

Social Exclusion Shifts Personal Network Scope

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18 **Keywords:** cyberball₁, ostracism₂, social network₃, activation₄, cognition₅, word-of-mouth₆,
19 online₇, availability₈

20 **Abstract**

21 Social exclusion has the potential to alter subsequent social interactions with the members of
22 personal networks, especially given their online availability in contemporary life. Nonetheless, there
23 is minimal research examining how social challenges such as exclusion alter ensuing interactions
24 with personal networks. Here, we tested whether being excluded during a social interaction altered
25 which personal ties are most salient in a subsequent, ostensibly unrelated, online news sharing task.
26 Across three operationalizations of tie strength, exclusion (vs. inclusion) increased sharing to close
27 friends, but (unexpectedly) decreased sharing to close family members. The findings provide
28 preliminary evidence that negative encounters may shift attention toward certain types of network
29 ties and away from others. Future work is needed to examine how social experiences influence
30 personal network scope – i.e., who comes to mind – in the background of daily life.

31 **1 Introduction**

32 One challenging event that occurs regularly in daily life is social exclusion, which can increase
33 negative mood (Blackhart et al. 2009) whether it occurs via face-to-face, text message, or social
34 media (A. Smith 2004; Schneider et al. 2017; Covert and Stefanone 2018; Hales et al. 2018). Some
35 work also shows that social exclusion can diminish belonging, and control, and self-esteem (Gerber
36 and Wheeler 2009), though the latter effect remains unclear (cf., Blackhart et al. 2009). Given the

37 mental costs of exclusion, individuals often respond by reaching out to others, consciously or
 38 unconsciously. Indeed, past research suggests that people react anti-socially if subsequent inclusion
 39 seems unlikely, but otherwise pursue prosocial goals (DeWall and Richman 2011; Kawamoto, Ura,
 40 and Nittono 2015). Yet extant experimental research is limited in explaining which types of real-
 41 world relationships become more or less salient in the moments following exclusion.

42 Understanding who individuals seek out after social exclusion is also increasingly important due to
 43 emergence of online technologies. Instead of chatting with a nearby coworker or stranger, people can
 44 now message their wisest or kindest friend at almost any moment, including periods of social stress
 45 or threat (Holtzman et al. 2017). Hence, technologies that enhance the availability of others allow
 46 people to choose between a wider set of recipients in daily life (Trieu et al. 2019). Moreover,
 47 research suggests that contextual and emotional factors can shape the way people engage with social
 48 networks, with a substantial portion of social support mobilization being spontaneous or incidental
 49 (Small and Sukhu 2016; E. B. Smith, Menon, and Thompson 2012). Nonetheless, it is unclear how
 50 people *choose* particular ties after an experience of exclusion.

51 One common way of reaching out to friends and family is through online news sharing, and
 52 according to word-of-mouth research, people share more news articles when in high arousal states
 53 (Berger 2011; Berger and Milkman 2012). Research on the social sharing of emotions demonstrates
 54 that people also generally share emotional events with intimate ties (cf., Rimé 2009), though the type
 55 of close tie chosen (e.g., family vs. partner) varies by age group. However, it is unknown whether
 56 negative high-arousal states, such as feelings of exclusion, prompt certain types of relationships to
 57 become more or less salient. In this way, the emotional effects of exclusion may shift the personal
 58 ties who come into focus, thus changing the “social scope” (Kobayashi & Boase, 2014).

59 In contrast to the emotion sharing literature, here we consider how emotional events can alter
 60 personal network scope – i.e., who comes to mind – during subsequent social behavior.
 61 Consequently, we tested whether being excluded influences the rate of sharing news articles to
 62 personal ties in an unrelated online task, while also assessing changes in which relationships (e.g.,
 63 close family, weak friends) are preferred. That is, we examined whether social exclusion redirects
 64 attention toward some types of relationships – and away from others. In doing so, this study extends
 65 past research on social exclusion, word-of-mouth, and social scope in concert.

66 **2 Materials and Methods**

67 Ninety-six college students (63 females; ages 18-24) participated in exchange for course credit¹. The
 68 study was conducted over two appointments.

69 In Appointment 1, participants provided information about their personal relationships in their
 70 everyday communication network. Participants entered up to 20 family members, 20 calling partners,
 71 and 20 texting partners. For calling and texting partners, participants identified their recent contacts
 72 from their phones. Given the established role of tie strength in word-of mouth sharing (Dubois,
 73 Bonezzi, and Angelis 2016), we collected two measures for each relationship: perceived “closeness”
 74 of each contact ranging from (1) do not know to (7) very close and whether participants had seen
 75 each contact face-to-face and (within the last week, month, year, or over a year). After a minimum of

¹ One hundred and twenty-eight students attended both appointments, but the data of thirty-two participants were lost due to technical glitches in our customized social network and news website procedure.

76 5 days, participants came back for Appointment 2 in which they completed two ostensibly unrelated
77 social tasks: *Cyberball* (social exclusion task) and pilot-testing a news website (online sharing task).

78 *Social Exclusion Task.* Cyberball is an exclusion paradigm in which participants complete “a mental
79 visualization task” (Williams, Cheung, and Choi 2000; cf., Dvir, Kelly, and Williams 2019), reliably
80 eliciting distress both online and offline (Schneider et al. 2017). In the game, an avatar representing
81 the participant throws a ball with two other avatars. Participants were told they were engaging in the
82 task with two students from nearby colleges. Participants were randomly assigned to one of two
83 conditions. In the inclusion condition, the other avatars were pre-programmed to throw the ball to the
84 participant at regular occasions; in the exclusion condition, the other avatars initially threw the ball to
85 the participant, but later only threw the ball to one another, excluding the participant. Afterward,
86 participants completed a manipulation check, the 20-item need threat scale (NTS; van Beest and
87 Williams 2006). Responses were assessed on a 7-point scale ranging from 1 (*strongly disagree*) to 7
88 (*strongly agree*). Higher scores on the NTS indicate greater need *satisfaction*, or less self-reported
89 distress following the experimental manipulation.

90 *Online Sharing Task.* The second task involved “pilot testing” a website for reading and sharing news
91 articles. On the website, participants were asked to read pre-selected news articles. The custom site
92 allowed participants to choose a topic relevant to them (health, sports, science, or technology).
93 Importantly, the side panel of the website provided the opportunity for participants to share articles
94 with friends entered in Appointment 1. Each participant evaluated six different news articles during
95 the task, and the same selection of articles were counterbalanced across conditions. Next to each
96 news article, the site presented four contacts selected randomly from the participants’ own network –
97 two close ties and two weak ties – with whom participants could share the article. The site also
98 included a search option in which participants could share with additional friends from their complete
99 network. Participants were asked to share articles as they normally would in “real life” in order to
100 provide feedback on the best and worst features of the website, but no specific requirements or
101 guidelines for sharing news articles were given.

102 3 Results

103 To check the effectiveness of the Cyberball manipulation, we computed indices of the belongingness
104 ($\alpha = .76$), self-esteem ($\alpha = .69$), meaningfulness ($\alpha = .69$), and control ($\alpha = .73$) sub-scales from the
105 Need Threat Scale². Between-groups one-way ANOVAs were run, which confirmed that Cyberball
106 effectively manipulated social exclusion. Excluded participants felt less included [$M_{included} = 3.72$,
107 $M_{excluded} = 2.78$; $F(1, 83) = 34.35, p < .001$], lower in self-esteem [$M_{included} = 2.91, M_{excluded} = 2.45$;
108 $F(1, 83) = 9.44, p = .003$], less meaningful [$M_{included} = 3.52, M_{excluded} = 2.80$; $F(1, 83) = 23.92, p <$
109 $.001$], and less control [$M_{included} = 3.01, M_{excluded} = 2.21$; $F(1, 83) = 21.74, p < .001$].

110 Next, we identified whether the targets of article sharing were socially distant (closeness = 2-4) or
111 socially close to the participant (closeness = 5-7). Since network cognition differs as a function of
112 whether ties are family members (Brashears 2013), we also delineated ties as family vs. friends (i.e.,
113 non-family ties). Separate analyses were run for number of articles shared with close family, close
114 friends, weak family, and weak friends as outcome variables. We also computed the number of
115 different channels that participants communicated with each of their contacts (i.e., multiplexity; two
116 = both calling and texting; one = calling or texting; zero = neither), and whether the contact had last
117 been interacted with face-to-face. We conducted an analysis of covariance (ANCOVA) assessing the

² Eleven cases were missing NTS data, bringing the total number of cases for this analysis down to 85.

118 effect of exclusion on number of articles shared with each target type while controlling for individual
 119 differences in the amount of overall sharing³.

120 All models (described below) evaluating the effects of exclusion on sharing were ANCOVAs. We
 121 first evaluated the effect of exclusion on overall sharing but found no significant effect ($F < 1$).
 122 However, exclusion drove sharing with different types of targets. Excluded participants shared more
 123 articles with close friends ($M = 6.33$ articles, $SE = 0.39$ articles) than included participants ($M = 5.07$
 124 articles, $SE = 0.35$ articles), $F(1, 93) = 5.62$, $p = .020$, $r = .24$ for the effect of exclusion.
 125 Additionally, excluded participants also shared fewer articles with close family ties ($M = 2.13$
 126 articles, $SE = 0.35$ articles) than included participants ($M = 3.28$ articles, $SE = 0.32$ articles), $F(1, 93)$
 127 $= 5.64$, $p = .020$, $r = .24$ for the effect of exclusion. Sharing with weak friends and family was
 128 unaffected by exclusion, $F < 1$ and $F(1, 93) = 1.03$, $p = .311$, respectively. Thus, exclusion increases
 129 sharing with close friends. See Figure 1.

130 Recent face-to-face interactions are more emblematic of close relationships (Pollet, Roberts, and
 131 Dunbar 2011). If exclusion increases sharing with close friends, it should similarly increase sharing
 132 with friends participants had physically interacted with recently. As shown in Figure 2a, this was the
 133 case: excluded participants shared more articles with friends with whom they had seen face-to-face
 134 within the last week ($M = 4.65$ articles, $SE = 0.38$ articles) than included participants ($M = 3.61$
 135 articles, $SE = 0.34$ articles), $F(1, 93) = 4.14$, $p = .045$, $r = .21$. Notably, exclusion did not affect
 136 sharing with friends seen face-to-face over longer time-scales, including within the month, $F < 1$, or
 137 within the year, $F(1, 93) = 3.24$, $p = .075$, $r = .18$. Exclusion also significantly decreased sharing with
 138 friends last seen face-to-face over a year ago, $F(1, 93) = 8.15$, $p = .005$, $r = .28$. By contrast,
 139 exclusion had no effect on sharing with family ties seen face-to-face within the week, $F(1, 93) =$
 140 1.40 , $p = .239$, within the year, $F < 1$, or over a year ago, $F(1, 93) = 1.53$, $p = .219$. However,
 141 exclusion decreased sharing with family ties seen in the last month, $F(1, 93) = 8.68$, $p = .004$, $r = .29$.

142 Close ties also exhibit media multiplexity; i.e., they are contacted through more communication
 143 channels (Haythornthwaite 2005). If exclusion increases sharing with close friends, it should increase
 144 sharing with more multiplex friends. As shown in Figure 2b, this was observed: excluded participants
 145 shared more articles with multiplex friends ($M = 2.70$ articles, $SE = 0.28$ articles) than included
 146 participants ($M = 1.73$ articles, $SE = 0.26$ articles), $F(1, 93) = 6.43$, $p = .013$, $r = .25$. However,
 147 exclusion did not affect sharing with one or zero channel friends, ($F_s < 1$). In line with the previous
 148 sets of analyses, excluded participants shared fewer articles with multiplex family ties $F(1, 93) =$
 149 4.48 , $p = .037$, $r = .21$, but did not share more or less with family ties contacted through one channel,
 150 $F(1, 93) = 1.53$, $p = .220$, or those contacted through zero channels, $F < 1$.

151 4 Discussion

152 Which ties are preferred in the moments after exclusion? Our data indicate that close friends are
 153 prioritized. Specifically, we find that exclusion increases online news sharing to close friends, but not
 154 weak friends or family. These data are consistent with previous studies indicating that elevated
 155 arousal can influence unrelated news sharing (e.g., Berger 2011), and with the large literature
 156 showing that the experience of exclusion causes people to work to regain acceptance from others who
 157 did not perpetrate the exclusion. Our data also extend prior findings by showing that levels of sharing
 158 differ according to the type of relationship in question. When belongingness is threatened, strong

³ Effects did not differ by whether contacts were selected from the side panel or searched.

159 friendships may come to mind as the fastest and safest remedy – and perhaps most worthy of
160 bolstering.

161 From a more fine-grained standpoint, this study provides initial evidence for the reallocation of
162 network scope. Excluded participants shared more with close friends – and less with close family –
163 across three measures of tie strength: emotional closeness, face-to-face recency, and media
164 multiplexity. Past research shows that family ties are perceived in a fundamentally different way than
165 non-family ties (Brashears and Quintane 2015). Due to their special status, the results suggest that
166 participants may have shifted priorities, allocating less attention to family members. If family ties are
167 secure by default, draw from a separate pool of belongingness, and do not cause the exclusion, then
168 network focus may adjust to match present goals (e.g., restoring belongingness to a less secure
169 group). Another possibility is that excluded participants avoided weaker ties when sharing due to
170 their similarity to the Cyberball perpetrators (students from nearby colleges). More work is needed to
171 investigate how everyday social experiences shape *in vivo* personal network scope, as well as
172 influence social network characteristics over time (Bayer et al. 2018).

173 In parallel, our study builds on past work by showing that a negatively arousing *social* activity has
174 the potential shift social scope and subsequent social transmission. This distinction is significant
175 given that prior research has focused on positive or neutral arousal states, and these manipulations
176 have primarily been induced in non-social ways. Indeed, socially derived emotions may have
177 different carryover effects given the inherently social nature of sharing. At the same time, whereas
178 previous studies found a categorical positive effect of arousal on sharing, we found a more contextual
179 effect based around the type of personal tie. These nuanced effects affirm importance of identifying
180 the boundary conditions of social transmission effects, while also revealing how subtle changes in
181 word-of-mouth behavior can occur discreetly in the backdrop of daily life.

182 The observed redirection in social scope also demonstrates the need to reconsider how online
183 technologies are rewiring social transmissions. For instance, this effect warrants comparison to the
184 tele-cocooning hypothesis, which states that use of mobile technologies will strengthen strong ties *at*
185 *the expense of* weak ties (Kobayashi and Boase 2014). Although research has established that mobile
186 availability results in people communicating mostly with their core ties (and sometimes feeling closer
187 to them), there is mixed empirical support for tele-cocooning (Campbell 2015). In the current case,
188 the increased sharing for close friends indicate that exclusion can shift the specific outlets for sharing,
189 as opposed to changing the aggregate level of social closeness or support. As such, our study
190 suggests that future research should reconsider how online availability may influence social network
191 cognition – in context – rather than overall social resources.

192 Past ostracism research has consistently shown that being excluded prompts subsequent efforts to
193 connect, but largely studied reconnection with generic others. In a similar vein, prior research on
194 personal relationships has often neglected the role of social networks (Parks 2011), yet how people
195 choose among their online ties is increasingly central to satisfying social needs (Hall and Davis
196 2016). Our results show how network availability can tweak the mental equation. By providing the
197 option to share with personal ties, we provide a more naturalistic test on the residual effects of being
198 excluded today. Concurrently, a number of limitations in our study deserve attention to best guide
199 future research. First, our findings related to particular types of relationships are likely to be
200 influenced by the characteristics of our sample (i.e., female college students; young adults).
201 Likewise, the sample was collected at a large university in the midwestern United States, which
202 could affect the types of social networks activated since different relationships are more salient
203 across development (Rime, 2009); for example, family members may be less prominent within

204 college students' everyday social networks. Finally, our design used a customized online network
 205 generator that synced with a novel news website, which resulted in a sizable share of missing data
 206 due to technical glitches. Altogether, researchers should pursue more generalizable samples and
 207 replicate these findings through other social network paradigms.

208 Our study offers initial evidence that daily challenges, when paired with online availability, may shift
 209 communication in incidental ways. We find convergent evidence that the experience of exclusion
 210 increases sharing with close friends, and decreases sharing with close family. Although we initially
 211 hypothesized a main effect of exclusion on sharing, these findings highlight a more nuanced effect on
 212 the specific outlets for sharing (vs. total amount). This result can be explored with future research,
 213 while also attending to both discrete ties and the overall structure of personal networks. Future
 214 studies are thus needed to clarify how social exclusion shapes personal network scope, as well as
 215 how those mechanisms relate to social network structure over time.

216 **5 Conflict of Interest**

217 The authors declare that the research was conducted in the absence of any commercial or financial
 218 relationships that could be construed as a potential conflict of interest.

219 **6 Author Contributions**

220 J.B., D.H., and E.F. wrote the main manuscript. J.B. and D.H. conducted the analyses. All authors
 221 assisted in the study design, data collection, and manuscript preparation.

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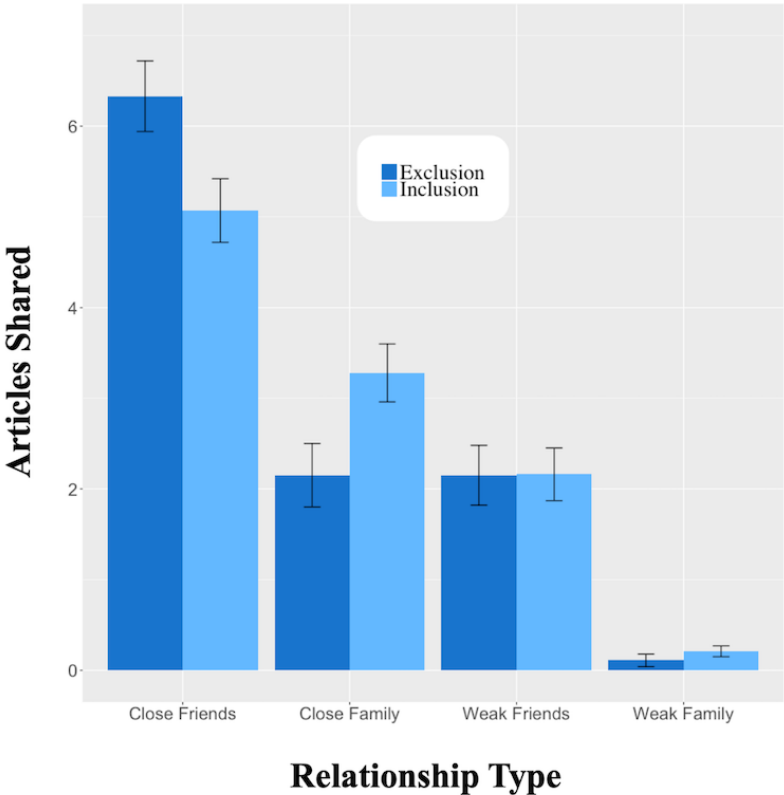
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 298

299 **8 Data Availability Statement**

300 The data that support the findings of this study are openly available on OSF at:
 301 https://osf.io/utaqn/?view_only=d283da6421b34c55b8c10ebe8efa722d.

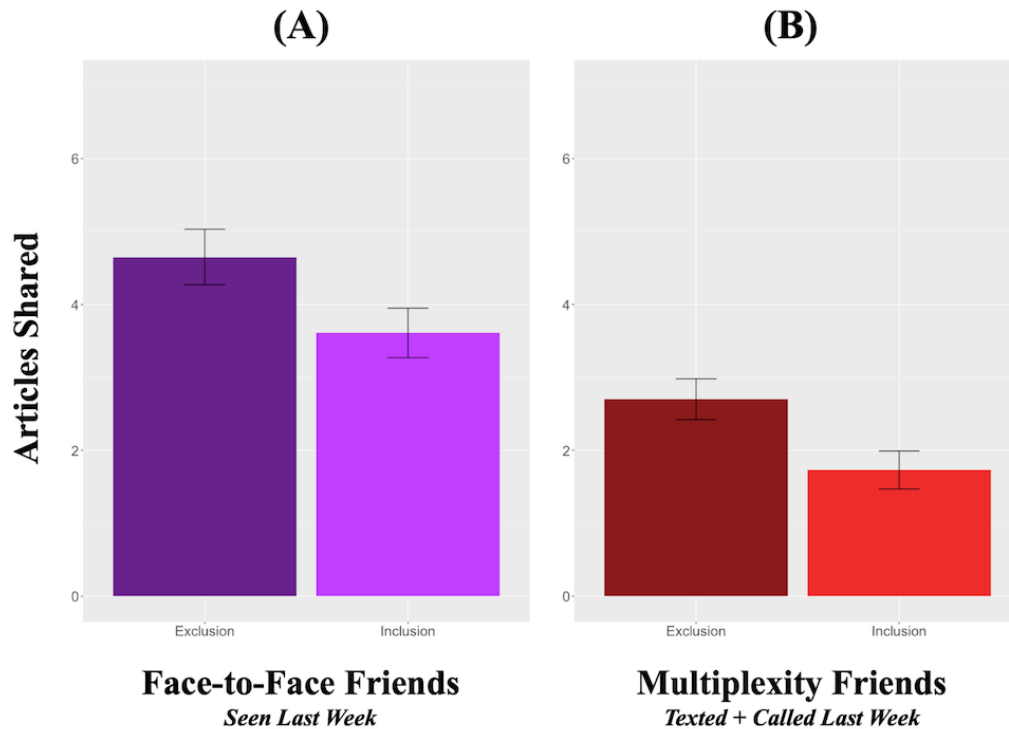
302 **9 Legends and Figures**

303 Figure 1 depicts the effect of Cyberball on subsequent news article sharing with friends and family
 304 members. Friends and family were defined as either close or weak ties based on the self-reported
 305 closeness of the specific relationship. As compared to the inclusion (light), exclusion (dark) increases
 306 sharing with close friends and decreases sharing with close family. However, exclusion did not
 307 influence sharing with weak friends or family, which remained at lower levels regardless of the
 308 manipulation.



309

310 Figure 2 demonstrates convergent validity for the primary finding (Fig. 1) by examining two
311 additional operationalizations of close ties. As shown in the left panel (A), exclusion (dark) prompted
312 more sharing to friends seen face-to-face in the prior week, as compared to inclusion (light).
313 Similarly, as shown in the right panel (B), excluded (vs. included) participants shared more news
314 articles with friends who they had both texted and called in the previous week (i.e., media
315 multiplexity friendships).



316