Memory & Cognition
https://doi.org/10.3758/s13421-023-01504-5

Collective overclaiming is related to collective narcissism and numeracy

Adam L. Putnam[1] · Jeremy K. Yamashiro[2] · Eylul Tekin[3] · Henry L. Roediger III[3]

Accepted: 4 December 2023

Abstract
When asked to estimate how much their state or nation has contributed to history, people typically provide unreasonably large estimates, claiming that their group has contributed much more to history than nongroup members would estimate, demonstrating *collective overclaiming*. Why does such overclaiming occur? In the current study we examined factors that might predict collective overclaiming. Participants from 12 U.S. states estimated how much their home state contributed to U.S. history, completed measures of collective narcissism and numeracy, and rated the importance of 60 specific historical events. There was a positive relationship between collective overclaiming and collective narcissism, a negative relationship between collective overclaiming and numeracy, and a positive relationship between collective overclaiming and the importance ratings of the specific events. Together, these results indicate that overclaiming is partially and positively related to collective narcissism and negatively related to people's ability to work with numbers. We conclude that collective overclaiming is likely determined by several factors, including the availability heuristic and ego protection mechanisms, in addition to collective narcissism and relative innumeracy.

Keywords Collective overclaiming · Collective narcissism · Numeracy · Collective memory

Collective memory is concerned with how groups of people remember the past, and how such memories help to shape the group's identity (Halbwachs, 1992; Hirst et al., 2018; Wertsch & Roediger, 2008). Within psychology there have been attempts to measure various aspects of collective memory empirically. Recently, our labs have explored *collective overclaiming*, a tendency for people to claim that their group (often a state or nation) contributed more to past efforts than others would acknowledge. For example, when asked to estimate how much their home country contributed to winning WWII, people from eight Allied countries collectively claimed to be responsible for 309% of the victory (Roediger et al., 2019). The goal of the current paper is to identify factors that predict why such strong collective overclaiming occurs.

✉ Adam L. Putnam
adam.putnam@furman.edu

[1] Furman University, Greenville, SC 29613, USA

[2] University of California, Santa Cruz, CA, USA

[3] Washington University in St. Louis, St. Louis, MO, USA

Overclaiming of historical contributions

Prior work in our lab (Putnam et al., 2018) provided a clear demonstration of chauvinistic collective remembering. Nearly 3,000 Americans from across the 50 states answered the question, "How much has your home state contributed to U.S. history?" by providing an answer between 0% and 100%. Notably, the average response across all 50 states was 18%, from a low of 9% (Iowa) to a high of 41% (Virginia), with a wide degree of variability across states. Adding the average response of all states (which, given the question instructions, should equal 100%) yielded 907%, demonstrating that people may have a chauvinistic bias in remembering their collective past.

Additionally, Putnam et al.'s (2018) participants also rated states that they did not grow up in, which yielded two interesting observations. First, these non-resident ratings were strongly correlated with the resident ratings ($r = .83$), suggesting that—not surprisingly—Americans generally agree about which states have contributed more (Virginia and Massachusetts) or less (Iowa and Colorado) to U.S. history. Second, and more importantly, the non-resident ratings were consistently lower than the resident ratings, suggesting that residents think their

Published online: 02 January 2024

state has contributed more than non-residents. The overclaiming pattern in U.S. states has been replicated (Churchill et al., 2019; Yamashiro & Roediger, 2021), and similar patterns of overclaiming have been demonstrated when asking people from different nations to rate how much their home country has contributed to world history (Zaromb et al., 2018), or how much their country contributed to World War II (Roediger et al., 2019). In short, people easily and often overclaim how much their group has contributed to a shared past endeavor.

Why does such overclaiming of historical contributions occur? Several explanations are possible. Undoubtedly, people want to feel good about their groups, especially if their self-esteem is tied to the perceived greatness of their group—in other words, they may display collective narcissism (Brewer, 1999; Golec de Zavala et al., 2009; Gramzow & Gaertner, 2005; Schildkraut, 2014).

However, the availability heuristic (the tendency to make decisions based on how fluently information comes to mind) likely also plays a role—people take history classes about their home state or country and typically learn much less about other places. With increased knowledge about their home state, it is easy to use the fluency of remembering to inform a judgment of historical influence because facts about the home state would more easily come to mind than for other states. Indeed, past work in our lab has demonstrated that the availability heuristic predicts collective overclaiming—Yamashiro and Roediger (2021) reported that Americans were more fluently able to access important historical events about their own states than outsiders, and that this discrepancy predicted how much the in-group overclaimed responsibility for their state (see also Ross et al., 2020).

A third possibility is that people are poor intuitive statisticians: They may overestimate small percentages, or struggle with accurately answering a question related to percentages (Landy et al., 2018; Tversky & Kahneman, 1974). In other words, overclaiming may be the result of poor numeracy.

Of course, in practice, all three of these factors (and possibly others) likely play a role in contributing to collective overclaiming. Because we have already demonstrated that the availability heuristic contributes to collective overclaiming, in the current project we examined whether measures related to ego protection (collective narcissism) and numeracy predicted overclaiming. As an additional question, we also attempted to measure collective overclaiming with a different instrument, namely having Americans rate the importance of specific state events, rather than making an overall estimate for a state's contributions.

Collective narcissism

Chauvinistic collective remembering, as demonstrated by collective overclaiming, suggests a type of ethnocentrism, or narcissism focused on groups. Working from a different empirical perspective, Golec de Zavala and colleagues have established *collective narcissism* as a measurable individual difference (Cichocka et al., 2015; Golec de Zavala et al., 2009, 2016; Golec de Zavala, 2011; Golec de Zavala, Dyduch-Hazar, et al., 2019a; Golec de Zavala, Federico, et al., 2019b; for a review see Golec de Zavala & Lantos, 2020). Briefly, collective narcissism is "an ingroup identification tied to an emotional investment in an unrealistic belief about the unparalleled greatness of the ingroup" (Golec de Zavala et al., 2009, p. 1074). In other words, collective narcissism is a type of narcissism with the focus being a group one identifies with, rather than the individual self as in classical conceptions of narcissism (e.g., Raskin & Terry, 1988). Collective narcissism is characterized not just by glorification of the in-group, but also includes derogating out-groups and a brittle defensiveness. Collective narcissism using this measure has been associated with a variety of prejudices, including misogyny, homophobia, racism, and xenophobia (Golec de Zavala & Lantos, 2020).

The collective narcissism scale (Golec de Zavala et al., 2009) was developed to explicitly measure this attitudinal aspect of collective narcissism. The scale consists of nine Likert scale items, has good internal reliability, and is distinct from measures of self-esteem and individual narcissism. Scores on the collective narcissism scale can predict scores on a variety of other scales, including national group identification, blind patriotism, social dominance orientation and right-wing authoritarianism (see Golec de Zavala & Lantos, 2020, for a review).

Why might collective narcissism be related to collective overclaiming? Research on individual narcissism suggests that narcissistic traits predict several types of behavior: Narcissists are more likely to remember positive (compared with negative) self-relevant information (Jones & Brunell, 2014), more likely to remember their own desirable behavior in a group context (Gosling et al., 1998), and more likely to think about self-relevant memories in a way that enhances their self-esteem when asked to think about past experiences (Hart et al., 2011). Translating these phenomena to the collective, rather than the individual, suggests that people who show collective narcissism for their state may be more likely to remember positive historical events from their state, to remember their state's positive contributions more than other states, and to think about state-relevant memories in a way that enhances the rememberer's self-esteem. Indeed, Golec de Zavala and Lantos (2020) note that "people who endorse collective narcissism explicitly express the belief that their in-group is exceptional" (p. 274). In short, people who endorse collective narcissism values for their state should also overclaim how much their state has contributed to U.S. history.

Examining the correlation between collective narcissism and collective overclaiming is important for a second reason: in past work we have explicitly referred to overclaiming of responsibility as a type of collective narcissism (Putnam et al., 2018; Zaromb et al., 2018). Because of the inherent interdisciplinarity of collective memory, researchers have often attempted to examine particular phenomena using quite divergent measures. This methodological heterogeneity potentially leads to questions about whether different studies are addressing the same underlying constructs. If they are addressing the same construct, then using these different methods can contribute to convergent validity. If, however, the same terms are being used to refer to different phenomena (Flake & Fried, 2020), this heterogeneity could introduce confusion into the literature, hindering the accumulation of empirical insight. Thus, it is important to measure whether collective overclaiming is in practice related to collective narcissism.[1]

Numeracy as an explanation of overclaiming

Collective narcissism, or ego protection more broadly, is not the only potential mechanism for collective overclaiming: Poor statistical reasoning may also contribute to why people overclaim influence for their group. The historical responsibility question—how much has your state contributed to U.S. history?—requires people to respond with a percentage. Yet research has consistently shown that many adults struggle to accurately answer questions that require them to work with percentages, proportions, and fractions (Lipkus et al., 2001). For example, in Putnam et al. (2018), we reminded subjects that the total contribution of all states should equal 100%, implying that on average, states should contribute about 2% of U.S. history. Despite this reminder, people still overclaimed responsibility, with an average response of 18% when rating their own state and 12% when rating other states.

A specific issue with numeracy is that people often overestimate small numbers and underestimate large ones. This has nothing to do with egocentric processing, or even difficulties in working with percentages, but rather appears to be a systematic cognitive bias, an artifact of the judgment-making process (Landy et al., 2018). Given that 2% is a reasonable starting point for considering the average mutually exclusive contribution of a state, people likely overclaim responsibility simply because they are working with small numbers.

A second, perhaps more important issue related to numeracy is that people often demonstrate additivity neglect: If they are estimating the likelihood that an event will occur in the future, and that event is part of a mutually exclusive and exhaustive group, people's summed estimates for all of the events in the set will often exceed 100% (Riege & Teigen, 2013). In other words, people will fail to consider that the sum of their ratings should add to 100%. Ross et al. (2020) had participants rate the historical contributions of a fictious territory to a fictitious country (thus avoiding any influence of prior knowledge or ego protection) and demonstrated overclaiming increased as the number of the territories in the country increased. Ross and colleagues argued that participants were rating the "target" territory and then implicitly grouping the contribution of all the other territories together, so as more territories were added to the country, additivity neglect become more prominent (see also Schroeder et al., 2016). Critically, numeracy, or facility in working with numbers, has been demonstrated to predict additivity neglect, as people with better quantitative skills are less likely to neglect additivity (Riege & Teigen, 2013).

Taken together, these lines of research suggest that difficulty in working with numbers is one of the reasons collective overclaiming responses are so high. Thus, participants who are more quantitatively literate will be less likely to overclaim responsibility.

A multi-event measure of collective overclaiming

Finally, a valid critique of the historical contributions question is that it is a single question. In general, scales and measures are more accurate when they have more questions and items compared with fewer, because random measurement error is less of an issue (Emons et al., 2007). Thus, operationally defining historical contributions by having participants respond multiple times instead of once—by rating the relative importance of several specific historical events—may result in a more accurate measure of collective overclaiming.

Having people rate the importance of several events from different states has an additional advantage. If presented in a randomized order, with events from different states intermingled together, it forces participants to consider the contributions of several different states, rather than just considering their home state. As outlined above, a major contributor of overclaiming is that people focus on their own state's contribution and fail to consider the contributions of other states (which could be interpreted as the availability heuristic or additivity neglect). Thus, having participants rate multiple historical events from different states in a randomized order may lower collective overclaiming. If so, this would provide further evidence that collective overclaiming is not just the result of self-enhancement or ego protection.

[1] We thank William Chopik et al. (2022) for pushing us to think about these issues.

Current study

The current study had three goals. The primary goal was to examine how historical overclaiming of responsibility relates to collective narcissism (Golec de Zavala et al., 2009). Second, we wanted to see if numerical reasoning was related to collective overclaiming. A third peripheral goal—motivated by concerns relating to the unreliability of single-item measures (Emons et al., 2007)—was to measure collective overclaiming by having people rate the importance of a set of specific historical events associated with different states rather than making a single overall rating.[2]

To address these questions, we recruited participants from twelve U.S. states. These 12 states were chosen to represent four states each that in prior research had demonstrated strong, moderate, or low overclaiming of historical influence (Churchill et al., 2019; Putnam et al., 2018). Participants rated how much their home state had contributed to U.S. history, and how much each of the 11 other states in our study had contributed to U.S. history. This allowed us to calculate an *inflation index*, or how much people thought their home state had contributed to U.S. history compared with people who did not grow up in that state. Second, we had people complete the collective narcissism scale (Golec de Zavala et al., 2009), along with measures of objective and subjective numeracy (Fagerlin et al., 2007; Lipkus et al., 2001). Finally, in addition to the overall historical contributions rating, participants also saw a set of 60 specific historical events from different states and rated their importance to American history.

We preregistered three predictions. First, we expected to find a positive correlation between state overclaiming and the attitudinal measures of collective narcissism. Second, we expected to find a negative correlation between state overclaiming and measures of numeracy (both objective and subjective). Third, we expected that our single overclaiming question would be positively correlated with overclaiming as measured by the multi-item ratings of specific historical events.

Method

Our study was preregistered (https://doi.org/10.17605/OSF.IO/4TXJ2). We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study. All analyses conducted are reported in the manuscript or in the supplemental materials.

Participants

Our goal was to recruit 60 participants who had grown up in each of 12 states: Alabama, Colorado, Florida, Massachusetts, Michigan, Missouri, New Jersey, Pennsylvania, Texas, Utah, Virginia, and Washington. We chose these states based on prior work (Churchill et al., 2019; Putnam et al., 2018), so that we had four states that were high in overclaiming (Massachusetts, New Jersey, Pennsylvania, Virginia), four states that were in the middle (Alabama, Florida, Missouri, Texas), and four states that were low (Colorado, Michigan, Utah, Washington). We determined our sample size based on prior work in our lab (Putnam et al., 2018) that showed collective overclaiming with around 50 participants per state; we aimed for 60 to account for some data exclusions. We did not conduct a formal a priori power analysis, but a post-hoc sensitivity analysis showed that with our final sample size (n = 673), alpha set to .05, and power set to .80 our study would be able reliably detect correlations of $r = .11$ or higher (Faul et al., 2009). We posted 12 different advertisements (one for each state) on Prolific (www.prolific.co) an online survey pool, and later posted one survey on Amazon's Mechanical Turk when we were unable to get enough participants from Utah via Prolific.

The initial sample consisted of 785 participants. We excluded from analysis participants who did not spend at least 5 years in their home state ($n = 9$), had missing data for the critical overclaiming question ($n = 20$), or who did not follow task instructions, operationalized as failing a manipulation check ($n = 33$). Additionally, although we did not preregister this decision, we also excluded participants who looked up information on the web while taking the survey ($n = 25$), and one subject who had a repeated Prolific ID number. This left us with a final sample of 673 participants, with an average of 56 subjects per state ($M_{age} = 33.36$ years, $SE = 0.46$, 352 female, 310 male, 11 other) who lived in their home state for an average of 30.33 ($SE = 0.46$) years.[3] Ninety-four percent ($SE = 0.01$) of our sample still lived in the state they reported growing up in. Table 1 (and Table S1) provide state-by-state details of our sample. Participants were paid $4 for completing the 25-minute experiment.

Measures

Overclaiming state contributions

Our central overclaiming questions were drawn from Putnam et al. (2018). The overclaiming question asked "You said that you grew up in [Home State]. In terms of percentage, what do

[2] An exploratory goal was to examine how collective overclaiming of past historical contributions related to predictions of how much a state might contribute in the future. These results are reported in the supplemental materials.

[3] Including all participants in the data analysis yielded identical outcomes.

Table 1 Demographic details and scale scores for each state

State	*N*	Gender			Age		Collective Narcissism		Lipkus		Fagerlin	
		F	M	Other	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Alabama	55	38	17	0	33.29	11.17	2.85	1.09	0.75	0.24	4.18	1.13
Colorado	52	22	29	1	33.44	14.63	3.28	0.77	0.88	0.13	4.61	0.87
Florida	58	31	27	0	32.95	10.73	2.96	1.19	0.78	0.23	4.22	0.84
Massachusetts	58	33	24	1	34.93	10.99	3.42	1.02	0.81	0.22	4.05	1.07
Michigan	56	30	26	0	38.95	14.51	3.34	0.84	0.83	0.19	4.34	0.99
Missouri	59	30	28	1	34.61	12.43	2.48	0.87	0.88	0.13	4.49	0.92
New Jersey	60	32	27	1	30.53	11.61	3.39	1.08	0.80	0.20	4.15	0.90
Pennsylvania	54	29	24	1	33.00	11.30	2.58	1.01	0.81	0.22	4.09	1.04
Texas	57	30	27	0	30.61	9.93	2.90	1.16	0.80	0.18	4.25	0.91
Utah	53	20	31	2	31.26	10.22	2.63	0.89	0.85	0.13	4.43	0.94
Virginia	56	27	27	2	32.93	10.63	2.82	1.07	0.85	0.16	4.11	1.00
Washington	55	30	23	2	33.82	12.45	3.25	0.90	0.83	0.17	4.30	0.89

Participants were recruited from Prolific. The one exception is Utah, where some participants were recruited from Amazon's Mechanical Turk, after we failed to hit our sample size goal for the state. Additional sample details are available in Table S1

you think was [Home State]'s contribution to the history of the United States? In other words, how responsible was [Home State] for the historical developments in the United States? Keep in mind that there are 50 states and that the total contribution from all states has to equal 100%." Participants saw the name of their home state displayed instead of [Home State]. Participants then made their rating using a slider ranging from 0% to 100% and submitted their response. Sliders were initially set to zero. After making their rating for their home state (i.e., the Resident Response), we also asked participants to rate the 11 other states we surveyed for this study (i.e., Baseline Ratings). These states were presented in a random order.

We also included an exploratory measure, which asked participants a revised version of the critical question: "How much influence do you think [Home State] will have over the future of the U.S.?" In other words, we asked participants to predict their state's future influence with similar wording to the collective history question. Again, participants also made future influence ratings for the 11 other states after rating their home state. These questions were drawn from research showing that people often use specific past memories to envision future events (Szpunar & McDermott, 2008), and from research demonstrating that people tend to have a similar emotional outlook about the past and future of their groups (Deng et al., 2022; Shrikanth & Szpunar, 2021; Shrikanth et al., 2018). These questions were not the main focus of this article, so are reported in the supplemental materials.

Collective Narcissism Scale

The Collective Narcissism Scale (Golec de Zavala et al., 2009) consists of 8 Likert items asking people to evaluate their attitudes towards their group. For our implementation of the scale, we asked people to consider their home state as their "group" (see supplemental materials for a copy of the scale). For example, someone from Missouri would see the item *"I wish other states would recognize the authority of Missouri more readily"* and make a rating on a 6-point scale with response options ranging from 1 (*totally disagree*) to 6 (*totally agree*), which were coded so that higher numbers corresponded to more endorsement of collective narcissism. The items were presented in a random order. We averaged the response for each item to calculate each subject's score ($M = 2.99$, $SD = 1.05$). The collective narcissism scale had acceptable internal reliability, $\alpha = .88$, 95% CI [.87, .89]. Note that the average collective narcissism score for each state (see Table 1) was near the midpoint on the 6-point scale.

Lipkus Objective Numeracy Scale

The Lipkus Objective Numeracy Scale (Lipkus et al., 2001) consists of 11 short-answer and multiple-choice questions evaluating respondents' ability to reason with proportions and percentages. Some questions related to general numeracy "In the Acme Publishing Sweepstakes, the chance of winning a car is 1 in 1,000. What percent of tickets to Acme Publishing Sweepstakes win a car?" and other questions related to numeracy in a medical decision-making context "Which of the following numbers represents the biggest risk of getting a disease? 1%, 10%, or 5%?" The questions were presented in a set order and we examined the proportion of questions answered correctly ($M = .82$, $SD = .19$).

Fagerlin Subjective Numeracy Scale

The Fagerlin Subjective Numeracy Scale (Fagerlin et al., 2007) is a series of Likert-style questions measuring people's preferences for working with numbers versus verbal information. Sample questions include "How good are you at working with fractions?" and "When people tell you the chance of something happening, do you prefer that they use words (it rarely happens) or numbers (there is a 1% chance)?" Participants responded on a 6-point scale, with higher numbers referring to a preference for quantitative information. We averaged each participant's responses to the items ($M = 4.26$, $SD = 0.97$). The Fagerlin scale had acceptable internal reliability, $\alpha = .84$, 95% CI [.83, .86].

State event importance ratings

We gathered a set of 60 historical events, five from each of the 12 states in our sample, that were culled from various history texts and Wikipedia. We started by selecting some historical events for Virginia and Massachusetts from a state history quiz used in prior work (Yamashiro & Roediger, 2021), and then aimed to get a similar representation of events for each of the states in the current study. For example, the oldest event occurred in 1540, and the most recent in 2003, with an average year of 1853. The 60 events characterized different types of historical events, including the creation or development of the U.S. government, settlements and movement of people, and war or organized violence. Rather than trying to equate the events across states in terms of when they occurred, whether they involved just the single state or multiple states, and the area of American history (i.e., wars, technology, and so on) we aimed to gather a wide variety of events. Table S4 in the supplemental materials contains the full set of state events. We presented the events in a random order (not grouped by state). For each event we told participants which state the event occurred in and asked them to rate the event in terms of its overall importance to U.S. history on a 1 (*not important*) to 7 (*extremely important*) scale.

Procedure

We posted 12 different surveys on Prolific, recruiting participants who were both born in and currently residing in one of the target states. Upon starting the survey (presented via Qualtrics, Provo, Utah, USA) participants confirmed that they lived in one of the target states and reported how long they lived there, where they currently lived, their age and their gender.

Participants then answered the overclaiming questions (both the resident and nonresident ratings and the questions about the past and the future) and completed the collective narcissism scale. Critically, the presentation order of the overclaiming question block and the collective narcissism scale was counterbalanced across participants. Participants completed these two blocks first, because this was our most important research goal. Next, participants completed, in order, the Lipkus objective numeracy scale, the Fagerlin subjective numeracy scale, and then finally rated the importance of all 60 State Event items (presented in a random order). Following completion of the state event ratings, participants reported whether or not they had used any external resources and read instructions for receiving payment.

Results

Our data and analysis scripts are available on the OSF. We set alpha to .05 to determine statistical significance. Most of our variables were non-normally distributed so we report Kendall's tau and Wilcoxon signed rank tests rather than Pearson correlations and Student's *t* tests.

There are three ways to measure historical claims of responsibility: (1) the *resident* rating, which is the percentage of history claimed by the resident of a state; (2) the *baseline* rating, which is the percentage of history claimed by someone who did not grow up in a state (i.e., nonresidents); and (3) the *inflation index*, which is calculated by subtracting the average baseline rating of a state from each resident rating. The inflation index provides an estimate of how much the residents of a state overclaim responsibility for the historical contributions of their state compared with more neutral nonresidents. Of course, even the nonresidents overclaim if the baseline is considered an average of 2% (for the 50 states).

Preregistered analyses

Claims of historical contributions

The first three columns of Table 2 display the resident ratings, baseline ratings, and the inflation index for each state. The current results replicated prior work in showing higher average resident ratings, $M = 22\%$, 95% CI [20%, 24%], compared with the baseline ratings, $M = 16\%$, 95% CI [15%, 16%]. The resident ratings ranged from a low of 7% (Utah) to a high of 42% (Virginia), whereas the baseline ratings ranged from a low of 10% (Utah again) to a high of 24% (Massachusetts and Virginia). Notably, the sum of each state's mean resident ratings was 264%, a number far higher than the logical ceiling of 100%. This figure is more surprising considering that only 12 states (or 24% of the 50 states) were included in this study.

The average resident ratings and baseline ratings were comparable to Putnam et al. (2018; 18% and 12%,

Table 2 Mean proportion of U.S. history claimed by each state, as measured by single historical contributions question and by ratings of state events

State	Resident rating	Baseline rating	Inflation index	Event resident rating	Event baseline rating	Event inflation index
Alabama	20 [14, 26]	12 [10, 13]	8.36 [2.02, 14.71]	4.30 [3.98, 4.62]	3.85 [3.78, 3.93]	0.44 [0.12, 0.77]
Colorado	11 [7, 14]	10 [9, 11]	0.47 [−3.12, 4.05]	3.40 [3.06, 3.74]	3.38 [3.32, 3.44]	0.02 [−0.32, 0.36]
Florida	18 [1, 23]	13 [11, 14]	5.42 [−0.02, 10.85]	4.07 [3.79, 4.35]	3.62 [3.56, 3.69]	0.45 [0.16, 0.73]
Massachusetts	32 [27, 38]	23 [21, 25]	9.13 [3.47, 14.79]	4.97 [4.66, 5.28]	4.56 [4.50, 4.63]	0.41 [0.10, 0.72]
Michigan	18 [12, 23]	11 [9, 12]	7.14 [1.50, 12.78]	4.20 [3.86, 4.55]	3.69 [3.63, 3.75]	0.51 [0.17, 0.86]
Missouri	13 [8, 18]	12 [10, 13]	1.72 [−3.16, 6.59]	3.90 [3.63, 4.17]	3.87 [3.81, 3.94]	0.03 [−0.24, 0.30]
New Jersey	22 [16, 28]	15 [13, 16]	6.96 [1.13, 12.8]	3.93 [3.65, 4.21]	3.71 [3.64, 3.78]	0.22 [−0.06, 0.50]
Pennsylvania	34 [27, 40]	23 [21, 24]	11.08 [4.30, 17.85]	5.02 [4.73, 5.31]	4.79 [4.72, 4.86]	0.23 [−0.05, 0.52]
Texas	26 [20, 32]	18 [16, 20]	8.12 [2.22, 14.03]	4.18 [3.87, 4.48]	4.05 [3.98, 4.12]	0.13 [−0.18, 0.43]
Utah	6 [4, 9]	9 [8, 10]	−2.93 [−5.48, −0.38]	2.97 [2.63, 3.3]	3.20 [3.14, 3.27]	−0.24 [−0.57, 0.1]
Virginia	42 [34, 49]	24 [22, 25]	18.11 [10.6, 25.62]	4.57 [4.25, 4.89]	4.07 [4.00, 4.14]	0.50 [0.18, 0.82]
Washington	17 [11, 22]	15 [13, 17]	2.03 [−3.32, 7.37]	3.88 [3.49, 4.27]	3.77 [3.71, 3.83]	0.11 [−0.28, 0.50]
Mean	22 [20, 24]	16 [15, 16]	6.36 [4.72, 7.98]	4.12 [4.02, 4.22]	3.88 [3.85, 3.91]	0.24 [0.15, 0.33]

The numbers in brackets are 95% confidence intervals. The first three columns are the single item historical claims of responsibility questions (ranging from 0% to 100%) and the last three columns refer to the average importance for the events from each state (1–7 scale, with 7 representing *important*). The mean represents the average across all states

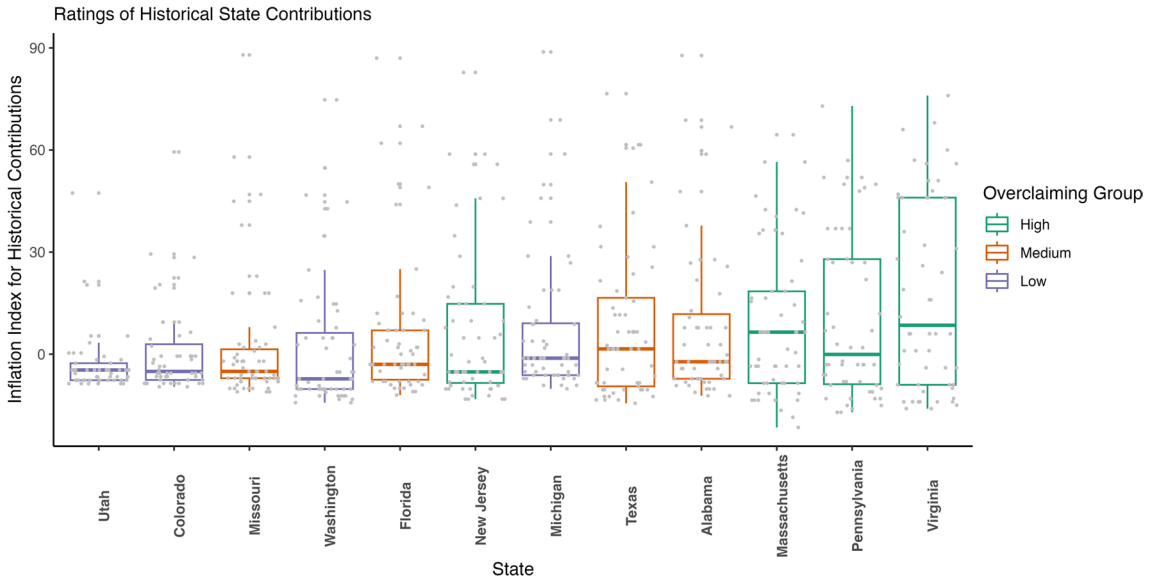

Fig. 1 Box plots summarizing the inflation index of each state's contribution to history. *Note*. The inflation index was calculated by subtracting the baseline rating for a state from each resident's response to the question "how much has your home state contributed to U.S. history?" The central bars in the box plots represent the median, and the boundaries of the box represent the interquartile range. Color (Overclaiming Group) refers to whether the states were originally selected as a high, medium, or low overclaiming group based on past research. (Color figure online)

respectively) and Churchill et al. (2019; 21% and 16%, respectively), highlighting the replicability of these ratings. The Putnam et al. and Churchill et al. ratings were based on reports of participants in all 50 states.

We also calculated an inflation index as the difference between each participant's resident rating and the mean rating provided for that state by out-of-state raters (see Fig. 1). Doing so provides a measure of how much each state's residents overweight the contributions of their state compared with a baseline provided by other states. Across all states the mean inflation index was 6%, 95% CI [−5%, 8%], with values ranging from a low of −3% (Utah) indicating that nonresidents thought Utah contributed more historically than residents did, to a high of 18% (Virginia) indicating that Virginians think Virginia contributed much more than did nonresidents. Again, the overall the inflation indices are comparable to Putnam et al. (2018; 6%) and Churchill et al. (2019; 4%).

Table 3 Correlation matrix (Kendall's tau) for central variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Resident Rating	1.00								
2. Baseline Rating	.35***	1.00							
3. Inflation Index	.75***	.06	1.00						
4. Collective Narcissism	.17***	.01	.18***	1.00					
5. Lipkus	−.28***	−.03	−.30***	−.09*	1.00				
6. Fagerlin	−.20***	−.11***	−.17***	.04	.38***	1.00			
7. Event Resident Rating	.31***	.24***	.22***	.14***	−.18***	−.07	1.00		
8. Event Baseline Rating	.31***	.66***	.06	−.05	−.01	−.07	.26***	1.00	
9. Event Inflation Index	.22***	.07	.21***	.16***	−.19***	−.05	.82***	.05	1.00

* $p < .05$, ** $p < .01$, *** $p < .001$

Importance of state event ratings

The last three columns of Table 2 display the descriptive statistics for the individual event ratings, where participants rated the importance of five events from each state on a 1–7 scale. The *event resident ratings* represent how much residents rated the importance of the five events from their own state. These values ranged from a low of 2.97 (Utah) to a high of 5.02 (Pennsylvania). with an average of 4.12, 95% CI [4.02, 4.22]. The *event baseline ratings* represent the event averages as rated by nonresidents; these ranged from a low of 3.20 (Utah) to a high of 4.79 (Pennsylvania), with an average of 3.88, 95% CI [3.85, 3.92]. Finally, *event inflation index* refers to an inflation index calculated by subtracting the event baseline ratings from the event resident ratings. The event inflation index ranged from a low of −0.24 (Utah) to a high of 0.51 (Michigan), with an average of 0.24, 95% CI [0.15%, 0.33%]. One interesting comparison is size of the inflation index for the single-item version compared with the event ratings. Notably, the difference between the resident and baseline ratings (in other words, the inflation index) was larger for the single item measure ($d = 0.38$), than for the event measures ($d = 0.25$).

Research Question 1: Is historical overclaiming correlated with collective narcissism?

The central research question of this study was whether overclaiming is correlated with Golec de Zavala et al.'s (2009) construct of Collective Narcissism. Table 3 displays a correlation matrix with the main study variables, and Fig. 2 displays a scatter plot comparing the inflation index to the collective narcissism scale. As predicted, people who scored higher on the Collective Narcissism scale also tended to overclaim more in estimating historical contributions of their home state (as measured by the inflation index), $r_\tau = .18$, $p < .001$. This suggests that the single item collective overclaiming inflation index is related to collective narcissism. The supplemental materials (Table S2) contain a table that shows the relationship between collective narcissism and collective overclaiming broken down by state. Notably, there is some variation across states, with correlations ranging from −.07 to .37.

Research Question 2: Are resident ratings correlated with numeracy skills?

As outlined in the introduction, one predictor of the large overclaiming numbers seen in prior research may be poor mathematical and statistical reasoning skills. As expected, people with higher objective numeracy scores provided lower resident ratings, $r_\tau = -.28$, $p < .001$, indicating that mathematical reasoning (or lack thereof) is contributing to overclaiming. An exploratory analysis examining the correlation between the inflation index and the Lipkus scale yielded similar results, $r_\tau = -.30$, $p < .001$.

Likewise, we expected that subjective numeracy skills would also be negatively correlated with overclaiming. As predicted, people who reported preferring quantitative information tended to provide lower resident ratings, $r_\tau = -.20$, $p < .001$. Again, this provides evidence that mathematical reasoning may be related to overclaiming. An exploratory analysis examining the correlation between the inflation index and the Fagerlin scale yielded similar results, $r_\tau = -.17$, $p < .001$.

There was a strong positive correlation between the Lipkus and Fagerlin scores, $r = .50$, $p < .001$. This correlation replicates Fagerlin et al. (2007), and indicates that subjects' *perception* of their quantitative abilities is associated with their *actual* numeracy.

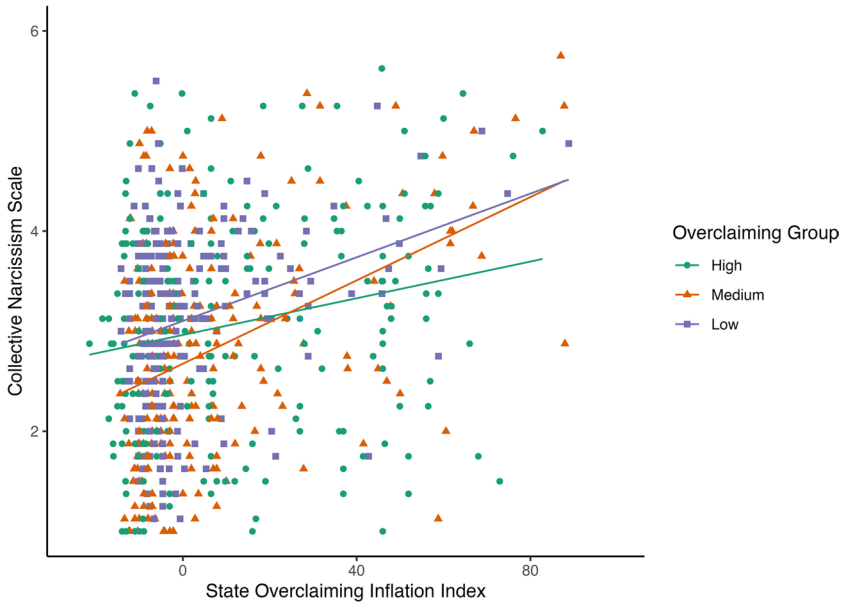

Fig. 2 Scatterplot showing relationship between state overclaiming (inflation index) and collective narcissism scale. $r_\tau = .18$, $p < .001$. (Color figure online)

Research Question 3: Do responses to the state event ratings correlate with our single item measure of historical contribution?

We expected that the aggregated state event ratings would be related to the single item historical contribution question. One way people may answer the historical contribution question may be by considering what events occurred in the target state. We examined the correlations between the single-item responses and the event ratings in three ways. First, there was a medium positive correlation between the single item resident rating and the event resident ratings, $r_\tau = .31$, $p < .001$.[4] Second, there was also a high positive correlation between the single item baseline ratings and the event baseline ratings, $r_\tau = .66$ $p < .001$. Finally, there was a small positive correlation between the single item inflation index and the event inflation index, $r_\tau = .21$, $p < .001$. Taken together, these correlations suggest that ratings of individual events are associated with the single item question about the historical contributions of a state, indicating that people may be considering specific events that occurred in that state to make their rating. Furthermore, the larger correlation for the baseline ratings suggests that when people rate unfamiliar states they may be relying on their knowledge and opinion of specific events more so than when rating their own state.

Finally, an exploratory analysis showed that the event inflation index was correlated with the collective narcissism scores, $r_\tau = .16$, $p < .001$. Notably, the effect size is similar to the correlation between the single overclaiming question and the collective narcissism scale ($r_\tau = .18$).

General discussion

This study reported three main findings. First, there is a positive relationship between collective overclaiming and attitudinal measures of collective narcissism. Second, there is also a negative relation between collective overclaiming and objective and subjective numeracy; people with better quantitative skills were less likely to overclaim historical influence for their state. Third, all three single-item methods of measuring state contributions to history were related to the event importance ratings.

Limitations

There are some limitations of these results. One is that single item measures can be unreliable (Emons et al., 2007). The state contribution question has demonstrated remarkable consistency across different replications (see Roediger et al., 2022), but one of the goals of this project was to measure state contributions to history in a different way, and our

[4] Although not preregistered, we applied a Bonferroni correction for multiple comparisons to the three tests examining the correlation between the overall and event specific ratings. The results are the same whether or not the correction is applied.

results indicate that rating the importance of state events yields a similar, but not identical outcome. Of course, if different events were selected for the state events, that pattern of ratings might change. For example, events associated with the founding of the country (i.e., the Boston Tea Party) will be perceived as more important than events that happened more recently. Furthermore, important events occurring before 1776 may be more associated with a specific state, whereas important events occurring after 1776 may be associated more with the country as a whole (e.g., the U.S. involvement in WWII).[5] Despite the variety of events that were used in the current study, the relationship between the baseline event ratings and the baseline overall state ratings was strong ($r_\tau = .66$).

A second limitation is that the current study only recruited participants from 12 of the 50 U.S. states. Sampling people from other states might yield different results, but by choosing the states based on the degree of overclaiming they showed in past studies, we have avoided restriction of range issues. Related to the selection of the states is the observation that the correlations between collective overclaiming and our other key variables (collective narcissism and numeracy) may vary across states (see Table S2). Small sample sizes per state are a challenge here, but an exploratory mixed-effects analysis (reported in the supplemental materials) suggested that collective narcissism still predicted collective overclaiming, even when using state as a grouping variable. Notably, a model that added random slopes based on home state did not improve the model fit; this suggests that while states vary in their overall level of collective overclaiming, the relationship between collective overclaiming and collective narcissism was consistent across states. Future research should explore the variability in the relationship between collective overclaiming and collective narcissism across states, and why such variability occurs.

A third limitation is that in the current sample participant scores on the collective narcissism scale were near the mid-point—the average score (on a 6-point scale) was 2.99, with a relatively limited range of 2.58 (Pennsylvania) to 3.42 (Massachusetts). Other research using the collective narcissism scale has yielded higher means (*M*s 3.18 to 3.52), suggesting that the endorsement of collective narcissism in our sample may be lower than in other samples (Golec de Zavala et al., 2009, 2013). It is possible that collective narcissism as operationalized on the collective narcissism scale may not be endorsed as strongly in the context of U.S. states. Alternatively, Americans in our sample may not identify strongly with their state compared with other groups, such as their race, religion, or nation. One suggestive piece of evidence here (shown in Table S2) is that states differed in how strongly they showed the correlation between the collective narcissism scale and collective overclaiming, ranging from a low of −.07 (Utah) to a high of .37 (Missouri). This variability may be due to differences in how closely people identify with their state. Zaromb et al. (2018) did show a positive correlation ($r = .20$) between National Identification and a rating of how much one's country had contributed to world history, suggesting that group identification predicts collective overclaiming. Future research would benefit from exploring how individual differences related to identity predict overclaiming—not only state identification, but perhaps age, education, or race.

Key findings

Despite these limitations there is still much to learn from this data set. For starters, much of the work examining differences between individual and collective cognition (e.g., Shrikanth et al., 2018) have operationalized the collective as the nation. Using states as the definition of the collective may start to bridge the gap between the individual and the nation.

Another key take-away is that historical ratings of the contributions of a state to U.S. history (collective overclaiming) is related to collective narcissism. As noted above one limitation here is that states differed in how strongly that correlation was displayed (with *r*s ranging from −.07 to .37). However, other factors may be in play as well. Prior work in our labs has demonstrated a link between collective overclaiming and an asymmetry in the cognitive availability of events in memory for the in-group versus outgroup (Yamashiro & Roediger, 2021), and demonstrated that overclaiming can occur without any strong emotional attachment to the focal group (Ross et al., 2020). The current study further demonstrates that numerical reasoning is related to collective overclaiming, with people who are stronger quantitatively providing lower ratings of historical contribution. While it is impossible to make a causal claim with correlational data, one explanation is that quantitatively literate people are more likely to consider the requirement that the contributions of each state should be mutually exclusive (in other words, they avoid additivity neglect; Riege & Teigen, 2013). Additional pilot work from our lab has also found a negative relationship between cognitive reflection and overclaiming, suggesting that people who habitually provide impulsive answers to questions are likely to provide high estimates of their state's contribution to U.S. history (Frederick, 2005).

A second key takeaway is that while there were generally positive correlations between the ratings of a state's overall contributions and the ratings of the importance of events within those states, the ratings were not identical. The correlation was stronger for the baseline ratings (r_τ

[5] We thank an anonymous reviewer for this suggestion.

= .66) compared with the resident ratings (r_τ = .31). One interpretation of this difference in correlations is that when people are rating less familiar states they mentally generate and evaluate specific events that occurred in that state, and use that information to inform their overall rating of the state. In contrast, when people are rating their home state, they may be using some other strategy. One possibility is that the combination of having lots of accessible information about their home state and the drive to feel good about their in-group leads people to make a quick, intuitive decision rather than carefully evaluating the question (Frederick, 2005; Gramzow & Gaertner, 2005). One interesting direction for future research would be to look for differences in how people make ratings for their home state versus another state, perhaps by examining reaction times or using a think-aloud procedure. Additionally, the effect size of the inflation index was larger for the single question ($d = 0.38$) than the multi-event rating ($d = 0.25$). This may be because evaluating one's home state on specific events instead of a global judgment reduces ratings of a home state's contributions, or because the state event ratings were presented in an intermixed fashion, which should draw attention away from the current state (Ross et al., 2020).

Finally, given the small to medium sized correlation between historical overclaiming and collective narcissism it is inappropriate to treat the historical overclaiming question as a pure measure of collective narcissism. As seen in the current study, other factors are involved in overclaiming of responsibility, and collective narcissism, especially as defined by others (Golec de Zavala, Dyduch-Hazar, et al., 2019) is a more complicated construct addressing intergroup relations and whether people feel their group is adequately recognized. We suggest that the overclaiming seen in our work might be partially driven by collective narcissism, but that it is only one among other factors. Thus, a more appropriate name for phenomena seen with our historical contributions question is collective overclaiming, rather than collective narcissism.

Conclusion

Collective overclaiming is a robust phenomenon yet is underexplored by the psychology literature. In the current paper we demonstrated that collective overclaiming is positively correlated with an attitudinal measure of collective narcissism and negatively correlated with quantitative reasoning ability. Those factors and others (such as availability and ego protection) all contribute to a tendency to overclaim the contributions of one's groups. Thus, the large effect sizes of collective overclaiming are likely to be multiply determined, with all of these different factors contributing to its reliability.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.3758/s13421-023-01504-5.

Acknowledgements Many thanks to Chopik et al. (2022) for inspiring this specific research question and to Will Deng for his help in preparing the materials. This project was supported by a grant from the James S. McDonnell foundation to H.L.R.

Open practices statement The data, analysis script, and materials are available at 10.17605/OSF.IO/T9MR8. The study was preregistered (https://doi.org/10.17605/OSF.IO/4TXJ2).

References

Brewer, M. B. (1999). The psychology of prejudice: In-group love and outgroup hate? *The Journal of Social Issues, 55*(3), 429–444.

Churchill, L., Yamashiro, J. K., & Roediger, H. L. (2019). Moralized memory: Binding values predict inflated estimates of the group's historical influence. *Memory, 15*(1), 1099–1109. https://doi.org/10.1080/09658211.2019.1623261

Chopik, W. J., Holtzman, N. S., Donnellan, B., Boyer, T. W., & Konrath, S. (2022). Concept creep of collective narcissism: A commentary on Putnam and colleagues (2018). https://doi.org/10.31234/osf.io/36zvj

Cichocka, A., Marchlewska, M., Golec de Zavala, A., & Olechowski, M. (2015). 'They will not control us': In-group positivity and belief in intergroup conspiracies. *British Journal of Psychology, 107*(3), 556–576. https://doi.org/10.1111/bjop.12158

Deng, W., Rosenblatt, A. K., Talhelm, T., & Putnam, A. L. (2022). People from the U.S. and China think about their personal and collective future differently. *Memory & Cognition, 51*, 87–100. https://doi.org/10.3758/s13421-022-01344-9

Emons, W. H. M., Sijtsma, K., & Meijer, R. R. (2007). On the consistency of individual classification using short scales. *Psychological Methods, 12*(1), 105–120. https://doi.org/10.1037/1082-989X.12.1.105

Fagerlin, A., Zikmund-Fisher, B. J., Ubel, P. A., Jankovic, A., Derry, H. A., & Smith, D. M. (2007). Measuring numeracy without a math test: Development of the subjective numeracy scale. *Medical Decision Making: An International Journal of the Society for Medical Decision Making, 27*(5), 672–680.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149–1116.

Flake, J. K., & Fried, E. I. (2020). Measurement schmeasurement: Questionable measurement practices and how to avoid them. *Advances in Methods and Practices in Psychological Science, 3*(4), 456–465.

Frederick, S. (2005). Cognitive reflection and decision making. *The Journal of Economic Perspectives: A Journal of the American Economic Association, 19*(4), 25–42. https://doi.org/10.1257/089533005775196732

Golec de Zavala, A. (2011). Collective narcissism and intergroup hostility: The dark side of 'In-Group Love. *Social and Personality Psychology Compass, 5*(6), 309–320. https://doi.org/10.1111/j.1751-9004.2011.00351.x

Golec de Zavala, A., Cichocka, A., Eidelson, R., & Jayawickreme, N. (2009). Collective narcissism and its social consequences. *Journal of Personality and Social Psychology, 97*(6), 1074–1096. https://doi.org/10.1037/a0016904

Golec de Zavala, A., Cichocka, A., & Iskra-Golec, I. (2013). Collective narcissism moderates the effect of in-group image threat on

intergroup hostility. *Journal of Personality and Social Psychology, 104*(6), 1019–1039. https://doi.org/10.1037/a0032215

Golec de Zavala, A., Dyduch-Hazar, K., & Lantos, D. (2019a). Collective narcissism: Political consequences of investing self-worth in the ingroup's image. *Political Psychology, 40*(S1), 37–74. https://doi.org/10.1111/pops.12569

Golec de Zavala, A., Federico, C. M., Sedikides, C., Guerra, R., Lantos, D., Mroziński, B., Cypryańska, M., & Baran, T. (2019b). Low self-esteem predicts out-group derogation via collective narcissism, but this relationship is obscured by in-group satisfaction. *Journal of Personality and Social Psychology, 119*(3), 741–764. https://doi.org/10.1037/pspp0000260

Golec de Zavala, A., & Lantos, D. (2020). Collective narcissism and its social consequences: The bad and the ugly. *Current Directions in Psychological Science, 29*(3), 273–278. https://doi.org/10.1177/0963721420917703

Golec de Zavala, A., Peker, M., Guerra, R., & Baran, T. (2016). Collective narcissism predicts hypersensitivity to in-group insult and direct and indirect retaliatory intergroup hostility: Collective narcissism and hypersensitivity to in-group image insult. *European Journal of Personality, 30*(6), 532–551. https://doi.org/10.1002/per.2067

Gosling, S. D., John, O. P., Craik, K. H., & Robins, R. W. (1998). Do people know how they behave? Self-reported act frequencies compared with on-line codings by observers. *Journal of Personality and Social Psychology, 74*(5), 1337–1349.

Gramzow, R. H., & Gaertner, L. (2005). Self-esteem and favoritism toward novel in-groups: The self as an evaluative base. *Journal of Personality and Social Psychology, 88*(5), 801–815. https://doi.org/10.1037/0022-3514.88.5.801

Halbwachs, M. (1992). *On collective memory*. University of Chicago Press.

Hart, C. M., Sedikides, C., Wildschut, T., Arndt, J., Routledge, C., & Vingerhoets, A. J. J. M. (2011). Nostalgic recollections of high and low narcissists. *Journal of Research in Personality, 45*(2), 238–242.

Hirst, W., Yamashiro, J. K., & Coman, A. (2018). Collective memory from a psychological perspective. *Trends in Cognitive Sciences, 22*(3), 438–451. https://doi.org/10.1016/j.tics.2018.02.010

Jones, L. L., & Brunell, A. B. (2014). Clever and crude but not kind: narcissism, self-esteem, and the self-reference effect. *Memory, 22*(4), 307–322.

Landy, D., Guay, B., & Marghetis, T. (2018). Bias and ignorance in demographic perception. *Psychonomic Bulletin & Review, 25*(5), 1606–1618. https://doi.org/10.3758/s13423-017-1360-2

Lipkus, I. M., Samsa, G., & Rimer, B. K. (2001). General performance on a numeracy scale among highly educated samples. *Medical Decision Making, 21*(1), 37–44. https://doi.org/10.1177/0272989X0102100105

Putnam, A. L., Ross, M. Q., Soter, L. K., & Roediger, H. L. (2018). Collective narcissism: Americans exaggerate the role of their home state in appraising U.S. history. *Psychological Science, 29*(9), 1414–1422. https://doi.org/10.1177/0956797618772504

Raskin, R., & Terry, H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*(5), 890–902.

Riege, A. H., & Teigen, K. H. (2013). Additivity neglect in probability estimates: Effects of numeracy and response format. *Organizational Behavior and Human Decision Processes, 121*(1), 41–52.

Roediger, H. L., Abel, M., Umanath, S., Shaffer, R. A., Fairfield, B., Takahashi, M., & Wertsch, J. V. (2019). Competing national memories of World War II. *Proceedings of the National Academy of Sciences, 116*(34), 16678–16686. https://doi.org/10.1073/pnas.1907992116

Roediger, H. L., Putnam, A. L., & Yamashiro (2022). National and state narcissism as reflected in overclaiming of responsibility. In R. Roediger & J. V. Wertsch (Eds.), *National memory in a time of populism* (pp. 209–235). Oxford University Press.

Ross, M. Q., Sterling-Maisel, O. A., Tracy, O., & Putnam, A. L. (2020). Overclaiming responsibility in fictitious countries: Unpacking the role of availability in support theory predictions of overclaiming. *Memory & Cognition, 48*, 1346–1358. https://doi.org/10.3758/s13421-020-01059-9

Schildkraut, D. J. (2014). Boundaries of American identity: Evolving understandings of "Us." *Annual Review of Political Science*, *17*(1), 441–460.

Schroeder, J., Caruso, E. M., & Epley, N. (2016). Many hands make overlooked work: Over-claiming of responsibility increases with group size. *Journal of Experimental Psychology: Applied*, *22*(2), 238–246.

Shrikanth, S., & Szpunar, K. K. (2021). The good old days and the bad old days: Evidence for a valence-based dissociation between personal and public memory. *Memory, 29*(2), 180–192. https://doi.org/10.1080/09658211.2020.1871024

Shrikanth, S., Szpunar, P. M., & Szpunar, K. K. (2018). Staying positive in a dystopian future: A novel dissociation between personal and collective cognition. *Journal of Experimental Psychology: General, 147*(8), 1200–1210. https://doi.org/10.1037/xge0000421

Szpunar, K. K., & McDermott, K. B. (2008). Episodic future thought: Remembering the past to imagine the future. In K. D. Markman, W. M. P. Klein, & J. A. Suhr (Eds.), *Handbook of imagination and mental simulation* (pp. 119–129). Psychology Press.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124–1131.

Wertsch, J. V., & Roediger, H. L. (2008). Collective memory: Conceptual foundations and theoretical approaches. *Memory, 16*(3), 318–326.

Yamashiro, J. K., & Roediger, H. L. (2021). Biased collective memories and historical overclaiming: An availability heuristic account. *Memory & Cognition, 49*(2), 311–322. https://doi.org/10.3758/s13421-020-01090-w

Zaromb, F. M., Liu, J. H., Paez, D., Hanke, K., Putnam, A. L., & Roediger, H. L. (2018). We made history: Citizens of 35 countries overestimate their nation's role in world history. *Journal of Applied Research in Memory and Cognition, 7*(4), 521–528. https://doi.org/10.1016/j.jarmac.2018.05.006