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The Role of Social Circle Perceptions in "False Consensus" about Population Statistics: Evidence from a National Flu Survey

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Purpose. "False consensus" refers to individuals with (v. without) an experience judging that experience as more (v. less) prevalent in the population. We examined the role of people's perceptions of their social circles (family, friends, and acquaintances) in shaping their population estimates, false consensus patterns, and vaccination intentions. **Methods.** In a national online flu survey, 351 participants indicated their personal vaccination and flu experiences, assessed the percentage of individuals with those experiences in their social circles and the population, and reported their vaccination intentions. **Results.** Participants' population estimates of vaccination coverage and flu prevalence were associated with their perceptions of their social circles' experiences, independent of their own experiences. Participants reporting less social circle "homophily" (or fewer social contacts sharing their experience) showed less false consensus and even "false uniqueness." Vaccination intentions were greater among nonvaccinators reporting greater social circle vaccine coverage. **Discussion.** Social circle perceptions play a role in population estimates and, among individuals who do not vaccinate, vaccination intentions. We discuss implications for the literature on false consensus, false uniqueness, and social norms interventions.

Keywords
false consensus, false uniqueness, influenza vaccination, perceived social norms

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Traditionally, psychologists have defined "false consensus" as individuals with (v. without) an experience judging that experience as more prevalent in the population.[1] Perceiving more false consensus may promote distrust in communications that contradict one's views and undermine behavior change.[2,3] Explanations of false consensus have focused on people overweighing personal experiences when assessing population estimates, due to knowing more about themselves (v. others) and wanting to believe that others are like them.[4,5]

Alternatively, false consensus in population estimates may stem from "homophily" or selective exposure to like-minded peers.[1] For example, sexually active college women estimated more sexual activity among college women in general, due to having more sexually active friends.[6] Recent social sampling models suggest that people have relatively accurate perceptions of their social contacts, which inform their population estimates and behavioral intentions.[7–10] Most people socialize with like-minded others,[11] but those reporting less like-minded social circles should show relatively less false consensus and greater willingness to change.[8]

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In a national flu survey, participants reported on vaccination and flu experiences, for themselves, their social circles, and the population. We examined whether 1) participants with (v. without) the experience reported larger population estimates for that experience, replicating false consensus; 2) population estimates were predicted by social circle perceptions, even after accounting for false consensus or correlations between population estimates and personal experiences; 3) participants reporting less like-minded social circles showed less false consensus in their population estimates; and 4) vaccination intentions were associated with reported population estimates and social circle perceptions and whether these relationships varied by personal experience.

Methods

Sample

We conducted secondary analyses of an online survey with RAND's American Life Panel,[12,13] which was recruited nationally through probability-based approaches.[14] Panelists regularly complete online surveys for about $20 per 30 min and receive equipment and Internet access if needed.

Between September 2011 and February 2013, 493 of 598 (82%) invited panelists completed all measures analyzed here. To ensure that questions about "the past year" included the 2010–2011 flu season, we restricted analyses to 351 of 493 respondents (71%) surveyed in September 2011, before the 2011–2012 flu season. This restriction did not affect focal measures (Supplementary Table S1) or main findings.

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Procedure

RAND's Human Subjects Protection Committee approved the survey.[15] All participants gave informed consent. The questions below were analyzed here.

Personal experiences. Participants answered, "During the last flu season (fall 2010 to spring 2011), did you get a seasonal flu vaccine (either a shot or nasal spray)?" and "During the last flu season (fall 2010 to spring 2011), did you ever have [flu] symptoms?" described as "fever and a cough or sore throat."[16] Responses included "yes," "no," and "I don't remember" coded as missing (3% for vaccination, 4% for flu).

Social circle perceptions. Participants were asked to "think of all the people you know, who know you, and who you've had regular contact with in the past 6 months," which could be "face-to-face, by phone or mail, or on the Internet." They assessed how many included family members, close friends, coworkers, school or childhood relations, people who provide you a service, neighbors, and others. Subsequently, participants answered, "Of [all] people in your social circle: How many are you sure got vaccinated for the flu in the past year?" and "How many are you sure did not get vaccinated for the flu in the past year?" For remaining social contacts, participants estimated how many they thought got vaccinated. Perceived social circle vaccine coverage reflected participants' reported percentage of vaccinated social contacts, across confidence levels (i.e., known and suspected vaccinations). Analogous questions assessed perceived percentage of social circles getting the flu in the past year. We also computed "homophily" or like-mindedness, as the perceived percentage of social circles who shared participants' experience of getting vaccinated (v. not) or getting the flu (v. not).

Population estimates. Participants answered, "In a typical year, how many out of every 100 people in the United States do you think get vaccinated against the flu?" and "In a typical year, how many out of every 100 people in the United States do you think catch the flu and develop flu symptoms?"

Vaccination intentions. Participants assessed "the chances that you will choose to get the influenza vaccine this flu season (fall 2011 and spring 2012)" on a 0% to 100% scale.

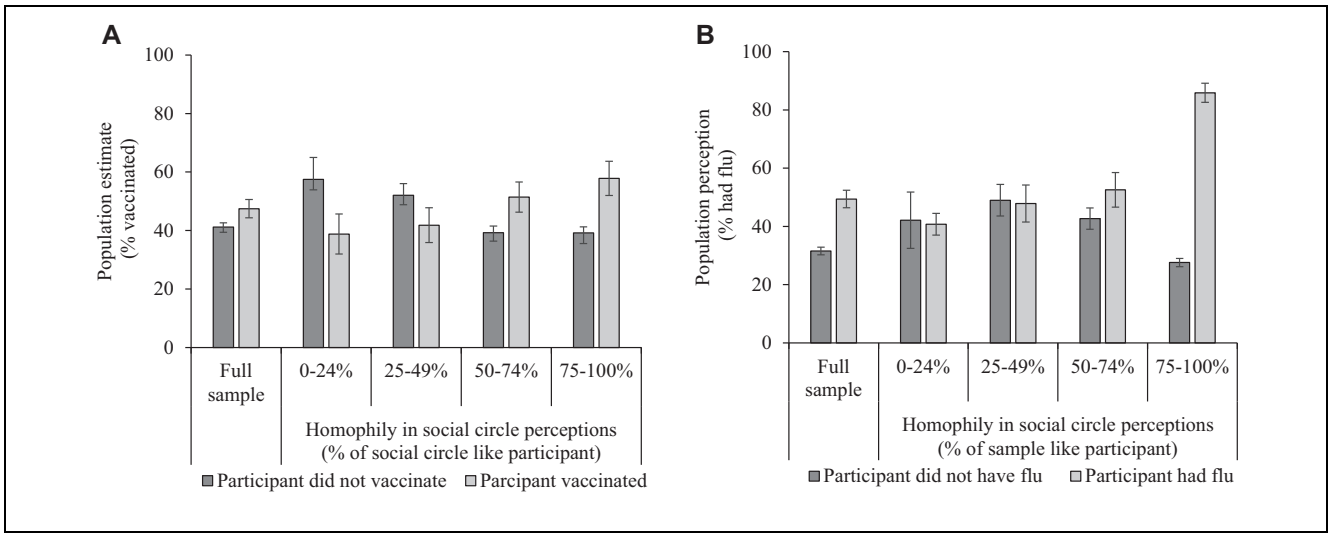

Figure 1 Population estimates for (A) vaccination coverage and (B) flu prevalence, by own personal experience and "homophily" of social circle. "False consensus" is seen in higher population estimates among participants with (versus without) the experience and "false uniqueness" in the opposite pattern. The 4 categories of homophily in social circle perceptions were created only for presentation purposes; associated analyses used the continuous variable. Error bars reflect 1 standard error.

Analysis Plan

Analyses were conducted for vaccination and flu. To test research question 1, we computed *t* tests and Pearson correlations reflecting relationships between population estimates and personal experiences or false consensus (Figure 1; Table 1). To test research question 2, we computed linear regressions predicting population estimates from social circle perceptions, personal experiences, and both (Table 2). Robustness checks examined whether the role of social circle perceptions held when dichotomizing that measure or interacted with personal experiences or characteristics of social circle perceptions (Supplementary Tables S2 and S3). To test research question 3, linear regressions examined whether homophily in social circles interacted with personal experience when predicting population estimates. To test research question 4, linear regressions predicted vaccination intentions from reported population estimates and social circle perceptions and tested whether own experiences moderated these relationships (Table 3). All linear regressions included demographic control variables. We computed correlations associated with regression models (Supplementary Table S4).

Results

Descriptive Statistics

Supplementary Table S1 shows descriptive statistics for invitees and participants. Our sample's reported 2010–2011 vaccination rate was 40%, and flu prevalence was 21%. Participants' average social circle perceptions were closer to these sample statistics than their average population estimates (37% v. 44% for vaccination, 20% v. 35% for the flu). The Centers for Disease Control and Prevention (CDC) estimate for Americans' 2010–2011 vaccination coverage was 41%.[17] The CDC estimated the US flu prevalence at 9%, but this figure was based on a survey that ran only from January to April 2011.[16]

False Consensus

Participants who reported getting vaccinated in the previous flu season (v. not) estimated greater population vaccine coverage (Figure 1A). Similarly, participants who reported getting the flu (v. not) estimated greater population flu prevalence (Figure 1B). Table 1 shows descriptive statistics for participants who got vaccinated and the flu (v. not).

Role of Social Circle Perceptions

For vaccination and the flu, the participants' social circle perceptions were associated with population estimates and personal experiences (Supplementary Table S4). Population estimates were predicted by social circle perceptions even after accounting for false consensus or relationships of population estimates with personal experiences (Table 2; model 3A v. 2A for vaccination;

Table 1 Descriptive Statistics for Participants with versus without Vaccination and Flu Experience[a]

	Vaccination			Flu		
	Did Vaccinate (n = 154)		Did Not Vaccinate (n = 197)	Had Flu (n = 71)		Did Not Have Flu (n = 280)
Population estimates						
Mean (s) population estimate of vaccine coverage	47.47**	(21.52)	41.16 (20.58)	41.63	(19.72)	44.51 (21.56)
Mean (s) population estimate of flu prevalence	34.14	(25.10)	35.99 (23.11)	49.41***	(25.21)	31.57 (22.31)
Social circle perceptions						
Mean (s) perceived percentage of social circle getting vaccinated in previous flu season	49.79***	(26.70)	27.07 (21.77)	39.77	(27.27)	36.35 (26.36)
Mean (s) perceived percentage of social circle getting flu in previous flu season	21.15	(23.23)	19.96 (23.97)	33.39***	(29.32)	17.21 (20.77)
Personal experiences						
Percentage (n) who reported getting vaccinated in previous flu season	—		—	47%	(33)	43% (121)
Percentage (n) who reported getting flu in previous flu season	21%	(33)	19% (38)	—		—
Vaccination intentions						
Mean (s) percentage chance of vaccinating this flu season	87.83***	(23.65)	22.52 (31.31)	53.07	(39.87)	50.69 (43.78)
Demographics						
Mean (s) age	54.90***	(15.27)	45.81 (14.08)	45.51**	(14.71)	50.89 (15.25)
Female, % (n)	51	(79)	52 (102)	54	(38)	51 (143)
College education, % (n)	47	(72)	44 (86)	39*	(28)	46 (130)
White, % (n)	92	(141)	86 (170)	92	(65)	88 (246)

[a]Differences between groups were tested by t tests for reported means and by chi-square tests for reported percentages. The Centers for Disease Control and Prevention's (CDC's) estimate for US 2010–2011 vaccination coverage was 41%.[17] The CDC's estimate for US 2010–2011 flu prevalence was 9%, but based on a survey that ran only from January to April 2011.[16]
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

model 3B v. 2B for flu). Conclusions held when comparing dichotomized social circle perceptions with already dichotomized measures of personal experience (Supplementary Table S2) and were unaffected by personal experiences or characteristics of social circle perceptions, with one exception (Supplementary Table S3).

Less false consensus emerged among participants reporting fewer social contacts sharing their experience (Figure 1). Linear regressions predicting population estimates showed significant interactions between social circle homophily (or percentage of social contacts such as participants) and participants' reported experiences, such that participants with fewer like-minded social circles weighed personal experience less when making population estimates ($\beta = 0.70$, $B = 0.49$, $se = 0.09$, $p < 0.001$ for vaccination; $\beta = 0.57$, $B = 0.73$, $se = 0.10$, $p < 0.001$ for the flu). Estimated population vaccine coverage even showed false uniqueness, such that participants reporting fewer like-minded social circles viewed the population as less like themselves (Figure 1A).

Vaccination Intentions

Reported vaccination intentions were correlated with population estimates and social circle perceptions for vaccination but not for the flu (Supplementary Table S4). However, perceived social circle vaccine coverage was the sole independent predictor of vaccination intentions, especially among participants who indicated not having vaccinated in the previous flu season (Table 3).

Discussion

In a national flu survey, we found that population estimates for vaccination and flu rates were larger among participants reporting those experiences, which traditionally has been deemed false consensus.[1] However, unlike what has traditionally been thought, population estimates seemed less informed by personal experiences than by social circle perceptions. These findings align with propositions that false consensus in population estimates

Table 2 Standardized Estimates (and Unstandardized Estimates, Standard Errors) from Linear Regression Models Predicting Population Estimates[a]

	Vaccination			Flu		
	Model 1A	**Model 2A**	**Model 3A**	**Model 1B**	**Model 2B**	**Model 3B**
Predictor variables						
Personal experience (yes = 1; no = 0)	0.16*** [6.81, 2.31]	—	0.03 [1.19, 2.44]	0.26*** [15.56, 2.90]	—	0.17** [10.34, 2.79]
Social circle perception (0%–100%)	—	0.32*** [0.25, 0.04]	0.31*** [0.24, 0.04]	—	0.39*** [0.39, 0.05]	0.34*** [0.35, 0.05]
Demographic control variables						
Age	0.00 [0.00, 0.08]	0.02 [0.03, 0.07]	0.02 [0.02, 0.07]	–0.24*** [–0.37, 0.08]	–0.21*** [–0.33, 0.07]	–0.19*** [–0.30, 0.07]
Female	0.08 [3.39, 2.21]	0.08 [3.37, 2.12]	0.08 [3.37, 2.12]	0.13* [5.98, 2.32]	0.12** [5.95, 2.20]	0.12** [5.81, 2.16]
College education	–0.20*** [–8.55, 2.22]	–0.21*** [–8.75, 2.13]	–0.21*** [–8.76, 2.13]	–0.13** [–6.23, 2.33]	–0.15** [–6.96, 2.21]	–0.14** [–6.54, 2.18]
White	–0.07 [–4.93, 3.52]	–0.09 [–6.24, 3.38]	–0.09 [–6.23, 3.38]	–0.11* [–8.44, 3.70]	–0.10* [–7.16, 3.50]	–0.11* [–8.17, 3.45]
Model statistics	$R^2 = 0.08$ $F(5, 350) = 6.01$***	$R^2 = 0.16$ $F(5, 350) = 12.66$***	$R^2 = 0.16$ $F(6, 350) = 10.57$***	$R^2 = 0.21$ $F(5, 350) = 18.28$***	$R^2 = 0.29$ $F(5, 350) = 27.80$***	$R^2 = 0.31$ $F(6, 350) = 26.30$***

[a]Interactions of social circle perceptions with personal experience and social circle characteristics appear in Supplementary Table S3.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 3 Standardized Estimates (and Unstandardized Estimates, Standard Errors) from Linear Regression Models Predicting Vaccination Intentions[a]

	Overall Sample	**Participants Who Did Vaccinate**	**Participants Who Did Not Vaccinate**
Predictor variable			
Social circle perception for vaccination (0%–100%)	0.33*** [0.54, 0.09]	–0.07 [–0.06, 0.08]	0.17*,[b] [0.24, 0.11]
Population estimate for vaccination (0%–100%)	0.04 [0.08, 0.11]	0.19* [0.21, 0.10]	–0.05 [–0.07, 0.12]
Social circle perception for the flu (0%–100%)	0.02 [0.04, 0.10]	0.03 [0.03, 0.09]	0.05 [0.07, 0.11]
Population estimate for the flu (0%–100%)	0.04 [0.07, 0.11]	–0.03 [–0.03, 0.10]	0.05 [0.07, 0.11]
Demographic control variables			
Age	0.24*** [0.68, 0.14]	0.25 [0.38, 0.13]	–0.04 [–0.09, 0.17]
Female	–0.02 [–1.56, 4.27]	–0.10 [–4.88, 3.96]	0.04 [2.22, 4.49]
College education	0.01 [0.42, 4.50]	0.07 [3.38, 3.91]	–0.01 [–.47, 4.68]
White	–0.01 [–1.69, 6.77]	0.07 [5.76, 6.74]	–0.07 [–6.17, 6.79]
Model statistics	$R^2 = 0.20$ $F(8, 350) = 10.25$***	$R^2 = 0.12$ $F(8, 153) = 2.38$*	$R^2 = 0.05$ $F(8, 196) = 1.13$

[a]Adding interactions of own experience with population estimates and with social circle perceptions (each separately for vaccination and flu) in addition to own experiences to the overall sample model revealed only a significant interaction of own experience × social circle perceptions for vaccination ($\beta = –0.18$, $B = –0.2$, $se = 0.13$, $p < 0.05$; see note [b]).
[b]Significantly different from participants who did vaccinate.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

may actually reflect selective exposure to peers with congruent characteristics.[1,6,8] Furthermore, participants reporting fewer like-minded social circles showed less false consensus and tended toward false uniqueness, or perceiving the population to be less like themselves. The same pattern occurred for vaccination and the flu, despite differences in controllability and prevalence.[18,19]

Moreover, perceived social circle vaccine coverage predicted vaccination intentions independent of population estimates, especially among participants who did not vaccinate in the previous flu season. Individuals who do not vaccinate but perceive social contacts who vaccinate may become motivated to change their behavior. Indeed, people's vaccination decisions appear sensitive to perceived peer social norms.[12,20]

One limitation is that we lacked information about the actual characteristics of participants' social contacts. However, perceived social circle characteristics are often more relevant than actual ones, for people's judgments and decisions.[21] Although false consensus errors affect surrogates' predictions of peer preferences for medical treatments,[22] people generally do have relatively accurate perceptions of their social circle's characteristics.[7,22,23] Here, participants' social circle perceptions for vaccination and flu rates were similar to our overall sample's statistics. The former also approached CDC estimates. Thus, people may reason with information they have about themselves and their social contacts.[7,8,24,25] Using social circle perceptions in addition to information about oneself can improve predictions about population-level outcomes.[26]

Overall, our findings suggest that tendencies toward selecting like-minded peers will exacerbate disagreements about population estimates, potentially promoting distrust in health messages opposing one's views.[3] Disagreements may be reduced by interventions that increase exposure to diverse others. Social network interventions also help to promote health behaviors.[27]

Authors' Note

This research was previously presented at the 2018 annual meeting of the Psychonomic Society in New Orleans, Louisiana; the 2019 annual meeting of the University of Southern California's Roybal Center for Decision Making to Improve Health and Financial Independence in Old Age in Washington, DC; and the 2019 meetings on "Science and Proven Experience" organized by Lund University (Sweden).

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Supplemental Material

Supplementary material for this article is available on the *Medical Decision Making* Web site at http://journals.sagepub.com/home/mdm.

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