefed at the end of each
162 experiment, and received £3 for participation.

163

164 **Procedure**

165

166 The experiment was conducted in the Social Immersion Lab in the Psychology
167 Department at the University of St Andrews. Prior to the experiment it was confirmed that
168 participants did not know each other in any way. Participants arrived at the lab at the same
169 time and were given instructions before any social chatting could take place. Participants
170 were given information forms describing the experiment and then asked to complete a
171 consent form.

172 As the minimal group paradigm, participants were told the cover story that the
173 experiment was designed to study the link between cognitive style and social interaction. To
174 that end, the experimenter would first assess their cognitive style and then ask them to
175 complete a social interaction task. Their cognitive style, they were told, would be assessed
176 using a test called the ‘Dot Estimation Task’ (DET), which was in reality the minimal group
177 paradigm used to categorize participants into out-group and in-group conditions (adapted
178 from Howard & Rothbart, 1980). Participants were told that using the DET the experimenter
179 would be able to tell whether they were over- or under-estimators, and that this categorization
180 was significant since estimation abilities correlated with such abilities as spatial computation
181 and mathematical skills. The DET itself involved estimating the amount of dots present on
182 three consecutive pictures (made using Power Point, see Fig. 1 for example below). Dot
183 pictures were presented for 3 seconds each using Microsoft Power Point and a projector.

184

185 Figure 1 about here

186

187 Figure 1. Representative illustration of a ‘Dot Estimation Task’ picture

188

189 Participants were asked to write down their estimates for each picture and to do the
190 task alone in order to ‘get a clear and true read-out’ of each of their cognitive styles. In actual
191 fact this request was designed to keep participants from discussing their answers and thereby

192 realizing that there was no actual correlation between estimates and assigned category. The
193 experimenter then made a brief show of calculating the average of their estimations, and then
194 arbitrarily assigned each participant to be either an over- or under-estimator. Participants
195 were asked to wear a badge with their estimation type displayed on it (two ‘over’ or ‘under’
196 estimators in the in-group condition, and one of each in the out-group condition).
197 Participants were told this was so that ‘the experimenter would not forget who was what for
198 future analysis’ whereas it was in fact done to maintain the salience of the categorization.
199 Again, this categorization was in reality arbitrary.

200 Once categorized, participants were told that they would take a short break from the
201 experiment to allow the experimenter to set up the rest of the experiment before the social
202 interaction. Participants were told they were allowed to chat to pass the time before the
203 supposed upcoming social task if they wanted. The experimenter then left the room and
204 allowed the participants 7 minutes to freely converse, during which time the CCTV camera
205 system in the lab was recording. After the conversation, participants were separated and
206 asked to ‘solidify their impressions’ of each other by completing a free-form written
207 description of their partner before the supposed social interaction task. Participants were told
208 that their written descriptions would remain anonymous and that their only purpose was to
209 allow each participant to collect and focus their impressions of the other before the
210 interaction task. After completing the written descriptions the experiment was concluded and
211 participants were told that there was in actual fact no social interaction task. Participants
212 were then debriefed in full and paid.

213

214 **Coding**

215

216 Previous research has shown that the use of mental state verbs provides a useful
217 metric of theory of mind functioning (Bretherton, McNew, & Beeghly-Smith, 1981; Dunn,
218 Bretherton, & Munn, 1987). Mental state verb usage is correlated with children’s theory of
219 mind development as measured by false belief tasks (Brown, Donelan-McCall, & Dunn,
220 1996). Mental state talk has been coded in a variety of ways, usually tailored to the study’s
221 particular aims. The aim of the current study was to quantify differences in linguistic
222 manifestation of mental state reference as a function of our group manipulation. To this end,
223 a master list of mental state words was devised to identify all references participants made to
224 their partner’s mental states.

225

226 To devise the master word list, we began with previous research which analysed
227 spoken language to identify instances of mental state reference (e.g. Bartsch & Wellman,
228 1995; Jenkins et al., 2003; Shatz, Wellman, & Silber, 1983). The Jenkins list (2003) has
229 come to be the standard list used in developmental research. However, the terms that
230 constitute the Jenkins list are not exhaustive of all possible ways in which adults reference
231 mental states. We therefore added to the Jenkins list the ‘state verbs’ identified by the
232 Linguistic Category Model (Semin & Fiedler, 1988), except for those that did not fit the
233 following rule: the word was required to make sense if and only if the concept of a mental
234 state was invoked. The ‘state verbs’ that did not pertain solely to a mental state (but in some
235 cases could describe a behaviour or a personality) and that were therefore excluded from our
236 mental state term list were the following: *aggressive, charismatic, impulsive, moody,*
237 *outgoing, reliable,* and *reserved*. For example, ‘aggressive’ could be used to describe an
238 ‘aggressive behaviour’ without reference to the person as such. Hence, these aforementioned
239 words were excluded from our coding system to avoid ambiguity.

240 The current corpus of transcribed speech showed that participants in the current study
241 used many more expressions to reference mental states than those listed by both Jenkins et al
242 (2003) and the LCM model. The first author and a second coder therefore submitted the
243 transcribed corpus to a two-stage analysis to form a more complete master list. First, all
244 terms that pertained to any mental state were identified by both the first coder (first author)
245 and a second coder separately. This involved each coder combing the manuscript for
246 statements that adhered to the aforementioned rule: the statement was required to make sense
247 if and only if the concept of a mental state was invoked. When this rule was met, the term
248 used was then added to the master list. We identified another 71 verbs used to reference
249 mental states (e.g. to be interested in, to be pleased to, to learn., etc). See table 1 for
250 complete master list. The two coders identified the same terms in the corpus except for three,
251 ‘to reckon’, ‘to find’ (in the context of a sentiment or thought as opposed to an object), and
252 ‘to be only joking’. After discussion the two coders agreed that these three terms each fit the
253 rule of necessitating the concept of a mental state to be understood and so were subsequently
254 added to the master list.

255 Some terms are more ambiguous, in that they can be used to actively refer to a mental
256 state or simply as conversation fillers that hold some social function. For instance, although
257 conversation analysts previously treated the phrase ‘you know’ that exists without an object

258 as an ambiguous filler (G. Brown, 1977), more recent work with adult discourse analysis
 259 treats ‘you know’ as a referent to either shared knowledge (Edwards, 1997; Holmes, 1986;
 260 Potter, Hepburn , & Tileagă, 2011) or knowledge the recipient alone holds (P. Brown &
 261 Levinson, 1987). Therefore, in order to parallel recent content analysis techniques we have
 262 coded every use of the term ‘to know’ as reference to a mental state.
 263

to want	to feel _____	to think	to mean
to hope	to be hurt	to know	to be serious
to wish	to be angry	to believe	to realise
to care	to be happy	to wonder	to recognise
to be pleased to	to be excited	to remember	to learn
to be tempted to	to love	to forget	to have an idea
to be interested in	to like	to guess	to be conscious of
to be bothered to	to dislike	to pretend	to imagine
to be keen on	to be afraid	to understand	to reckon
to look forward to	to enjoy	to expect	to fathom
to be bored of	to have fun	to have a clue	to figure (out)
to have a crush on	to be glad	to be confused	to plan to
to be mad about	to be mad	to notice	to lie
to desire	to be scared	to assume	to be sorry
to fancy	to be upset	to find out	to decide
to miss	to be surprised	to underestimate	to choose
to need	to fear	to agree	to trust
to enjoy	to be disgusted	to be sure	to be intelligent
to be fond of	to worry	to make sense	to be
to hate	to be anxious	to disagree	pessimistic/optimistic
to abhor	to be relieved	to be able to relate	to esteem
to detest	to be shocked	to judge	to admire
to loath	to be disappointed	to be determined	to find (in the sense of a
to hold in contempt	to be nervous	to be only joking	cognitive act, i.e. without
to prefer	to be sad	to accept	a physical object)

to be glad to to dread to pity	to commiserate to envy to mourn for	to respect to suspect to intend	to be into (not in the physical sense)
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265 Table 1. Master list of words used to reference mental states.

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267 Once the master list was formed, coding was carried out on the entire corpus. The first
268 coder coded the entire corpus of transcribed conversations and written descriptions while the
269 second coder coded 20% of each. Both coders were blind to experimental condition and the
270 second coder was blind to the hypothesis. First, each instance of mental state reference using
271 any of the terms on the master list was identified in the corpus. This consisted of using a
272 Microsoft Word XP ‘find’ function to locate every occurrence of each word on the master list
273 (and all related grammatical forms). All grammatical forms were located by inputting the
274 stem of a verb into the search function, or each grammatical form individually for irregular
275 verbs. For example, to find all references to the mental state ‘to want’, the word ‘want’ was
276 inserted into the search function and every instance of all grammatical forms, including to
277 want, wanted, wanting, and will want, were all highlighted. The same procedure was applied
278 to participants’ written impressions of each other. To be considered an instance of mental
279 state reference, the same rule was invoked requiring that the statement could be made sense if
280 and only if the concept of a mental state was invoked. For example, in one written
281 impression a participant wrote the following: ‘She was nervous. Lots of nervous laughter’.
282 The phrase ‘She was nervous’ was coded as a mental state reference (as it referred to the
283 partner’s mental state), while ‘Lots of nervous laughter’ was not coded as mental state
284 reference since here the word ‘nervous’ did not refer to the partner’s mental state but to the
285 laughter itself.

286 Next, once all usages of the mental state reference terms were located, each was
287 coded for complexity of mental state reference (as either ‘basic’, ‘complex’, or ‘highly
288 complex’) along with whether the object of the mental state attribution in the utterance was
289 the speaker or the partner (e.g. Baron-Cohen, 1989; Flavel, Botkin, Fry, Wright, & Jarvis,
290 1968; Wimmer & Perner, 1983). ‘Basic’ mental state reference is equivalent to what is
291 sometimes called ‘first order’ mental state reference in that it involves only one degree of

292 intentionality and references one mental state alone (Dennett, 1987). For example ‘You *like*
293 chocolate?’ contains reference to only one mental state and would qualify as a basic
294 reference. Basic mental state references included such statements as ‘What do you *think* of
295 it?’ (partner as object, trial 22) and ‘and I’m not like a hideously messy person, I *like* to have
296 a bit of mess’ (self as object, trial 35). ‘Complex’ mental state reference is equivalent to
297 what is also called ‘second order’ mental state reference: it involves a statement with two
298 degrees of intentionality realised by using two mental states in reference to each other within
299 the same expression (Dennett, 1987). This included such utterances as, ‘ok, you have to *think*
300 back to your first *thoughts* of me’ (partner as object, trial 37) and ‘I *think* I wasn’t quite so
301 *sure* before I came’ (self as object, trial 1). ‘Highly-complex’ mental state reference
302 (equivalent to Dennett’s ‘third order intentionality’) combines three mental state terms in one
303 utterance. Highly-complex mental state reference only occurred when participants were
304 speaking about themselves, such as in the statement, ‘I *wish* I *knew* what I *wanted* to do’ (self
305 as object, trial 5). Lastly, all references to both the self and the partner that did not involve
306 the use of one of the mental state terms in table 1 were located and coded. These ‘non-
307 mentalistic’ references were required to make sense if and only if either the speaker or the
308 speaker’s partner was invoked as the referent of the statement without the use of a mental
309 state term from the master list.

310 Correlation between the two coders was assessed by calculating cohen’s kappa for
311 each of the categories of mental state and non-mentalistic reference in the conversations and
312 in the written descriptions. Inter-rater reliability was high with all kappas, > 0.86 . Given the
313 small sample size, all of the complex and highly-complex instances of mental state reference
314 were then coded by the second coder (still blind to condition and hypothesis) which produced
315 a high inter-rater reliability (kappa = 1.00).

316

317 **Results**

318

319 **Data Analysis**

320

321 To assess the impact of group membership on spoken conversation and written
322 descriptions we conducted generalized linear mixed models with the individual as the unit of
323 analysis, the fixed effect set as group membership, and the random effect set as the pair that
324 participants conversed in. All analysis was conducted using SPSS 24. Analyses were divided

325 into the following sections 3.1) Natural conversations: 3.2) Written impressions, and 3.3)
326 Correlation between mental state reference in conversations and written descriptions.

327

328 **Natural Conversation Results**

329

330 Analysis of participants' spontaneous conversations is divided into the following
331 sections: A) 'Overall conversation', that is, amount of total speech as a function of group
332 membership, B) 'Non-theory of mind reference', including all reference that does not involve
333 attributing mental states to the partner, and C) 'Theory of mind like reference', including all
334 references to the partner's mental states.

335

336 **A) Overall conversation.**

337

338 First, in comparing the overall amount of spoken conversation between conditions, we
339 see that group membership had no effect on total words spoken: out-group condition
340 (estimated marginal mean = 676.159) vs in-group condition (estimated marginal mean =
341 660.106; $F(1, 80) = .46, p = .5$). This is important because it indicates that any differences in
342 mental state referencing cannot be ascribed to absolute differences in the overall amount of
343 speech produced or the motivation to converse. However, we nevertheless analyse all
344 subsequent differences in conversation as a function of percentage of total utterances for the
345 sake of accurate comparability across conditions.

346 Also, to ensure that there was no effect of the specific categories used in our minimal
347 group paradigm (over- and under-estimators) we also conducted GLZMs on in-group pairs
348 alone to determine whether category type affected any of the referencing behaviours,
349 including mental state reference and non-mental state reference. We found no effect of
350 category type in any of the following analysis, in that over-estimators did not significantly
351 differ from under-estimators along any dimension. We therefore pooled both types of
352 estimators for the in-group condition in all analyses.

353

354 **B) Non-'theory of mind' reference.**

355

356 Regarding statements which require no theory of mind processing, we looked at the
357 effect of group membership on non-mentalistic reference to the self and the partner, as well

358 as mentalistic reference to the self (using mental state verbs as defined above in the coding
 359 section). For example, non-mentalistic references to the self included things like, ‘I tend to
 360 leave things ‘til the last minute so...’ (trial 40), or, ‘I never saw a person faint in front of me’
 361 (trial 34). Non-mentalistic references to the partner included both statements and questions
 362 that referenced the partner without using the mental state verbs listed in table 1. For example,
 363 a non-mentalistic reference to the partner was, ‘Do you have brothers and sisters that you left
 364 behind?’ (trial 10), or ‘You’re not from the UK, though’ (trial 36). Mentalistic reference to
 365 the self included statements like ‘I *miss* not having animals around’ (trial 10, basic
 366 reference), and ‘I *knew* that like at 18 or whatever I couldn’t *fathom* being in a different
 367 country from my parents’ (trial 29, complex reference). Table 2 summarises non-theory-of-
 368 mind reference as a function of group membership.

369
 370

	Estimated Marginal Means (% of total utterances)	F (1,80) =	P value
<u>Non-mentalistic self-reference</u>			
Out-group	18.00	6.838	.011 *
In-group	22.40		
<u>Basic mentalistic self-reference</u>			
Out-group	13.2	.442	.508
In-group	12.6		
<u>Complex mentalistic self-reference</u>			
Out-group	0.3	.405	.526
In-group	0.2		
<u>Non-mentalistic partner-reference</u>			
Out-group	6.7	4.067	.047*
In-group	8.7		

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Table 2. Frequency of non-theory of mind reference to the self and partner.

375 Of the references participants made that required no theory of mind abilities, only the
376 non-mentalist references to the self and the partner differed significantly between in-group
377 and out-group conditions. That is, shared group membership increased both non-mentalist
378 reference to the self and the partner. No significant differences were found regarding
379 mentalistic reference to the self.

380

381 **C) ‘Theory of mind-like’ reference to the partner.**

382

383 We next analyzed the impact of group membership on how participants referenced
384 their partners’ basic mental states, indicated by the presence of any one of the words on the
385 master list used in reference to the partner’s mental state. First, participants talked about their
386 partners’ basic mental states less if their partner was an out-group member (estimated
387 marginal mean = 1.2%) than a presumed in-group member (estimated marginal mean = 3.8%;
388 $F(1, 80) = 205.634, p = .000$, fig. 2). That is, statements that referred to a partner’s basic
389 mental states, such as ‘So, would you like to be a lecturer?’ (Trial 12) were more common
390 when participants spoke with in-group than out-group members.

391

392 Figure 2 about here

393

394 Figure 2. Percentage of references to a partner’s basic mental states in natural conversations
395 (estimated marginal means \pm SE) as a function of group membership.

396

397 Given the infrequency of complex reference to the partner’s mental states (eight times
398 in our entire data set with no pair using this type of reference more than once) we used a
399 simple Fisher’s exact test to assess whether this type of reference was more likely to occur in
400 the in-group or out-group conditions. In fact, participants referenced their partners’ complex
401 mental states less frequently when speaking with an out-group member (1 times total) than
402 with an in-group member (7 times total; $p < .02$, Fisher’s exact test). That is, statements
403 such as, ‘What you might *find* is that you *enjoy* it more’ (trial 39) were more likely to be used
404 between in-group members than between out-group members.

405

406 Figure 3 about here

407

408 Figure 3. Total references to a partner's complex mental states in natural conversations as a
409 function of group membership.

410

411 **Written Impressions Results**

412

413 **A) Overall amount of written words.**

414

415 Questionnaire data from 6 pairs was unavailable as these pairs requested to leave
416 early due to time constraints. There was no statistical difference between the total number of
417 words participants wrote when describing an out-group partner (estimated marginal mean =
418 88.294) compared to describing an in-group partner (estimated marginal mean = 74.583; $F(1,$
419 $68) = 2.578, p > .113$). Again this is important as it shows that our minimal group
420 manipulation did not affect participants' motivation to write about their partners.

421

422 **B) Basic mental state reference to the partner.**

423

424 Sentences written by participants were coded as either no mental state reference, basic
425 mental state reference (one mental state verb in the sentence), or complex mental state
426 reference (two mental state verbs in the sentence) according to the same coding scheme
427 described above for conversation. Amount of both basic and complex mental state reference
428 was calculated as a percentage of total sentences written. Out-group members were described
429 less frequently in terms of their basic mental states (estimated marginal mean = 9.70%) than
430 were in-group members (estimated marginal mean = 27.60%), $F(1, 68) = 14.948, p = .000,$
431 fig. 4). For example, statements such as 'She doesn't *want* to fly into a conversation quickly'
432 (Trial 4) were more likely to be written about in-group than out-group members.

433

434 Figure 4 about here

435

436 Figure 4. Percentage of reference to the partner's basic mental states in written impressions
437 (estimated marginal means \pm SE) as a function of group membership.

438

439 **C) Complex partner mental state reference.**

440 Although participants used more complex forms of mental state reference more rarely,
441 the same pattern was found. That is, participants writing about presumed out-group members
442 referenced their complex mental states less frequently (estimated marginal mean = .5%) than
443 those writing about presumed in-group members (estimated marginal mean = 3.6%; $F(1, 68)$
444 = 8.457, $p = .005$; fig. 5). For example, participants were significantly more likely to write
445 complex statements referring to a partner's mental states, such as 'She's not *afraid* to do what
446 she *wants*' (Trial 28), about in-group than out-group members.

447

448 Figure 5 about here

449

450 Figure 5. Percentage of reference to the partner's complex mental states in the written
451 impressions (estimated marginal means \pm SE) as a function of group membership.

452

453 **Correlation Between Mental State Reference in Conversation and Written Descriptions**

454

455 It is possible that the level of mental state reference participants manifest during
456 conversation influenced their subsequent descriptions of their partner. That is, if people are
457 provided with more mental state information about a person they may then be more prone to
458 use that information preferentially over other information when describing a person, or they
459 may simply have had less non-mentalistic information to hand with which to describe a
460 person. Whichever is the case, it seems logical to assume that the conversations participants
461 engaged in might have influenced the way in which they considered and described their
462 partner afterward. However, we found no correlation between amount of total mental state
463 reference in conversation and amount of total mental state reference in participants'
464 subsequent descriptions of each other ($R = .03$, $p = .97$).

465

466

467 **Discussion**

468

469 In this study we aimed to determine whether people reference other's mental states
470 automatically and consistently, or whether different social contexts, for example group
471 membership, produce different referential behavior. To do this, we analyzed how people
472 reference another person's mental states in both natural conversations and in subsequent

473 written descriptions as a function of artificially manipulated group membership. Broadly, our
474 results showed that group membership affects how people overtly refer to another person's
475 mental states, both immediately during an interaction and after it.

476 We first examined participants' casual conversations in order to examine the effect of
477 group membership on spontaneous mental state reference as well as reference that would not
478 require theory of mind processes. For non-theory-of-mind reference, it seems that shared
479 group membership increases references to both the self and the partner that do not involve
480 use of mental state verbs. So, for example, in-group participants discussed their current and
481 past lives than out-group participants did. This could be because such references were aimed
482 at uncovering shared interests to solidify or expand their shared identity, or simply due to
483 participants in the in-group condition being more at ease with each other and hence more
484 likely to discuss more personal information. Regarding reference that required mentalising,
485 results revealed that, when interacting with an out-group member, participants referenced
486 their partner's mental states less than when interacting with an in-group member. This effect
487 held for both conversations during immediate interactions and for descriptions participants
488 wrote about their partners even after interacting with them. Group membership also had the
489 same effect on different levels of referential complexity, in that participants talking with an
490 out-group member referenced both their basic and complex mental states less frequently than
491 participants talking with an in-group member. Similarly, in their written descriptions,
492 participants wrote less about out-group member's basic and complex mental states than they
493 did about in-group members' basic and complex mental states. Importantly, as we show
494 there is no correlation between mental state reference in conversation and mental state
495 reference in written descriptions, this suggests that group membership is independently
496 impacting these two processes. That is, we can rule out two alternative causes of increased
497 mental-state terms in in-group participants' descriptions: a) that some individuals are simply
498 more prone to overtly reference others' mental states regardless of the mode of reference, or
499 b) that group membership impacts only spoken mental state reference which could have then
500 primed in-group participants to increase their usage of mental state terms when describing
501 their partner.

502 These results suggest that people are less likely to overtly reference other people's
503 mental states if they perceive those others as out-group members. Importantly, this effect
504 occurred despite the fact that groups were artificially created using arbitrary characteristics.
505 That is, the groups in our study had no real-life group histories or prejudices between them

506 which could have led participants to stereotype or react to partners based on implicit
507 associations (Greenwald, McGhee, & Schwartz, 1998; Stott & Reicher, 1998). This suggests
508 that the difference in mental state reference shown here is a result of categorization based on
509 group membership itself and not any other social or individual factors. However, it is worth
510 noting a caveat of our design, that our minimal group paradigm could have impacted
511 perceived similarity (as a function of their assigned ‘cognitive style’). There is currently
512 conflicting evidence regarding the impact of perceived similarity on processes related to
513 theory of mind. For instance, while the accepted notion was that perceived similarity
514 increases empathy (Davis, 1994) more recent studies have shown that, in fact, basic drives to
515 nurture and protect have a bigger impact on empathy than perceived similarity (Batson,
516 Lishner, Cook, & Sawyer, 2005). Future research will be able to dissociate the impact of
517 shared group membership and perceived similarity on empathy and other processes linked to
518 theory of mind (as well as extend the sample to males to examine any possible gender
519 differences of this specific manifestation of theory of mind).

520 Our results also build on and extend research based on the Linguistic Category Model
521 (LCM) (Semin & Fiedler, 1991). First, we have extended the LCM ‘state verb’ list to
522 provide a more complete list of terms which people use to reference mental states. Secondly,
523 we have extended the application of this type of natural conversation and description
524 analysis. The LCM has been used to elucidate the typical inter-group biases shown in a vast
525 variety of behavioural studies. For example, Maass and colleagues (Maass, Salvi, Arcuri, &
526 Semin, 1989) showed that people used more abstract and dispositional terms to describe
527 positive in-group behaviour and negative out-group behaviour (which was interpreted as
528 furthering in-group favouritism and out-group discrimination). Along the same lines, Fiedler
529 and colleagues (Fiedler, Semin, & Finkenauer, 1993) showed that people used more
530 stereotypic language across all five of the LCM’s defined categories when describing a
531 gender out-group than a gender in-group, again suggesting a mode by which out-group
532 discrimination is perpetuated. The current results are the first, however, to show that the
533 actual quantity of mental state reference used in interaction and description differs as a
534 function of the partner’s group membership. As such our results expand on the LCM
535 literature by suggesting both cognitive and behavioural mechanisms by which out-group
536 discrimination and, conversely, in-group favouritism are facilitated.

537 While our results have shown an effect of group membership on mental state reference as a
538 behavior, we cannot conclusively say which cognitive process this stems from. That is, even
539 though mental state reference is commonly used as a proxy to gauge both mental state
540 attribution and theory of mind usage (Schwanenflugel, Henderson, & Fabricius, 1998;
541 Schwanenflugel, Martin, & Takahashi, 1999) , strictly speaking, a difference in this type of
542 referential behavior does not necessarily stem from a difference in underlying mental state
543 attribution. That is, participants may or may not be attributing mental states to their partners
544 regardless of how they overtly reference them in conversation. For example, participants may
545 be truly unconcerned with an out-grouper’s mental states and not even ‘turn on’ their theory
546 of mind when interacting with them. Alternatively, theory of mind processes may be alive
547 and active even with out-group members but people may choose not to show evidence of
548 such during interaction, specifically with out-groupers, by actively suppressing reference to
549 such processes. The explicit link between linguistic reference and actual mental
550 representation, along with the degree to which participants consciously engage (or disengage)
551 their theory of mind, remains to be shown by future research. However, taking other recent
552 research into account we would speculate that theory of mind cognition is curtailed at a more
553 fundamental level during interactions with out-group members, prior to any linguistic
554 reference in conversation. For example, a recent study has shown that during joint
555 interaction people fail to spontaneously form mental representations of out-group members
556 (McClung, Jentsch, & Reicher, 2013). In this study, people who did a computerized joint
557 action task with a perceived in-group member showed altered reaction times due to the
558 computational demands of mentally representing their partner, whereas people who did the
559 task with a perceived out-group member reacted as if they were doing the task alone and
560 evidenced no alteration in reaction times. This result suggests that the less socially relevant
561 out-group member does not warrant mental representation even on a subconscious,
562 unintentional level, which has implications for the current study. While speculative, a lack of
563 basic mental representation of the out-group may be the source of the diminished linguistic
564 reference to out-group members’ mental states: without initial representation of a person one
565 could hardly use their theory of mind to develop representations of their mental states. That
566 is, if out-groupers are not even perceived as potentially intentional beings in the first place,
567 then this may consequently affect more complex psychological processes, including the
568 inhibition of theory of mind processes (Tomasello, Carpenter, Call, Behne, & Moll, 2005).

569 By showing that people reference mental states differently depending on the group
570 membership of their target, our results extend the growing body of literature which suggests
571 that actual theory of mind usage is not automatic or consistent. For instance, recent research
572 suggests that understanding another's perspective or feelings does not happen spontaneously
573 but instead requires effortful cognitive adjustment (e.g. I. A. Apperly et al., 2010; Epley,
574 Keysar, Van Boven, & Gilovich, 2004; Nickerson, 1999). One benefit of the current study is
575 that the differential mental state reference we showed occurred totally spontaneously in actual
576 social interactions. Much of the previous research on theory of mind-related processes is
577 based on artificial paradigms in which participants are required to mentalise about characters
578 in a cartoon strip (e.g. Converse et al., 2008) or simply allowed to mentalise about a cartoon
579 character (Apperly et al., 2006). In the current study participants interacted naturally and
580 spontaneously with actual people without any prompts as to the direction of their attention.

581 This decrease in reference to out-group members' mental states may also have a range
582 of consequences for 'real-world' social interactions. First, we would speculate that the
583 effects we show as a result of minimal categorisation would also carry over to real-life
584 groups. Given that such groups would be based on more relevant identities than minimal
585 groups, it would seem a logical consequence that they would also be more motivated to
586 maintain their bonds, which sharing more intimate knowledge of each other could facilitate.
587 Conversely, between members of different groups, decreased mental state reference may
588 facilitate out-group discrimination, even at its extremes of infrahumanization and
589 dehumanization (Haslam & Levy, 2006; Leyens et al., 2001). For example, even if we
590 assume that theory of mind is functioning normally, without overt reference to a person's
591 mental states, it may become easier to perceive such a person as less than human, or at least
592 to treat them as such. However, the causal direction of such a link is as yet unclear: further
593 research is needed to clarify the link between overt mental state reference and different
594 aspects of out-group discrimination. For instance, the simple perception of a common
595 identity during an interaction may be sufficient to increase mental state reference, which may
596 in turn prohibit out-group discrimination entirely.

597 In sum, our results identify one social factor – group membership – as a major factor
598 in how cognitively normal adults manifest their theory of mind usage, specifically in how
599 they overtly refer to another person's mental states during natural conversation. However,
600 this study does more than simply add to a list of contextual influences on different theory of
601 mind-related processes. These results highlight the importance of group membership in the

602 cognition and behavior within our social world. We do not wish to claim that people never
603 mentalize about the out-group. Our argument that mental state reference is contextual is just
604 that: there are obvious contexts in which it would behoove a person to understand and
605 reference the mental states of the out-group. Future research may identify other social factors
606 (such as extreme power differentials) that may interact with categorization to impact mental
607 state reference.

608 In conclusion, using the minimal group paradigm – a stripped down manipulation of
609 social group context – the current study shows that people are less willing to talk about the
610 mental states of anyone categorized ‘other’, and less willing to consider them even afterward
611 in mentalistic terms. In sum, whether a person merits overt mental state reference seems to
612 be a function of group membership.

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623

624 **Open Practices**

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627 https://figshare.com/articles/McClung_and_Reicher_Representing_Other_Minds_data/54016

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635 **References**

636

- 637 Alison, G., & Astington, J. W. (1988). Children's Understanding of Representational Change
638 and Its Relation to the Understanding of False Belief and the Appearance-Reality
639 Distinction. *Child Development*, 59(1), 26-37.
- 640 Ames, D. R. (2004). Inside the Mind Reader's Tool Kit: Projection and Stereotyping in
641 Mental State Inference. *Journal of Personality and Social Psychology*, 87(3), 340-
642 353. doi:10.1037/0022-3514.87.3.340
- 643 Antonietti, A., Liverta-Sempio, O., Marchetti, A., & Astington, J. W. (2006). Mental
644 language and understanding of epistemic and emotional mental states *Theory of mind
645 and language in developmental contexts* (pp. 1-30): Springer.
- 646 Apperly, Carroll, D. J., Samson, D., Humphreys, G. W., Qureshi, A., & Moffitt, G. (2010).
647 Why are there limits on theory of mind use? Evidence from adults' ability to follow
648 instructions from an ignorant speaker. *The Quarterly Journal of Experimental
649 Psychology*, 63(6), 1201-1217.
- 650 Apperly, I. A., Carroll, D. J., Samson, D., Humphreys, G. W., Qureshi, A., & Moffitt, G.
651 (2010). Why are there limits on theory of mind use? Evidence from adults' ability to
652 follow instructions from an ignorant speaker. *Quarterly Journal of Experimental
653 Psychology*, 63(6), 1201-1217.
- 654 Apperly, I. A., Riggs, K. J., Simpson, A., Chiavarino, C., & Samson, D. (2006). Is Belief
655 Reasoning Automatic? *Psychological Science*, 17(10), 841-844. doi:10.1111/j.1467-
656 9280.2006.01791.x
- 657 Baron-Cohen, S. (1989). The Autistic Child's Theory of Mind: A Case of Specific
658 Developmental Delay. *Journal of Child Psychology and Psychiatry*, 30(2), 285-297.
- 659 Bartsch, K., & Wellman, H. (1995). *Children talk about the mind*. New York: Oxford
660 University Press.
- 661 Batson, C. D., Lishner, D. A., Cook, J., & Sawyer, S. (2005). Similarity and nurturance: Two
662 possible sources of empathy for strangers. *Basic and applied social psychology*, 27(1),
663 15-25.
- 664 Bretherton, I., McNew, S., & Beeghly-Smith, M. (1981). Early person knowledge as
665 expressed in gestural and verbal communication: when do infants acquire a 'theory of
666 mind'? In M. L. a. L. Sherrod (Ed.), *Social Cognition in Infancy*. Hillsdale, NJ:
667 Erlbaum.
- 668 Brown, Donelan-McCall, N., & Dunn, J. (1996). Why Talk about Mental States? The
669 Significance of Children's Conversations with Friends, Siblings, and Mothers. *Child
670 Development*, 67(3), 836-849. doi:10.1111/j.1467-8624.1996.tb01767.x
- 671 Brown, G. (1977). *Listening to spoken English*: Longman London.
- 672 Brown, P., & Levinson, S. (1987). Politeness: Universals in language usage. *Cambridge:
673 CUP*.
- 674 Call, J., & Tomasello, M. (2008). Does the chimpanzee have a theory of mind? 30 years later.
675 *Trends in Cognitive Sciences*, 12(5), 187-192.
- 676 Cikara, M., Bruneau, E. G., & Saxe, R. R. (2011). Us and them intergroup failures of
677 empathy. *Current Directions in Psychological Science*, 20(3), 149-153.
- 678 Converse, B. A., Lin, S., Keysar, B., & Epley, N. (2008). In the mood to get over yourself:
679 Mood affects theory-of-mind use. *Emotion*, 8(5), 725-730. doi:10.1037/a0013283
- 680 Davis, M. H. (1994). *Empathy: A social psychological approach*: Westview Press.
- 681 Dennett, D. C. (1987). *The intentional stance*. Massachusetts: MIT Press.

- 682 Dunn, J., Bretherton, I., & Munn, P. (1987). Conversations about feeling states between
683 mothers and their young children. *Developmental Psychology*, 23(1), 132-139.
684 doi:10.1037/0012-1649.23.1.132
- 685 Edwards, D. (1997). *Discourse and cognition*. London and Beverly Hills, CA: Sage.
- 686 Ensink, K., & Mayes, L. C. (2010). The Development of Mentalisation in Children From a
687 Theory of Mind Perspective. *Psychoanalytic Inquiry*, 30(4), 301-337.
- 688 Epley, N., Keysar, B., Van Boven, L., & Gilovich, T. (2004). Perspective Taking as
689 Egocentric Anchoring and Adjustment. *Journal of Personality and Social
690 Psychology; Journal of Personality and Social Psychology*, 87(3), 327-339.
691 doi:10.1037/0022-3514.87.3.327
- 692 Epley, N., Morewedge, C. K., & Keysar, B. (2004). Perspective taking in children and adults:
693 Equivalent egocentrism but differential correction. *Journal of Experimental Social
694 Psychology*, 40(6), 760-768. doi:10.1016/j.jesp.2004.02.002
- 695 Fiedler, K., Semin, G. R., & Finkenauer, C. (1993). The Battle of Words Between Gender
696 Groups A Language-Based Approach to Intergroup Processes. *Human
697 Communication Research*, 19(3), 409-441.
- 698 Flavel, J. H., Botkin, P. T., Fry, C. L., Wright, J. W., & Jarvis, P. E. (1968). *The development
699 of role-taking and communication skills in children*. New York: Wiley.
- 700 Fussell, S. R., & Krauss, R. M. (1991). Accuracy and bias in estimates of others' knowledge.
701 *European Journal of Social Psychology*, 21(5), 445-454.
702 doi:10.1002/ejsp.2420210507
- 703 Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual
704 differences in implicit cognition: The implicit association test. *Journal of Personality
705 and Social Psychology*, 74(6), 1464-1480. doi:10.1037/0022-3514.74.6.1464
- 706 Hackel, L. M., Looser, C. E., & Van Bavel, J. J. (2014). Group membership alters the
707 threshold for mind perception: The role of social identity, collective identification,
708 and intergroup threat. *Journal of Experimental Social Psychology*, 52, 15-23.
- 709 Haslam, N. (2006). Dehumanization: an integrative review. *Personality and Social
710 Psychology Review*, 10(3), 252-264.
- 711 Haslam, N., & Levy, S. R. (2006). Essentialist beliefs about homosexuality: structure and
712 implications for prejudice. *Pers Soc Psychol Bull*, 32(4), 471-485.
- 713 Heyes, C. M. (1998). Theory of mind in nonhuman primates. *Behav Brain Sci*, 21(1), 101-
714 114; discussion 115-148.
- 715 Holmes, J. (1986). Functions of you know in women's and men's speech. *Language in
716 society*, 15(01), 1-21.
- 717 Howard, J. W., & Rothbart, M. (1980). Social categorization and memory for in-group and
718 out-group behavior. *Journal of Personality and Social Psychology*, 38(2), 301-310.
719 doi:10.1037/0022-3514.38.2.301
- 720 Ito, T. A., & Urland, G. R. (2003). Race and gender on the brain: Electro cortical measures of
721 attention to the race and gender of multiply categorizable individuals. *Journal of
722 Personality and Social Psychology*, 85(4), 616-626. doi:10.1037/0022-3514.85.4.616
- 723 Jenkins, J. M., Turrell, S. L., Kogushi, Y., Lollis, S., & Ross, H. S. (2003). A Longitudinal
724 Investigation of the Dynamics of Mental State Talk in Families. *Child Development*,
725 74(3), 905-920. doi:10.1111/1467-8624.00575
- 726 Keysar, B., Barr, D. J., Balin, J. A., & Brauner, J. S. (2000). Taking perspective in
727 conversation: the role of mutual knowledge in comprehension. *Psychological Science*,
728 11(1), 32-38.

- 729 Keysar, B., Ginzler, L. E., & Bazerman, M. H. (1995). States of affairs and states of mind:
730 The effect of knowledge of beliefs. *Organizational Behavior and Human Decision*
731 *Processes*, 64(3), 283-293.
- 732 Keysar, B., Lin, S., & Barr, D. J. (2003). Limits on theory of mind use in adults. *Cognition*,
733 89(1), 25-41.
- 734 Leyens, J. P., Rodriguez-Perez, A., Rodriguez-Torres, R., Gaunt, R., Paladino, M. P., Vaes,
735 J., & Demoulin, S. (2001). Psychological essentialism and the differential attribution
736 of uniquely human emotions to ingroups and outgroups. *European Journal of Social*
737 *Psychology*, 31(4), 395-411.
- 738 Lin, S., Keysar, B., & Epley, N. (2010). Reflexively mindblind: Using theory of mind to
739 interpret behavior requires effortful attention. *Journal of Experimental Social*
740 *Psychology*, 46(3), 551-556. doi:10.1016/j.jesp.2009.12.019
- 741 Maass, A., Salvi, D., Arcuri, L., & Semin, G. R. (1989). Language use in intergroup contexts:
742 the linguistic intergroup bias. *Journal of personality and social psychology*, 57(6),
743 981.
- 744 McClung, J. S., Jentsch, I., & Reicher, S. D. (2013). Group Membership Affects
745 Spontaneous Mental Representation: Failure to Represent the Out-Group in a Joint
746 Action Task. *PLoS ONE*, 8(11), e79178. doi:10.1371/journal.pone.0079178
- 747 Meins, E., Fernyhough, C., Johnson, F., & Lidstone, J. (2006). Mind-mindedness in
748 children: Individual differences in internal-state talk in middle childhood. *British*
749 *Journal of Developmental Psychology*, 24(1), 181-196.
- 750 Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E., & Tuckey, M.
751 (2002). Maternal mind-mindedness and attachment security as predictors of theory of
752 mind understanding. *Child Development*, 73(6), 1715-1726.
- 753 Nickerson, R. (1999). How we know—and sometimes misjudge—what others know:
754 Imputing one's own knowledge to others. *Psychological Bulletin*, 125(6), 737-759.
755 doi:10.1037/0033-2909.125.6.737
- 756 Nickerson, R., Baddeley, A., & Freeman, B. (1987). Are people's estimates of what other
757 people know influenced by what they themselves know? *Acta Psychologica*, 64(3),
758 245-259. doi:10.1016/0001-6918(87)90010-2
- 759 Piaget, J., & Inhelder, B. (1966). *La psychologie de l'enfant*: Presses universitaires de France
760 Paris.
- 761 Potter, J., Hepburn, A., & Tileagă, C. (2011). INEQUALITY IN ACTION. *International*
762 *Journal of Education and Psychology in the Community*, 19(2), 43-60.
- 763 Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind?
764 *Behavioral and Brain Sciences*, 1(04), 515-526.
765 doi:doi:10.1017/S0140525X00076512
- 766 Rice, K., & Redcay, E. (2014). Spontaneous mentalizing captures variability in the cortical
767 thickness of social brain regions. *Social cognitive and affective neuroscience*, 10(3),
768 327-334.
- 769 Royzman, E. B., Cassidy, K. W., & Baron, J. (2003). 'I Know, you know': Epistemic
770 Egocentrism in children and adults. *Review of General Psychology*, 7(1), 38-65.
- 771 Schwanenflugel, P. J., Henderson, R. L., & Fabricius, W. V. (1998). Developing organization
772 of mental verbs and theory of mind in middle childhood: Evidence from extensions.
773 *Developmental Psychology*, 34(3), 512-524. doi:10.1037/0012-1649.34.3.512
- 774 Schwanenflugel, P. J., Martin, M., & Takahashi, T. (1999). The organization of verbs of
775 knowing: Evidence for cultural commonality and variation in theory of mind. *Memory*
776 *& Cognition*, 27(5), 813-825. doi:10.3758/bf03198534

- 777 Semin, G. R., & Fiedler, K. (1988). The cognitive functions of linguistic categories in
778 describing persons: Social cognition and language. *Journal of Personality and Social*
779 *Psychology*, 54(4), 558.
- 780 Semin, G. R., & Fiedler, K. (1991). The linguistic category model, its bases, applications and
781 range. *European review of social psychology*, 2(1), 1-30.
- 782 Shatz, M., Wellman, H. M., & Silber, S. (1983). The acquisition of mental verbs: A
783 systematic investigation of the first reference to mental state. *Cognition*, 14(3), 301-
784 321. doi:10.1016/0010-0277(83)90008-2
- 785 Stott, C., & Reicher, S. (1998). How Conflict Escalates: The Inter-Group Dynamics of
786 Collective Football Crowd `Violence'. *Sociology*, 32(2), 353-377.
787 doi:10.1177/0038038598032002007
- 788 Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social Categorization and
789 Intergroup Behavior. *European Journal of Social Psychology*, 1(2), 149-177.
- 790 Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and
791 sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*,
792 28(5), 675-+.
- 793 Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind
794 development: The truth about false belief. *Child Development*, 72(3), 655-684.
- 795 Wimmer, H., & Perner, J. (1983). Beliefs About Beliefs - Representation and Constraining
796 Function of Wrong Beliefs in Young Childrens Understanding of Deception.
797 *Cognition*, 13(1), 103-128.
- 798 Wu, S., & Keysar, B. (2007). The effect of culture on perspective taking. *Psychological*
799 *Science*, 18(7), 600-606.
- 800