Different Politics, Different Realities? A Case Study of Students' Partisan Sensemaking About COVID-19

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Abstract

The COVID-19 pandemic has been a source of conflict between liberals and conservatives in the U.S., with many politicized debates focusing on college students and universities. To understand this partisan conflict and how it might be mitigated, one useful approach is to examine how collective sensemaking about the virus and virus response, as reflected in language use, has differed between different political groups. Using semantic network analysis of a corpus of college students' descriptions of their worries about COVID-19, we found that there were many similarities in sensemaking across the political spectrum, but also important differences between ideological groups. In particular, collective sensemaking for conservative students (more so than for liberal and moderate students) was organized around words related to anxiety and close personal relationships. These results have implications for addressing partisan intergroup conflict about COVID-19.

News during the height of the COVID-19 pandemic abounded with stories of conflict, ranging from fatal shootings over mask policies (Kornfield, 2020) to bitter arguments among friends and families (Smith, 2020b). Several unique conflicts also arose over how universities handled the pandemic, with students, parents, and faculty expressing concerns both about the social and educational impacts of campus closures and about the health risks of in-person activities (e.g., CBS News, 2020; Kamis, 2020; Risam, 2020; Steinberg, 2020). In some cases, these conflicts even escalated to legal battles over issues such as COVID-19 health policy violations (Smith, 2020a) and tuition costs (Bolado, 2023).

Although these conflicts had a variety of causes, many had political roots. Reflecting broader U.S. trends, which suggest that liberals and conservatives feel increasing dislike, distrust, and anger toward one another (Iyengar et al., 2019; Mason, 2015), stark partisan differences emerged in reactions to COVID-19. Members of different political groups—college students included (e.g., Chen, 2023)—differed throughout the pandemic in their beliefs about the origins of the virus (Motta et al., 2020), risk perceptions (Calvillo et al., 2020), trust in government and scientists (Kerr et al., 2021), and compliance with masking and distancing guidelines (de Bruin et al., 2020).

How did such intense conflict arise over what could have been a nonpartisan, scientific issue (see Daschle et al., 2020)? One possibility is that *collective sensemaking* about the pandemic differed sharply along political lines. Sensemaking (Weick, 1995), which can be seen as a form of storytelling (Sunwolf & Frey, 2001), is a process by which people make sense of the unknown. Collective sensemaking, in turn, occurs as people with shared identities or group membership develop a sense of shared reality through common orientations to the world (Bietti et al., 2019; Campbell, 1958). Whereas collective sensemaking may foster cohesion within a group, however, it is reasonable to expect that intergroup conflict may emerge when sensemaking differs between groups. To wit, it is possible that intense partisan conflict about the pandemic emerged because collective sensemaking among conservatives and liberals diverged sharply. The two groups were essentially living in "two discordant, dissonant pandemic realities" (Fernandez & Healy, 2020, para. 3), which led them to adopt incompatible sets of beliefs and actions (see Sunwolf & Frey, 2001; Weick, 1995).

If so, mitigating conflicts like this may require understanding collective sensemaking in more detail. Understanding the language used in collective sensemaking, in particular, may offer important insights. "Language use frequently involves the recoding of implicit, nonlinguistic representations into explicit, linguistic ones" (Holtgraves & Kashima, 2008, p. 75). Thus, the words people use, and the semantic structures that organize those words, can be a window into how they make sense of a social issue and have implications for communication efforts to improve intergroup relations. Thus, differences in collective sensemaking between political groups, as expressed through their language use, may offer insights into the most contentious issues and challenges faced by future communication efforts, whereas similarities may point to opportunities to develop common ground and promote bipartisan action. With this goal in mind, the current study employed a semantic network analysis of words indicating anxiety about COVID-19 and concerns about social relationships to investigate sensemaking among liberals, moderates, and conservatives in the months leading up to the 2020 U.S. presidential election. In doing so, we also focused specifically on college students, to understand the possible role of political ideology in the unique conflicts experienced by this group.

Intergroup Conflict

To understand the origins of partisan conflict over COVID-19, it is useful to begin with relevant perspectives on intergroup conflict more generally. Intergroup conflict can be defined as "the perceived incompatibility of goals or values between...members of different social groups" (Böhm et al., 2020, p. 950). Several theoretical perspectives have offered insights into why intergroup conflict occurs (e.g., Fritsche et al.,

2011, 2013; Higgins, 2019; Hogg, 2000), but one of the oldest approaches focuses on the role of threat. This *realistic group conflict* paradigm sees intergroup conflict as a rational response to the fact that groups have conflicting goals and must compete over limited resources (Campell, 1965; Sherif et al., 1961). These real threats increase perceived threat; trigger hostility toward outgroups (particularly if they are the perceived cause of the threats); heighten ingroup identity, differentiation, and solidarity; and reduce tolerance for ingroup deviance (Campell, 1965; Fiske, 2002; Fritsche et al., 2011, 2013).

Symbolic threats, which occur when the outgroup is perceived to threaten the ingroup's religion, values, or beliefs rather than its physical or economic wellbeing (Stephan et al., 2008), may also cause intergroup conflict, especially when the threat is moral in nature. This occurs because moral conflicts tend to be seen as black-and-white: "In our evaluation of (im)moral positions and the people who hold them, there is no continuum of 'rightness,' but rather two possibilities—moral and immoral" (Parker & Janoff-Bulman, 2013, p. 83). Disagreements founded on moral convictions, which are attitudes based on moral principles, thus tend to trigger strong emotions, intolerance, reduced goodwill, and a decreased ability to resolve differences.

In light of these findings, the conflict between liberals and conservatives in the U.S. is unsurprising. These groups pose realistic threats to one another in that they compete for votes, political offices, and financial resources. Each side also tends to perceive the other as a symbolic group threat, in that they often disagree on value-laden issues such as abortion and gun control (Gallup, 2021). Liberals and conservatives also generally have strong moral convictions about these issues, but different moral foundations, with liberals placing more emphasis on harm/care and fairness/reciprocity and less emphasis on ingroup/loyalty, authority/respect, and purity/sanctity than do conservatives (Graham et al., 2009). As a result, conservatives and liberals report strong negative emotions toward one another and perceive one another to threaten their values, freedoms, and safety (Parker & Janoff-Bulman, 2013, Study 3; see also Brown & Hohman, 2022).

COVID-19 and the Role of Sensemaking in Conflict

Although this partisan divide existed long before the COVID-19 pandemic, the pandemic also created several conditions prone to exacerbate intergroup conflict. For one, the pandemic and responses to it introduced new realistic and symbolic threats (Stephan & Stephan, 2000; Stephan et al., 2008), including physical threats of death and illness and threats to economic wellbeing and values such as personal freedom, security, and equality. Given that threats are the heart of intergroup conflict (Campbell, 1965), introducing new threats also increases the potential for conflict to occur (see also Balmas et al., 2022).

For another, uncertainty, which also tends to increase intergroup conflict (Hogg, 2000), surrounded many practices and policies throughout the pandemic. For example, the World Health Organization (WHO, 2021) first recommended wearing masks only when someone was symptomatic, but quickly revised that recommendation to include everyone, regardless of symptoms. The Centers for Disease Control and Prevention (CDC, 2021) also updated guidelines at one point to recommend wearing two masks or masks with multiple layers for additional protection, then updated them again to state that people who were fully vaccinated no longer needed to wear masks at all in most situations. Thus, even for a behavior as simple as masking, people may have felt uncertain about what to do and why.

In addition to exacerbating conflict, uncertainty about unexpected, novel threats like COVID-19 prompts people to engage in sensemaking (see Bangerter, 2021). Sensemaking—"literally...the making of sense" (Weick, 1995, p. 4)—is a process by which people to fit the new situation into an existing framework, explain and cope with surprises, determine meaning, and guide action. Sensemaking also connects closely to storytelling or "explanatory narrating" (Sunwolf & Frey, 2001, p. 122), through which people describe, interpret, and share lived events. "How [people] construct what they construct, why, and with what effects are the central question for people interested in sensemaking" (Weick, 1995, p. 4). This process, although it

has cognitive elements, is also inherently social. The social context determines what cues people notice and how they interpret them. Moreover, the "story" (p. 61) that people create to explain what is happening must seem reasonable and acceptable to others if it is to facilitate joint action. People "are aware of whether a story told by another 'rings true' with what they know from their own lives" (Sunwolf & Frey, 2001, p. 122).

As part of sensemaking, people engage in social comparison (Festinger, 1954) to adjust their understanding of what is happening and build confidence that their interpretation is plausible and accurate (Hogg, 2000; Weick, 1995). These social comparisons also do not happen at random; it is the ingroup that serves as the most important reference point (Hogg, 2000). And in many cases, the most important ingroup includes those with a shared political ideology. Ideology plays an important role in sensemaking because it combines "beliefs about cause-effect relations, preferences for certain outcomes, and expectations of appropriate behaviors" (Weick, 1995, p. 111). Thus, those with a similar ideology are likely to develop a shared meaning of events (see Higgins, 2019), whereas people with different ideologies may reach very different conclusions. This is also the process through which individual sensemaking becomes collective sensemaking—sharing stories about unexpected events can enhance the group's ability to navigate the new situation and promote social cohesion (Bietti et al., 2019).

An ideological divide in sensemaking is likely to be reinforced further if it occurs in the context of intergroup conflict. As they seek to bolster their ingroups, people tend to modify their beliefs to fit those of the ingroup more closely (Hogg, 2000) and adhere more strictly to ingroup norms (Fritsche et al., 2011). People also tend to exaggerate differences between themselves and the outgroup (Abeles et al., 2019; Chambers et al., 2006; Hogg, 2000; Robinson et al., 1995). Liberals and conservatives, for example, tend to overestimate the extent to which they disagree on political issues (Robinson et al., 1995), especially for issues that are central (vs. peripheral) to their ideological values (Chambers et al., 2006).

For these reasons, one of the best ways to understand the foundations of partisan conflict about COVID-19 may be to examine collective sensemaking among members of different political groups. Because of the way it emerges from ideology and responds to the same conditions that promote intergroup conflict, the process of sensemaking is intimately tied to the process by which the conflict itself emerges. Thus, between-group similarities and differences in sensemaking likely reflect agreements and disagreements, respectively, about the issue at hand.

Language, Sensemaking, and Semantic Network Analysis

Classical psycholinguistic theories posit that the meaning of concepts cannot be fully explained by individual words that describe them, but instead is embedded in their relationships with other linguistic particles (Figueroa et al., 1976; Johnson, 1965). Even with the same sets of words, the meanings—and their effects on audiences—may vary depending on how these words are organized. Indeed, scholars have argued that the ability to combine concepts in a complex but flexible semantic space is one reason why humans can describe an almost infinite number of thoughts with a relatively small pool of words (Berwick & Chomsky, 2016). From this perspective, research seeking to compare collective sensemaking between groups would be well served to compare not just what concepts are evoked in groups' mental spaces, but also the semantic associations among the concepts of theoretical interest.

A powerful tool for understanding structural associations between concepts is semantic network analysis. Network analysis, overall, is the study of relations among a set of entities, such as people or concepts. Semantic network analysis (SNA), more specifically, offers insight into cognitive systems (also called schemas or mental maps; Anderson, 1983) by analyzing how people describe an abstract concept based on the concrete words they use and how those words connect (Danowski, 1993; Monge & Eisenberg, 1987). The words constitute the nodes in the network and their co-occurrences in text serve as the basis of the relationships between them.

This focus on words and their connections is ideal for understanding collective sensemaking for several reasons. For one, Weick (1995) sees language as central to the sensemaking process:

> "Sense is generated by words that are combined into the sentences of conversation to convey something about our ongoing experience...words figure in every step. Words constrain the saying that is produced, the categories imposed to see the saying, and the labels with which the conclusions of this process are retained. Thus words matter." (p. 106)

Accordingly, if we want to understand how conservatives and liberals make sense of the risks of COVID-19—as well as any differences in language they may use when describing those risks (e.g., see Holtzman et al., 2015; Okdie & Rempala, 2019; Robinson et al., 2017)—one of the best ways to do so may be to ask them to express their thoughts in words. And because SNA is specifically designed to examine data of this nature, it can provide insights that are challenging to glean with other approaches (e.g., see Stohl, 1993).

Second, understanding collective sensemaking requires an understanding not just of the words people use to describe something, but how those words are organized and structured. Broadly speaking, sensemaking is a process through which mental representations evolve into cognitive frames, defined as organized collections of concepts and their interrelations (e.g., Scheufele, 2004). The definition implies that concepts are structured (Converse, 1964; Dinauer & Fink, 2005; Hunter et al., 1976) and that those structures have implications for how people—and, through collective sensemaking, the groups to which they belong—see the world.

Examining the structure of words is, again, a task to which SNA is uniquely suited. By investigating mental representations of concepts as systems of organized words, SNA allows one to estimate which words are interconnected, the importance of particular words within a representational system, and the degree of overlap in how different people or groups make sense of the same concept (Monge & Eisenberg, 1987; O'Connor & Shumate, 2018). SNA therefore has the benefits of a content analysis, plus the unique ability to uncover meanings associated with a concept by examining relations among words (Carley, 1993; Monge & Eisenberg, 1987).

A particularly valuable piece of information SNA can provide is the *centrality* of different words, which can indicate multiple ways in which they are important to the structure of sensemaking. Centrality can indicate a word's contribution to the overall connectedness of a sensemaking network (Borgatti et al., 2018). For example, words with a higher centrality may express concepts that connect otherwise fragmented thoughts into a coherent sensemaking narrative. Centrality can also indicate the power that accrues to a word through its direct connections with other words (Borgatti et al., 2018). For example, a word tied to many other words is likely to have a bigger role in sensemaking than a word tied to few others (Calabrese et al., 2019). In either case, centrality reflects a word's structural importance in a semantic network, where importance is defined by patterns of connections with other words and implications for the overall network (Monge & Contractor, 2003; Wasserman & Faust, 1994). For semantic networks that reflect collective sensemaking, this centrality further reflects a word's structural importance in reflecting the core concepts that make up the group's shared view of events.

To summarize, SNA is a powerful tool for understanding collective sensemaking. By focusing directly on the words people use to describe their perceptions and quantifying the structural connections among those words, SNA provides a method by which to vivify the collective mental representations of COVID-19 among participants in different political groups, and thereby to assess partisan similarities and differences in collective sensemaking.

The Present Study

Following the logic outlined above, the goal of the present study was to use SNA to examine collective

sensemaking about COVID-19 among liberals, moderates, and conservatives and its connection to conflict. To do so, we focused specifically on college students. Although college students are not representative of all partisans, their sensemaking is important to understand. College-age students were frequently the subject of criticism during the pandemic, with news outlets suggesting that they failed to take the pandemic seriously enough (Kesslen, 2020) and put community members at risk (Ivory et al., 2020). They also occupied a unique position at the center of debates about campus closures, college sports, and remote learning, a position that was politicized as students became the target of political messaging during the 2020 U.S. presidential campaign (Barlow, 2020; Cadeau, 2020; Hoffman, 2023; Manchester, 2020). Examining their sensemaking thus offers a unique view of partisan conflict over these issues.

Focusing on young adults also afforded us the opportunity to examine the extent to which partisan conflict is salient to this group. Social science research has found for decades that today's young adults tend to be less engaged in various political activities and less involved in politics overall compared to early cohorts of young adults (Snell, 2010). This finding raises the question as to whether political conflict over COVID-19 among older adults (Calvillo et al., 2020; de Bruin et al., 2020; Grossman et al., 2020; Kerr et al., 2021) will be evident in the sensemaking of younger adults as well. Given that young adults are at an important point in the development of their political views, their sensemaking about COVID-19 and its connection to political ideology may shape their future political lives.

To understand college students' sensemaking and its connection to conflict, we focused on the abstract concept of *worries* about COVID-19—more specifically, feelings of anxiety and concerns about possible consequences for valued relationships. Threats are at the center of intergroup conflict (Campell, 1965; Parker & Janoff-Bulman, 2013; Sherif et al., 1961), so understanding what different groups find threatening (i.e., worrisome)—and the extent to which those worries overlap—is vital for a more complete understanding of the conflict. Furthermore, examining feelings of anxiety and concerns for important others, in particular, may provide nuanced but unique perspectives on ideological similarities and differences in sensemaking about the pandemic.

Words indicating COVID-related *anxiety* reflect sensemaking focused inward on oneself, as people attempt to understand their own readiness and preparation to deal with anticipated threatening events. Conversely, words indicating concerns about important *relationships* reveal the sensemaking directed outward to one's social milieu, as people think through which groups are at risk and how these groups may be affected by the disease. Together, examining language expressing anxiety and concerns about relationships may provide a finetuned understanding of how people make sense of the pandemic in relation to themselves and broader social groups.

On the one hand, it is logical to expect that both types of terms would be central to collective sensemaking among college students, regardless of partisanship. Studies suggest that college students experienced high rates of anxiety and depression during the pandemic (Lee et al., 2021; Son et al., 2020) and felt that COVID-19 was an acute source of increased stress and anxiety (Wang et al., 2020). Many students also cited worries about the health of loved ones as a major source of concern (Lee et al., 2021; Son et al., 2020). And other relationship concerns were probably especially salient for this group, many of whom faced the unexpected prospect of living at home as a result of campus closures. For instance, many students reported that the pandemic strained their relationships with their families and friends (Lee et al., 2021) and that communicating with family members about the virus was often difficult and frustrating (Hernandez & Colaner, 2021).

At the same time, it is plausible that sensemaking around these themes differed between college students of different political ideologies. For instance, previous research suggests that although students were concerned to some extent about the health risks of COVID-19, their anxiety was more often the result of concern about secondary impacts on productivity, job prospects, educational experiences, and finances (Lee et al., 2021). Broader politicized debates weighing the health impacts of COVID-19 against the economic

impacts of lockdowns and other policies were occurring at the same time (Dorling, 2020; Haberman & Sanger, 2020), so it would be unsurprising if the same ideological divide emerged among college students as they reflected on their own experiences.

To explore the overall role of both types of terms and the implications of this collective sensemaking for partisan conflict among college students, we asked:

RQ1. How important were feelings of anxiety and concerns for relationships in college students' collective sensemaking about COVID-19, as reflected in the centralities of anxiety and relationship words in semantic networks?

RQ2. What were the similarities and differences in how college students with different political ideologies made sense of COVID-19, as indicated by the centralities of anxiety and relationship words in semantic networks?

Method

Sample and Procedure

Participants for the study were college students (*N* = 856) recruited from a general education course with the incentive that they could receive a small amount of course credit in return for participation. After eliminating students who were under 18 years of age, took longer than 1.5 hours to complete the survey, or resided outside of the county in which the university was located, the final sample consisted of 706 participants. Most participants self-identified as White (*n* = 567, 80.3%)[1], female (*n* = 387, 54.8%), and in their second (*n* = 289, 40.9%) or third (*n* = 242, 34.3%) year of school. All were under 30 years of age (*M* = 19.68, *SD* = 1.15, range = 18-29).

Data were collected with a rolling cross-sectional online survey. Once a week for eight weeks (September 17-November 12, 2020), invitations to participate were sent out to a random subset of enrolled students until all eligible students had the opportunity to participate. The survey began with sociodemographic questions, then continued with the open-ended SNA prompt. The survey also included questions for a separate project, which are not discussed.

Measures

The prompt used to gather participants' thoughts was: "In a word or phrase, can you say what worries you most about the COVID-19 pandemic?" Participants could write as much or as little as they wanted in response. Unedited, responses included a total of 10,215 words (per response *M* = 14.47 words, *SD* = 18.29, *Min* = 1, *Max* = 247).

Political ideology was measured with a single item (1 = *extremely liberal*, 7 = *extremely conservative*). Responses to this item were used to classify participants as liberals (1-3; *n* = 283, 40.1%), moderates (4; *n* = 184, 26.1%), and conservatives (5-7; *n* = 239, 33.9%). Trichotomization of the political ideology measure aligned with theoretical work on attitude ambivalence (e.g., Thompson et al. 1995), in that participants classified as conservatives or liberals favored one end of the political spectrum, whereas moderates evenly balanced interest in the two poles. This also had the benefit of producing three groups roughly equal in size.

Anxiety and *relationship words* were identified using the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015). LIWC is an empirically validated tool for computerized text analysis that classifies words into categories based on predefined dictionaries. Examples of anxiety words include *worry*, *fear*, and *risk*. Examples of relational words include *family*, *friends*, and *people* (see Supplemental Materials, Table S1, for example responses). A binary code (0 = *absent*, 1 = *present*) was assigned to each word to indicate whether it belonged to each category.

Semantic Networks

To create semantic networks, responses to the prompt were corrected for spelling errors and edited to replace different ways of describing the same concept (e.g., *infect*, *spread*, *transmit*, *get [someone else] sick*) with a single, common term (e.g., *infect*). These steps helped ensure that different words genuinely represented different concepts, rather than simply differences in spelling, grammar, or word choice (see Table S2). A drop list of words to exclude from the analysis was also developed in advance. This drop list included words that were not relevant for understanding important concepts, such as articles, pronouns, and "to be" verbs.

We then obtained counts for words and word pairs and directional matrices of word co-occurrences using WORDij 3.0 (Danowski, 2013). Words appearing fewer than three times and word pairs appearing fewer than two times were dropped from the matrices. Word co-occurrences were identified using a two-word window, meaning that the program identified two words as occurring together any time they fell within two words of one another in the text (either before or after). In other words, this process identified the ties between words in the semantic network. For ease of interpretation, the matrices generated by WORDij were converted into binary matrices before network analyses were performed.[2] Then, the word matrices were used to create semantic networks for conservative, moderate, and liberal students, respectively.[3]

Network Measures

Network researchers have developed many types of centrality to quantify the ways in which concepts are involved in cognitive systems. An important consideration in semantic networks is the direction of ties between two words, because the text can only meaningfully be read in one way; one word flows forward to the next word and not the other way around. In this study we considered three types of centrality: indegree, outdegree, and betweenness.

Indegree centrality assesses the importance of a focal node in a network by estimating how often it appears after other nodes (Freeman, 1978). In a semantic network, high indegree centrality indicates that a word serves as a common reference point for multiple thoughts about a concept and hence is highly salient in sensemaking processes. For example, in the simple chain *COVID-19 → infect → friend*, *infect* and *friend* both have one indegree, because each appears after one other word, but *COVID-19* has none. Thus, both *infect* and *friend* have a higher indegree centrality than *COVID-19*.

Outdegree centrality describes the importance of a focal node by estimating how many other concepts appear after it (Freeman, 1978). In a semantic network, words with high outdegree centrality prime or lead to many other words. Returning to the example above, *COVID-19* and *infect* both have one outdegree, because both lead to one other word, but *friend* has none. Thus, both *COVID-19* and *infect* have a higher outdegree centrality than *friend*.

Betweenness centrality captures how frequently a focal node appears in the path connecting two otherwise disconnected nodes (Freeman, 1978). A word with high betweenness serves as a conduit for information to flow from one word to another, often guiding interpretations and inferences about a concept (Shim et al., 2015). In the example above, *infect* has betweenness centrality because this word connects *COVID-19* to *friend*.

Centrality indices were calculated using the *igraph* package (Csárdi & Nepusz, 2006) in R (version 4.0.5). Then, to make centrality estimates comparable across different networks, we ranked the centrality measures in each network and standardized these ranks to range between 0 and 1. This procedure was necessary because centrality can be affected by the pattern of ties in a network (i.e., which nodes are connected) and the network's overall size (Wasserman & Faust, 1994). For example, a node in a larger

network has more chances to fall on the shortest path between two other nodes and hence may have greater betweenness centrality than a node in a smaller network. Using standardized rankings has been shown to be robust for comparing centrality scores across cognitive networks (Boutyline & Vaisey, 2017). The standardized centrality scores were positively skewed and hence were log transformed (Fink, 2009).

Analysis Strategy

Multilevel modeling (MLM) was used to predict the centrality of words based on the word categories and participant political ideology. People with a shared political ideology are often exposed to more similar information sources than those of different political ideologies (Iyengar & Hahn, 2009). As they communicate this information with one another in the process of storytelling and collective sensemaking, they are also likely to develop a shared vocabulary over time. As a result, language used to describe current events (words and co-occurrences) may be more similar among members of the same political ideology than among those of different political ideologies, which creates interdependence. We assessed the degree of interdependence using the intraclass correlation coefficient (ICC), which estimates the proportion of variance explained by the clustering structure (Hox, 2010). The ICCs for log-transformed indegree, outdegree, and betweenness centralities were .83 (95% CI [.77, .88]), .89 (95% CI [.86, .93]), and .90 (95% CI [.87, .93]), respectively, which justified the use of MLM.[4]

The MLM was constructed incrementally such that the level-1 main effects of anxiety and relational words and the level-2 main effect of political ideology (1 = *conservative*, 2 = *moderate*, 3 = *liberal*) were entered in the model first, followed by cross-level interactions (word categories × political ideology). The intercepts were allowed to vary across networks, but slopes were not. Models were estimated using the *nlme* package (Pinheiro et al., 2019) in R.

Results

Descriptive Analysis

We first explored words students used to describe their worries about COVID-19 (see Supplemental Materials, Figures S1-3, for sociograms of the semantic networks for each group). The WORDij results revealed many similarities in the words used most often by liberal, moderate, and conservative students. Indeed, the six most frequently used words (*COVID-19*, *people*, *worry*, *family*, *contract*, and *infect*) were the same regardless of political group. Some words, however, were salient more for one group than for the others. Conservatives were especially likely to use the terms *economy*, *changed*, and *health*; moderates to use the term *uncertain*; and liberals to use the terms *careless* and *harmful* (see Supplemental Materials, Table S3).

Examining words and word pairs appearing across the semantic networks revealed other similarities and differences (see Table 1). Altogether, the networks contained 146 different words. Fifty (34.2%) of these words appeared in all three networks, 37 (25.3%) appeared in two networks, and the rest (59, 40.4%) were unique to one network (see Supplemental Materials, Table S4). Still, although unique words were common, all three groups described their worries about COVID-19 primarily in shared terms. Specifically, 72.2% of words used by conservatives, 77.8% of words used by liberals, and 90.8% of words used by moderates also appeared in the semantic network for one or both other groups. Similarly, the semantic networks contained 450 unique word pairs. Of these pairs, 72 (16.0%) appeared in all three networks, 88 (19.6%) appeared in two networks, and the rest (290, 64.4%) were unique to one network. Furthermore, despite the prevalence of unique word pairs, shared phrases were again more common. The majority of word pairs used by conservative (50.8%), liberal (54.9%), and moderate students (72.5%) also appeared in the semantic network for one or both other groups. Altogether, these results indicate that though there were some differences in

Table 1. Descriptive Information: Semantic Networks

	Conservatives (*n* = 239)		Moderates (*n* = 182)		Liberals (*n* = 286)	
	Word/pair	*n*	Word/pair	%	Word/pair	Frequency
Most common words	covid19	190	covid19	114	covid19	172
	people	96	people	60	people	127
	worry	94	family	49	infect	81
	family	89	worry	46	worry	78
	contract	65	infect	40	family	76
	infect	63	contract	39	contract	69
	not	59	not	32	at_risk	50
	elderly	51	elderly	21	not	43
	at_risk	47	damage	21	death	28
	damage	44	at_risk	19	careless	27
	economy	24	death	17	elderly	25
	changed	23	complications	16	complications	24
	health	17	uncertain	15	harmful	23
Most common pairs	contract covid19	51	contract covid19	28	contract covid19	41
	infect covid19	39	infect covid19	24	infect people	41
	elderly family	32	covid19 people	19	infect covid19	37
	worry covid19	32	infect people	15	covid19 people	28
	covid19 people	31	worry covid19	14	people at_risk	27
	covid19 family	27	family contract	14	family contract	25
	infect family	26	infect family	13	worry covid19	24
	covid19 infect	22	elderly family	13	infect family	24
	family covid19	22	covid19 family	9	covid19 infect	18
	family contract	22	people covid19	8	covid19 family	18
	infect people	21	people not	8	infect at_risk	17
	people at_risk	18	family covid19	8	people careless	15
	damage covid19	15	elderly contract	8	family covid19	14

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the content of collective sensemaking across groups, the similarities between them were more pronounced. Most words and word pairs each group used to express worries about COVID-19 overlapped with those used by other groups.

RQ1: Anxiety and Relationship Concepts

RQ1 explored young adults' worries about COVID-19, as indicated by the centralities of anxiety and relationship words in semantic networks.[5] Results (see Table 2) revealed that anxiety words had higher indegree (B = 0.05, SE = 0.02, p = .045) and outdegree centralities (B = 0.08, SE = 0.02, p < .001) than non-anxiety words. Thus, anxiety words both led to and followed from more concepts in the sensemaking network than non-anxiety words. However, anxiety and non-anxiety words did not differ in betweenness centrality (B = 0.03, SE = 0.02, p = .17), suggesting they had similar potential to bridge otherwise disconnected concepts in the sensemaking networks.

Furthermore, we found that relational words had higher indegree (B = 0.07, SE = 0.02, p =.003), outdegree (B = 0.07, SE = 0.02, p = .002), and betweenness centralities (B = 0.04, SE = 0.02, p = .02) than non-relational words. These findings suggest that relational words followed from, led out to, and linked together other concepts more often than non-relational words in the collective COVID-19 sensemaking networks. Altogether, these results suggest that anxiety and relational words were both central to sensemaking, regardless of ideology.

Table 2. Results of Multilevel Models Predicting Word Centrality in Semantic Networks

	Indegree		Outdegree		Betweenness	
	B	95% CI	B	95% CI	B	95% CI
PI	-0.00	[-0.01, 0.01]	-0.00	[-0.00, 0.00]	-0.00	[-0.01, 0.00]
Anxiety	0.05[*]	[0.001, 0.10]	0.08[**]	[0.04, 0.13]	0.03	[-0.01, 0.06]
Relation	0.07[**]	[0.02, 0.11]	0.06[**]	[0.02, 0.10]	0.04[*]	[0.01, 0.07]
R^2_{fixed}	.08		.15		.05	
PI × Anx	-0.03[**]	[-0.05, -0.01]	-0.00	[-0.02, 0.01]	-0.02[**]	[-0.03, -0.01]
PI × Rel	-0.01	[-0.02, 0.01]	-0.00	[-0.02, 0.01]	-0.01[*]	[-0.02, -0.002]
R^2_{fixed}	.10		.16		.06	
ICC	.83		.89		.90	
95% CI$_{ICC}$	[0.77, 0.88]		[0.86, 0.93]		[0.87, 0.93]	

Note. Centrality estimates were ranked within each network and standardized to vary from 0 to 1 using non-parametric techniques (Boutyline & Vaisy, 2017). Standardized centralities were skewed and were log-transformed (Fink, 2009). Word categories were extracted from the dictionaries of the Linguistic Inquiry and Word Count (LIWC, 2015 version). Political ideology: (1 = *conservative*, 2 = *moderate*, 3 = *liberal*). Multilevel models were built incrementally, such that main effects were entered before interaction effects. The results for each block are reported when that block was added to the model. Intercepts were allowed to vary, but slopes were not. PI = political ideologies; Anx = anxiety; Rel = relationship; ICC = intra-class correlations.
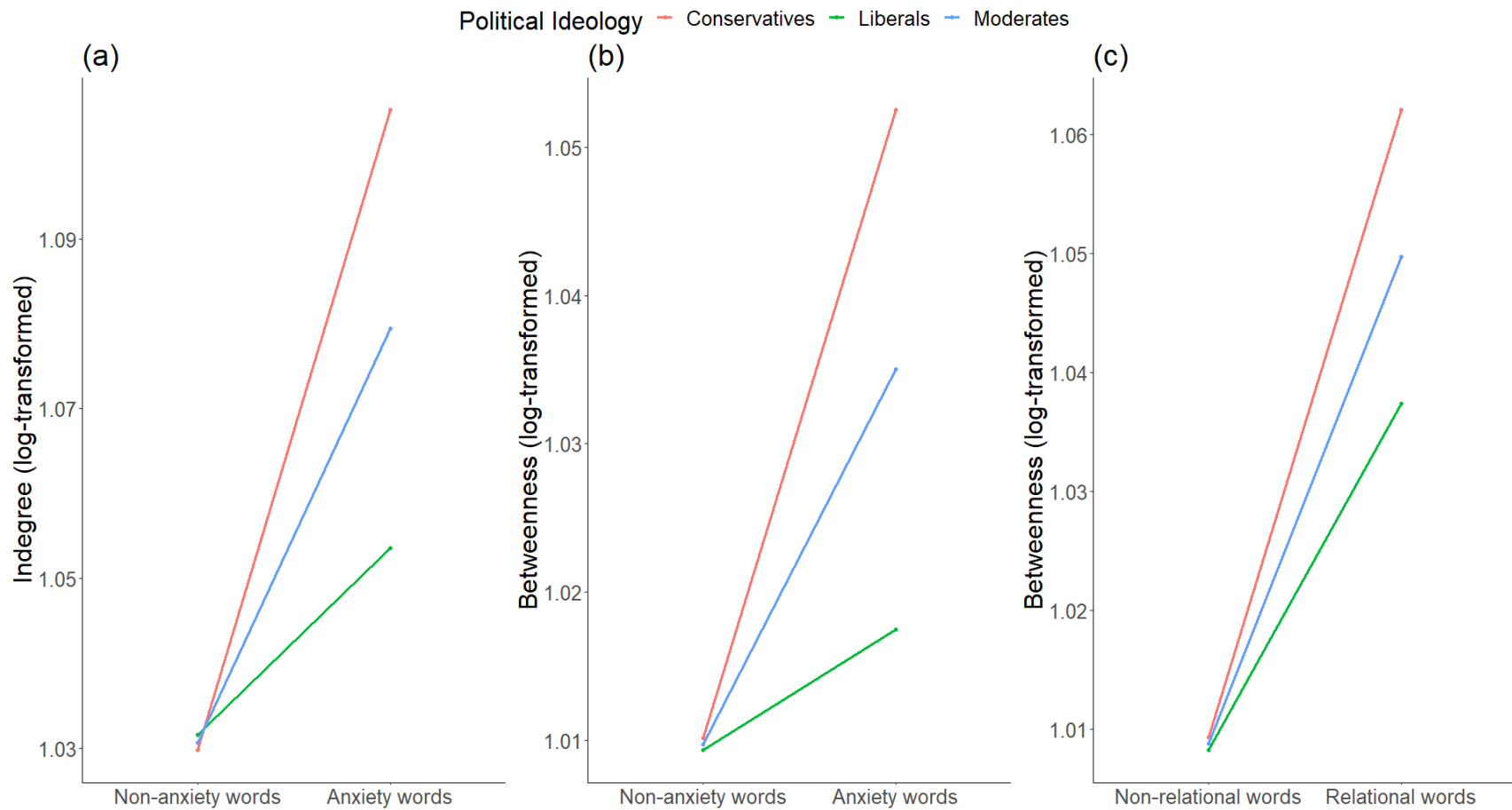[*]p < .05, [**]p < .01.

Figure 1. Plotted interactions between political ideology and word categories.

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RQ2: Comparing Collective Sensemaking by Political Ideology

RQ2 explored ideological similarities and differences in collective sensemaking about COVID-19 worries. To examine this question, we compared the centralities of anxiety and relational words among liberal, moderate, and conservative students (see Table S5 for descriptive information). Political ideology had no significant effects on word centralities on average (indegree: $B < -0.01$, $SE < 0.01$, $p = .87$; outdegree: $B < -0.01$, $SE < 0.01$, $p = .63$; betweenness: $B < -0.01$, $SE < 0.01$, $p = .27$), suggesting substantial overlap across political groups in their overall sensemaking. However, we also found that political ideology moderated some of the effects of word categories on centrality. Specifically, the results showed that the effect of anxiety words on indegree centrality ($B = -0.03$, $SE = 0.01$, $p = .007$) and betweenness centrality ($B = -0.02$, $SE = 0.005$, $p = .002$) was moderated by political ideology. Although anxiety words were more central than non-anxiety words in all groups, this difference was larger among conservatives than liberals (see Figures 1a-b). In other words, the tendency for anxiety words to follow from other words and bridge different words together was strongest among conservative students.

Furthermore, political ideology also moderated the effect of relational words on betweenness centralities ($B = -0.01$, $SE = 0.005$, $p = .02$). Although relational words were more central than non-relational words for all groups, the difference was larger for conservatives than liberals (see Figure 1c). Thus, for conservative students, relational words were especially prominent in connecting different words and holding their collective sensemaking network together.

Post-Hoc Analysis: Proximal vs. Distal Relationship Words

In preliminary analyses of common word pairs (see Table S4), we observed that conservative students were especially likely to connect concepts to proximal relationships, such as family and friends. To examine whether this was important for understanding the role of relational words in more detail, we further distinguished proximal and distal relational words and explored whether there were differences in their centralities in the sensemaking networks. Examples of proximal relational words were *family*, *friends*, and *roommates*. Examples of distal relational words included *people*, *society*, *USA*, and *world*. The results showed that, across the political spectrum, proximal relational words had slightly higher indegree centrality ($B = 0.06$, $SE = 0.03$, $p = .05$) and a marginally higher outdegree centrality ($B = 0.06$, $SE = 0.03$, $p = .06$) than distal relational words, though there was no difference in betweenness centrality ($B = 0.02$, $SE = 0.02$, $p = .39$). These findings suggest that proximal (vs. distal) relational words were relatively more important in their ability to lead to and follow from other concepts in the COVID-19 network, but not in their ability to connect different concepts. However, there was a significant interaction effect between relationship type and political ideology on betweenness centrality ($B = -0.02$, $SE = 0.006$, $p = .02$). Among conservative students, more so than liberal students, proximal relationship words were centrally located as intermediaries between other concepts.

Discussion

Recent media discourse has suggested that partisan conflict about the COVID-19 pandemic has occurred because people in different political groups are living in different realities (Fernandez & Healy, 2020). This claim implies that people with divergent political views have made collective sense of the pandemic very differently—for example, with one group viewing the pandemic as a public health and humanitarian crisis and another viewing it as a hoax. The purpose of this study was to examine the extent to which this was the case, using college students as a case study, and to identify opportunities for building common ground. By analyzing language and semantic associations, we uncovered the content and structure of collective

sensemaking about COVID-19 worries among different ideological groups.

The findings provided limited support for the view that members of different political groups are living in different realities, at least when it comes to young adults. Examining the words and word pairs different groups used to describe their worries about COVID-19 revealed marked similarities in the *content* of their collective sensemaking. The most common terms were the same for all groups, and there was substantial overlap in the use of words and word pairs. The few differences in content that emerged also echoed traditional ideological divides, including established differences in moral foundations (Graham et al., 2009) and policy preferences (Gallup, 2021). For instance, liberal students more often used terms related to harm/care, whereas conservative students more often mentioned the economy.

The findings also went beyond the analysis of individual words to focus on semantic relationships between them. Many language analysis studies adopt a bag-of-words approach, which assumes that the psychological significance of a text can be inferred by considering words as independent units and disregarding semantic relations among them (Boyd & Schwartz, 2021). For example, research has tracked changes in words indicating anxiety and cognitive reappraisal over time to understand the psychological trajectories of people coping with a COVID-19 infection (Zhu, 2023). However, such studies may only present an incomplete picture of the underlying psychological processes, as even the same sets of words may convey different psychological meaning depending on how they are connected. Using semantic network analysis, this study benefits from diverse measures of interconnectedness, such as different types of centrality, revealing insights that may have been hidden if independent words were considered.

Examining the centrality of different word categories revealed many similarities in the *structure* of students' collective sensemaking. Anxiety and relational words were more central than non-anxiety and non-relational words, respectively, for all three political groups. Furthermore, a post-hoc analysis revealed that it was proximal (vs. distal) relationships that were especially important and salient, regardless of ideology. As with content, the structural differences that did emerge were subtle. Conservatives' sensemaking about the pandemic was closely tied to anxiety and close personal relationships, whereas these concepts were somewhat less important among liberals and moderates. The results were consistent with the moral foundations of conservatives, who emphasize loyalty/ingroup. However, the differences in collective sensemaking between ideological groups were small and nuanced, not extreme.

Altogether, these findings contradict the common assumption (e.g., Fernandez & Healy, 2020) that intense intergroup conflict over COVID-19 must be rooted in large differences in how political groups have interpreted and made sense of the issue, at least not among young adults. Instead, we find that intense partisan conflict has occurred despite extensive similarities between members of different political groups in the content and structure of collective sensemaking about COVID-19. Thus, as has been found for other issues and for older partisans (Chambers et al., 2006; Robinson et al., 1995), it may be that the *perceived* political divide is much larger than the actual divide. Perhaps the intensity of the conflict is due more to mutual dislike between different political groups (i.e., affective polarization; Iyengar et al., 2019; Mason, 2015) than substantive disagreements about the issue at hand. Or, even though we observed so much common ground in the content of participants' sensemaking, perhaps these small differences are enough to anchor ingroup identities and trigger intergroup differentiation and outgroup hostility in the ways described by group scholars (e.g., Campbell, 1965; Fiske, 2002; Fritsche et al., 2011, 2013).

Another possible interpretation of the findings is that the source of the conflict differed from those commonly identified in the literature. Existing research on intergroup conflict has focused on how conflict may arise when social groups (1) disagree on what should be addressed (issue discrepancy) or (2) agree on the issue but have divergent opinions (opinion discrepancy). The results of this study suggest, at least in this particular context, a third possibility: people may worry about similar issues and have similar opinions about how to address those issues, but have different views about how those issues relate to and affect one other. For example, people in different political groups may all have worried about the economy and social

inequality during the pandemic. However, some may have believed that slowing the economy would worsen social inequality, whereas others felt that without social equality, economic revival would not be sustainable. The conflict thus arose from the presumed causality in their sensemaking. Future research that uses techniques like semantic network analysis to tap into this kind of structural difference may thus provide novel insights about the roots of intergroup conflict.

Reducing Intergroup Conflict

These results also have important implications for addressing intergroup conflict about issues like COVID-19 in university settings. In particular, the findings suggest that at least some of the recommended interventions to reduce intergroup conflict would not be successful in this context. For one, Tajfel and Turner (1979) propose that intergroup conflicts can be resolved by breaking down social categories (de-categorization) and fostering a superordinate social identity (recategorization) that includes both the ingroup and outgroup (e.g., Gaertner et al., 1994). Accordingly, the way to break down partisan conflict would be to emphasize a superordinate American or collegiate identity rather than separate conservative, moderate, and liberal identities. For example, appeals might promote vaccination by emphasizing the need for students to come together to do their part in reaching campus vaccination goals. However, our findings show that, especially for conservatives, proximal interpersonal relationships were more central to sensemaking than distal interpersonal relationships. Therefore, rather than bringing people together, emphasizing more distal social groups might only serve to alienate conservatives and increase perceptions that the two parties disagree. This is similar to what has been found in some recent work on intergroup conflict and ideological polarization (Harel et al., 2020; Myrick, 2021). Contradicting conventional wisdom that outgroups may be united by a common threat, these authors suggest that external threats may make ideological disagreements—such as the one over COVID-19—*worse*. Thus, although the strategy has been successful in other contexts (e.g., Gaertner et al., 1994), appealing to a superordinate identity is likely be ineffective for reducing conflict about COVID-19. This is also consistent with recent findings that hypothetical messages using *you* pronouns were more effective than those using *we* pronouns in encouraging people to stay home during the pandemic (Tu et al., 2021).

Rather than relying on traditional recommendations from the intergroup conflict literature, more effective approaches may be (a) showing examples of positive intergroup collaborations or (b) narrative writing. Multiple meta-analyses have shown that exposure to stories of positive intergroup collaboration can reduce prejudice by lowering intergroup anxiety and increasing empathy (Banas et al., 2020; Zhou et al., 2019). Reducing intergroup hostility may be a necessary precursor to recognizing common ground in sensemaking. Research also shows that writing from the perspective of a disliked member of a political outgroup (i.e., narrative writing) can reduce affective polarization and malevolent outgroup attributions (Warner et al., 2020; though cf. Bilali & Godfrey, 2021) and that perspective-taking in general can reduce intergroup bias and stereotyping (Abbate et al., 2020). Thus, asking students to describe what peers or community members of a different political group might worry about regarding COVID-19 could foster an appreciation of common ground.

Notably, this is unlikely to be the last time universities have to respond to a pandemic, and it would be beneficial if they could draw on lessons learned from COVID-19 when they have to communicate in the future. There are also other political conflicts that are unique or especially relevant to university contexts, such as debates about standardized testing, affirmative action, and hate speech. Developing a body of literature on constructive strategies to help mitigate these conflicts, such as those described above, would be a worthwhile effort.

Methodological Implications

Beyond the theoretical and practical implications, the findings suggest that examining collective sensemaking through SNA may be a useful approach for future research on ideological differences and intergroup conflict. Because the semantic networks reflect patterns in how words are connected across group members, they can provide unique insights about collective sensemaking—including which terms are central to a group's shared understanding of events—that would not be evident from exploring language use only at the individual level. As noted above, for example, SNA may help investigate possible cases where intergroup conflict is due to structural differences rather than simple issue or opinion discrepancies. Furthermore, examining the structure of sensemaking has the potential to offer insights that cannot be obtained from studies of content alone. For example, Robinson et al. (2014) found that conservatives have a greater tendency to use anxiety-related language than do liberals. However, our results suggest that this language preference may manifest not only in the content of conservatives' sensemaking (i.e., their word use), but its structure. Specifically, we found that anxiety terms were more central to collective sensemaking for conservatives' than for other groups, and conservatives also connected anxiety terms to other concepts in unique ways. For example, several conservative participants reported worrying that other people were becoming overly anxious and afraid (i.e., *meta*-anxiety). Thus, examining the content and structure of conservatives' sensemaking offered different insights about the importance of anxiety-related language, which may be case for other types of language as well.

Strengths and Limitations

This study has both strengths and limitations to note. One important strength of the study is that insights were drawn primarily from open-ended responses, which offered a greater depth and richness of information than is generally available from closed-ended survey responses alone. Using a relatively large (N = 706) and ideologically diverse sample also builds on existing studies of sensemaking about COVID-19, which have mainly used autoethnography or case studies of small samples (e.g., Crayne & Medeiros, 2021; Stephens et al., 2020).

The choice of sample also offered both benefits and drawbacks. We chose to focus on college students for several substantive reasons that make their experiences unique, which revealed important insights about this group. For one, the finding that anxiety and relationship words were highly central to sensemaking among our participants may help contradict the stereotype of college-age students as unconcerned about the pandemic and its effects on others (see Ivory et al., 2020; Kesslen, 2020). Although these findings may be due in part to the fact that we asked students explicitly to share their worries, they still suggest that, across the political spectrum, many students were worried about the virus and the potential that their loved ones, especially those who were elderly or at greater risk for complications, would be infected. Concerns about how the virus would impact the economy, education, and mental health were also common across the ideological spectrum. Conversely, very few students answered that they were worried about nothing or that they thought the virus was a hoax.

Using a college student sample does mean, however, the results may not all apply to older adults. Some concerns that were especially salient for students (e.g., how the pandemic affected their education and college experience) were less relevant for older adults, and other challenges that older adults may have coped with (e.g., changes in childcare) were not faced by most college students. Also, because younger adults also tend to be less politically involved than older adults (Snell, 2010), it is possible that collective sensemaking was more similar across ideological groups in our sample than it would in the broader U.S. population. If so, intergroup conflict may be less intense and potentially easier to mitigate for this group.

However, that does not mean that the insights from this sample are not useful. For one, if we are unable to address partisan conflict among college students, during this critical formative stage, then we will certainly be unable to address partisan conflict among older (presumably more divided) populations. For another, addressing partisan conflict among younger adults has the potential to have lasting effects. If we can help bridge the ideological divide now, it may reduce conflict in the long term.

Finally, this study captured only a snapshot of collective sensemaking at a particular point in time. Sensemaking evolves as circumstances change, so the results reported here might differ from what they would have been if the study were conducted earlier or later in the course of the pandemic (e.g., see Markowitz, 2022, for an analysis of how language use evolved over time among WHO experts). However, as people continue to make sense of a new situation and reduce their uncertainty about it, they are likely to become more confident in their interpretation of what is going on and what they should do (Hogg, 2000; Weick, 1995), which suggests that the structure of their sensemaking becomes more crystalized (and thus less likely to change) over time. Thus, although some differences are to be expected, the overall structure would likely be similar. A more meaningful limitation may be that the prompt used to explore sensemaking focused on worries about the pandemic, which may have resulted in different responses than a more generic prompt or one related to issues that were particularly contentious, such as the appropriateness of the government response or of particular policies (e.g., see Haberman & Sanger, 2020). Using a variety of prompts to get at different aspects of disagreement about an issue would be useful in future studies of partisan sensemaking.

Conclusion

This study sought to examine how college students made sense of their worries about COVID-19, using similarities and differences in collective sensemaking between different ideological groups to gain insights about the roots of partisan conflict about this issue. The results demonstrate that there was substantial overlap in collective sensemaking across different ideological groups, but also some nuanced differences. These findings contradict popular opinion about the basis of partisan conflict about the pandemic, at least among young adults, and also suggest that traditional approaches to addressing intergroup conflict may not be successful in this context. Instead, drawing on novel approaches, such as narrative writing, may be better suited to developing common ground and promoting bipartisan action.

Notes

1. Other participants self-identified as Hispanic (n = 20, 2.8%), Asian (n = 54, 7.6%), Black or African American (n = 14, 2.0%), and multi-ethnic (n = 36, 5.1%). Some students also preferred not to answer (n = 15, 2.1%).
2. Weighted ties can provide richer information about the strength of connections between words, but can be problematic in semantic networks because they can disproportionately skew centrality estimates based on word frequency more than on the pattern of connections. This is especially so when a few word pairs (e.g., *worry COVID-19*) occur much more frequently than others due to the question of interest. This skewed frequency distribution introduces uncertainty about the source(s) of word centrality. Words may be central due to frequent co-occurrences with a few other words, co-occurrences with many other words, or both. Because we were most interested in comparing network structure between groups, we prioritized patterns of connections between words over frequency.
3. We compared the network density and most central words across waves for each political group. The network density, as well as in- and out-degree centrality of top words, did not change

substantially over time for any of the three political groups. Therefore, we combined the data across waves and created a sensemaking network for each political group. The combined networks enabled us to test hypotheses with a larger sample of words (or word pairs) and standardize the network measures for comparison across political groups. Tables S6 to S9 in the supplemental materials show the comparisons of network density and centrality across waves for each political group.

4. Because our question prompt included the words *worry* and *COVID-19*, we also estimated interdependence without those words. After removing them from the semantic networks, the ICCs for log-transformed indegree, outdegree, and betweenness centralities were .75 (95% CI [.68, .83]), .79 (95% CI [.73, .85]), and .73 (95% CI [.66, .81]), respectively. Thus, removing these words slightly decreased ICCs for outdegree and betweenness centrality, but not indegree centrality, and the ICCs of all three centrality measures remained high. This finding further justifies the use of MLM and indicates that the strong interdependence is unlikely to be due to the question priming.

5. The correlations between the log-transformed indegree, outdegree, and betweenness centrality range between .86 to .91. Strong correlations among the centrality measures are not unusual in network research (Valente et al., 2008).

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