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The Structure and Organization of Collective Memory Representations

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Abstract

Most collective memory research to date has focused on the temporal distribution of and generational differences in public event representations while not directly addressing the conceptual relationships between different event representations. This study investigates how individuals cluster representations of public events and how sociopolitical identity changes event clustering. Participants judged the similarity of different pairs of key public events and reported their voting behavior. Using multidimensional scaling (MDS), we identified that public events were distinguished based on their political and nonpolitical characteristics; political events were further clustered based on their specific attributes (e.g. power struggles or ethnicity issues). Voting behavior introduced variations into how people clustered political public events. Our findings suggest that collective memories that are formed in relation to a historical and sociopolitical background may be better understood within a network of relationships and at the level of specific cultures/groups rather than at a larger (e.g. national) level.

Keywords: collective memory, public event memory, multidimensional scaling, sociopolitical identity, representations, voting behavior

The Structure and Organization of Collective Memory Representations

People frequently retrieve information about public events while thinking and talking about national and political issues (Brown, 1990). What people remember about these public events rely both on their recollections of the events and also on the knowledge they have acquired from the media, and/or others' recollections (Páez et al., 2009; Páez and Liu, 2010; Zerubavel, 1997). Thus, memories for public events are beyond personal remembrances; they are shared between individuals, formed and maintained through social processes (Hirst and Coman, 2018). Some conceptualize collective memory as a form of memory represented in cultural symbols and practices, such as archival records or commemorations (e.g. Harris et al., 2008; Hirst and Manier, 2008; Olick and Robins, 1998; Wertsch and Roediger, 2008). The cognitive perspective on collective memories focuses primarily on the shared mental representations of public events in a community (Coman et al., 2009; Hirst and Manier, 2008; Moscovici, 1988; Paez et al., 2009; Paez and Liu, 2010; Wertsch, 2002). Research from this perspective has mostly examined which public events individuals remember, their distribution across time and generations and how social variables (e.g. national or social identity) affect public event memories (e.g. Griffin, 2004; Liu et al., 2012; Schuman and Scott, 1989; Schuman et al., 1998; Schuman et al., 2003; Schuman and Rodgers, 2004; Tekcan et al., 2017). Another related line of research has begun to examine the mechanisms of how individual memories are transformed into shared memories in the lab setting (for a review, see Hirst and Coman, 2018). One domain that has received relatively little attention is how mental representations of key public events are in relation to one another. We argue that it is critical that we understand the representational space underlying collective memory because it is this organizational network that helps individuals make sense of new and old public events, supports meaningful collective narratives and establish and sustain group identities. With this overarching goal in mind, in the present study, we explored how key public event

representations relate to one another. Given that sociopolitical identity is related to what people remember about national public events (e.g. Corning et al., 2013; Griffin, 2004; Liu and Hilton, 2005; Paez et al., 2009; Paez and Liu, 2010), we also explored whether political identity introduced variations to how public event representations are clustered. In that regard, our focus on Turkish collective memory allowed us to test the impact of sociopolitical divides on representational space.

Only a few studies to date have addressed the relationships between public event representations (e.g. Brown, 1990; Liu et al., 2012; Zaromb et al., 2014). Brown (1990) argued that political and non-political events may be organized in separate associative network structures. Based on data from verbal dating protocols, he showed that people estimated dates of political (e.g. the resignation of U.S. Secretary of State Cyrus Vance) and non-political (e.g. first test-tube baby born in England) events in reference to other political events and personal history, respectively. He suggested that these political public event representations may reflect a “public narrative” (Brown, 1990: 298) that was schematic in nature (Wertsch, 2002). In a similar vein, Zaromb et al. (2014) demonstrated that when asked about the most important events from one of the three wars in American History (the Civil War, World War II, and the Iraq War), responses typically converged on a few core events, each representing key turning points of the wars and were consistent with a broader national schematic narrative. Wertsch (2002, 2009) claimed that these schematic narratives of public events help nations maintain cohesive social identities.

Empirical findings have corroborated the suggestion that public event representations and social identity are inextricably linked (e.g. Hirst and Manier, 2008; Liu and Hilton, 2005; Liu et al., 2012; Paez and Liu, 2010). For example, Liu et al. (2012) asked participants from 30 countries to evaluate the similarity of a number of world events. The similarity data revealed a dimension showing considerable stability across countries and another dimension

revealing less consensus. The stability in the first dimension was driven by similar clustering of major calamities (e.g. Asian tsunami, the Holocaust) and events representing historical progress (e.g. Renaissance). Critically though, there were also country-level variations in the evaluation of many other historical events and figures reflecting unique collective identities. Similarly, national and ethnic groups differ in which public events they identify as most important (Corning et al., 2013; Griffin, 2004; Schuman et al., 1998; Schuman and Rodgers, 2004). For example, Corning et al. (2013) showed ethnic Russians living in Lithuania reported key national events, such as Lithuania's declaration of independence less frequently than Lithuanians, highlighting deviations from "national" collective memory. Similarly, the data from a nationally representative sample indicated that there was substantial agreement in what was identified as the most important public events in Turkey (i.e. the 1980 Military Coup, the Marmara Earthquake, 1999, with a total mention of 43.4%); however, voters of different parties also highlighted subsets of unique events as important (Boduroglu et al., 2017; Mutlutürk et al., 2018). This suggests a considerable variation in the most important public events identified based on voting behavior.

The Present Study

Collective memory representations that are formed through both direct and vicarious experiences of public events may reflect something more abstract than one's individual episodic representations; thus they may bear semantic qualities (Brown, 1990, 2016; Muller et al., 2015; Paez et al., 2009). Moreover, in many sources (e.g. news stories), information about public events are organized within "a semantic macrostructure" in which facts and opinions about a specific public event are presented in relation to a background, context, or previous events (Van Dijk, 1984: 21). To understand the organization of collective memory representations, in this study we followed a methodology that was previously used to identify the structure of semantic knowledge representations. Multidimensional scaling (MDS) is a

technique for analysis of similarity and dissimilarity data (Borg and Groenen, 2005; Jacoby and Armstrong, 2014; Shepard, 1980). It converts similarity ratings into distances between stimuli and provides a map permitting the visual inspection of the relationships between stimuli in a Euclidean space (Borg and Groenen, 2005). This technique is valuable because it uncovers hidden structures underlying mental representations (e.g. Caramazza et al., 1976; Hornberger et al., 2009; Hout et al., 2013; Liu et al., 2012; Papesh and Goldinger, 2010; Rips et al., 1973). For example, the proximity structures derived from MDS can provide insights into semantic memory organization (Caramazza et al., 1976), own- and other-race face processing (Papesh and Goldinger, 2010), or the associational meaning of events in world history across countries (Liu et al., 2012). Studies employing this technique have also indicated that representational structure explains how that information is retrieved (e.g. the order and timing of retrieval; Caramazza et al., 1976; Rubin and Olson, 1980).

In the present study, we investigated how young adults represent and cluster collective memories based on the comparison of similarities between a set of public events. We identified a set of 15 most frequently recalled public events from Turkish history based on the national data obtained in November-December 2013 (Tekcan et al., 2017). Participants rated the similarity of pairs drawn from this set and reported their voting preferences. We examined the representational space generated from both the entire sample's data and that from the two major political party voters. As reported by the Survey of Social-Political Trends in Turkey (Aydın et al., 2018), 52% of people who think that Turkey is polarized believed that this polarization is driven by a religious conservatives and secular divide. The ruling party (AKP) and the main opposition party (CHP) represent opposite ends of this political spectrum, respectively. AKP, a religiously conservative party, came to power after the 2002 elections and they have been in power ever since. AKP's coming to power resulted in some concerns in secular segments of Turkish society, arguing that the party harbors an Islamist agenda that

could harm Turkey's secular foundation (Dinçşahin, 2012). Because AKP and CHP have been the ruling party and the main opposition party in Turkish politics for the past 18 years (See Table S1) and are the main representatives of religious conservatives and secularists (Gürsoy, 2012), we focus solely on AKP and CHP voters.¹ In the most recent national election (November, 2015), AKP and CHP received 49.5% and 25.3% of votes, respectively and the remaining 25.2% of votes were shared among other 14 parties contesting the election.

While we rely on data collected from a Turkish sample, our primary goal here is not to depict merely Turkish collective memories. Rather, we use the MDS driven representational configurations to highlight how the organization of collective memory representations in any community can be understood. Although recent major public and political events in Turkish history (e.g. Gezi protests, 2016 Coup Attempt) have been covered extensively in international media, most readers would likely be unfamiliar with the Turkish sociopolitical context. Therefore, in the supplementary material, we briefly outline the sociopolitical context of Turkey to help readers navigate through the MDS solutions. We also briefly describe the 15 most frequently recalled public events in Turkey in the supplementary material in an order reflecting their general proximity revealed in the MDS solutions (Table S2).

The MDS solutions are data-driven and thus exploratory (Borg and Groenen, 2005; Jacoby and Armstrong, 2014). Nevertheless, we expect MDS to offer an overall structure that is consistent with prior findings on public event representations (e.g. Brown, 1990; Liu et al., 2012) and Turkey's particular sociopolitical structure. For example, based on Brown's (1990) finding of the political-nonpolitical public event distinction and Liu et al. (2012)'s finding of the clustering of events representing major calamities, we expected people to cluster nonpolitical events and distinguish them from other events that were dominated by political characteristics. We also expected the MDS results to reveal clusters that tap into the two major divides that have been discussed with regards to the Turkish sociopolitical landscape

(e.g. ethnicity issues and power struggles between secular and religiously oriented ideologies). Given the evidence that group identity may impact retrieval of public events (Boduroglu et al., 2017; Corning et al., 2013; Griffin, 2004; Liu et al., 2012; Schuman et al., 1998; 2003), we predict that voting behavior might impact the way groups might cluster particularly the political as opposed to nonpolitical events.

Method

Participants

One hundred forty seven Boğaziçi University undergraduates participated in the study in return for extra course credit. We excluded data from eight participants who had extensive missing data (more than 30 of 225 trials) and/or those who had judged the identical event pairs as either “very dissimilar” or “somewhat dissimilar”, leaving us with data from 139 participants (101 women²; $M_{\text{age}} = 20.26$, $SD = 1.51$). All participants were of voting age at the time of the most recent national election (November 2015) and 87% of them reported the political party they voted for at that election. The data were collected in May 2016. All participants provided informed consent and they were debriefed at the end of the session.

Materials and Procedure

We identified the 15 most frequently recalled events from the national data ($n = 1205$) collected between November and December 2013 (Tekcan et al., 2017). These high-frequency events comprised 68.7% of the responses of participants younger than 40 years in the 2013 data, suggesting that these events have been privately and publicly rehearsed and commemorated among the younger population (For the recall percentage of each event, see Table S2).

In the similarity judgment task, participants rated the similarity of two simultaneously presented public events. We generated public event pairs from all combinations of the 15 public events, resulting in a total of 225 pairs. Pairs of event names were displayed in black

letters on a white background. Each event name was a short noun phrase that consisted of two or three words taken into a black frame. Pair members were presented side by side on the screen. A blank box framed by a black border was located below the pairs. Participants' ratings appeared in this box on the screen (Figure 1). Each pair was presented twice, with the location of the events swapped on the screen in order to counterbalance the left-right locations of pair members. This allowed controlling whether the direction of comparison affected the similarity ratings, such as using a more prominent event in the pair as the referent to judge similarity between a more prominent and a less prominent event (For a detailed discussion of asymmetries and direction of comparison in the similarity data, see Tversky, 1977). We also paired each event with itself to control whether all participants used the scale as instructed.

Figure 1. A typical trial sequence in the procedure

Participants completed the task in individual cubicles in the laboratory. The task was programmed in E-Prime 2.0 (Psychology Tools, Inc.). The computer program randomized the trial sequences for each participant. All possible pairs of fifteen public events were presented on the screen one by one with an inter-trial interval (ITI) of 1000ms. Before the beginning of the actual trials, each participant received nine practice trials pairing three events not used in

the actual trials (See Table S2). Participants were instructed to judge the similarity of the two public events presented on the screen using a 9-point scale with 1 indicating “not at all similar” (high dissimilarity) and 9 indicating “absolutely similar” (high similarity) and to respond as quickly as possible. The event pairs remained on the screen until a response was given.

After the similarity judgment task, each participant completed a questionnaire consisting of questions about public events and demographic information. Here, we discuss only the relevant variables from this questionnaire in detail.

Results

Due to space limitations, we provide a detailed description of how MDS was performed and the specific selection criteria for particular MDS solutions in the supplementary material. Below, we first present the MDS solutions from the full sample, which we believe would be more representative of the national collective memory, then we present solutions based on each voter groups’ data.

The Collective Memory Representational Space

Table 1 presents possible MDS solutions and their corresponding Stress (S) and goodness-of-fit values. We chose an optimum fit taking into account the balance between goodness of fit and interpretability of dimensions, using well-established criteria of S values less than .10 and RSQ values less than 0.95 (as recommended by Borg and Groenen, 2005; Borgatti, 1997; Koch et al., 2016). Our inspection of the scree plot also revealed that increasing dimensions did not substantially improve the fit. Thus, the resultant solution was a 3D space for public events representations.

Table 1. Goodness of fit across 6 dimensions

Dimensions	S	RSQ
2	0.134	0.947
3	0.083	0.971
4	0.079	0.963
5	0.058	0.968
6	0.048	0.973

Figure 2 shows the plot of the three-dimensional collective memory representational space. We rotated the axes on the space using the XLSTAT-3DPlot software and presented the figure from two different viewpoints to make all clusters optimally visible. We interpreted dimensions focusing on the events clustered at the poles of each axis. We also looked at the disparities (d) between events to help process the visualizations. All disparities between the events are presented in Table S3 and the values ranged between 0 and .74. As shown in Figure 2, the two earthquakes (Marmara and Van) almost completely overlapped on the left side of the first dimension ($d = .73$). As seen more clearly in the aerial view of Figure 2, a majority of the remaining events, which were dominated by political characteristics, were located on the opposite side of this dimension. Thus, we labeled this dimension the *political and non-political events dimension*. Interestingly, the Syrian civil war was closer to the earthquakes ($ds = 2.22$) compared to some political events (e.g. the Gezi protests, with $ds = 4.27$ and 4.28). Our participants did likely consider the Syrian civil war both for its political significance, and for the humanitarian plight of the Syrian people. At the time of data collection, there were 2.7 million registered Syrian refugees in Turkey (UNHCR, June 2016). There were numerous incidents where refugees drowned off Turkey's Aegean coast in an attempt to reach European countries (Smith, 2015). Because of the relatively close clustering of the Syrian Civil War along with major earthquakes also associated with humanitarian crises, we chose not to label

this dimension as merely natural disasters; instead our label reflected how these three events differed from the remaining highly political events.

Along the second dimension, as is more clearly visible in the aerial view of Figure 2, three key events related to the ethnicity (Kurdish-Turkish) issues in Turkey (i.e. the PKK terror, the Kurdish-Turkish peace process, and the arrest of A. Öcalan, PKK's leader) were clustered together on the left end ($d_{\text{range}} = .73 - .80$). The remaining political events fell on the opposite side of this dimension. Considering the common characteristics of the events ordered on the the second dimension from left to the right, we labeled this dimension *ethnicity issues*, a label which we believe captures the intricate relationships between the two groups. The Syrian civil war, though not within the cluster of events linked to the Kurdish issue, was nevertheless close to it ($d_{\text{range}} = 1.12 - 2.22$). This may be the case because the Syrian civil war has further sparked ethnicity issues in Turkey (Parlar Dal, 2017).

The events that were located along the third dimension were relatively dispersed. Two events (i.e. the AKP's coming to power and the Gezi protests) that can be seen as reflections of the struggle between the religiously conservative government and the secularist, non-conservative groups (e.g. Dinçşahin, 2012; Erdogan and Uyan-Semerci, 2017; Konda, June 5, 2014) were the closest neighbors on the upper end of this dimension ($d = .80$). On the lower end of this dimension, there were a cluster of events that reflected a struggle between the elected governments and the military (i.e. the coup-related events: the February 28 coup, the September 12, and the May 27 military coups, the Ergenekon trials, the execution of A. Menderes).³ Thus, taking all of this into account, we labeled this dimension *power struggles*.

Along with similarity ratings, we collected response time data for the ratings. However, we believe that the response time data should be interpreted with caution for two reasons. First, in this task, we did not train participants to highlight the importance of speed. Second, response times may have been affected by reading times associated with the length of event

names, leading to the possibility that the response time we obtained is likely a combination of reading time and motor response execution durations. Because we were more interested in the structure that could be extracted from the ratings themselves, we did not design our task to test any a priori predictions about reaction time and representational structure of collective memory events. Thus, we provide these data in the supplementary material and we suggest that the data need to be interpreted with caution.

Figure 2. Three-dimensional MDS configuration for public events derived from the full sample.

The MDS space across voter groups

In order to assess whether political identity has any bearing on collective memory representations, we separately analyzed the data of supporters of the ruling party (AKP) that is more religiously oriented and the main opposition party (CHP) that is more secularist. Our undergraduate sample had a larger group of the CHP supporters than AKP supporters, but the sample size in our smaller group ($n = 25$) was sufficient to yield a reliable solution. Previous research has demonstrated that MDS provides reliable solutions with sample sizes of 10 (Krumhansl, 1979) and even 5 (Hollins et al., 2000).

Table 2. Sample Size and Goodness of Fit for Each Political Party

Party	<i>N</i>	Dimensions	<i>S</i>	RSQ
AKP	25	3D	.084	.97
		4D	.074	.96
CHP	68	3D	.112	.94
		4D	.084	.95

We found that AKP supporters clustered public events based on three dimensions, while supporters of the main opposition party clustered the events based on four dimensions (Table 2). The configuration of the events in the AKP group is shown in Figure 3. The four-dimensional structure that emerged from the data of opposition party voters are shown in two 2-dimensional planes in Figure 4.

The solutions revealed both similarities and differences in the organization of collective memories across individuals voting for different parties. In all groups, the Marmara and Van earthquakes were clustered together on one end of the first dimension and the remaining events fell in the opposite end (See Figure 3 and Figure 4A). This suggested that the political and nonpolitical distinction was a key dimension for both groups. A second point of

agreement was regarding the ethnicity dimension. Voters of different parties clustered events representing the Kurdish issue (i.e. the PKK, the Kurdish-Turkish peace process, the arrest of A. Öcalan). Finally, the Syrian civil war was located between the nonpolitical and ethnicity-related events in both groups, suggesting that this event was evaluated by considering its humanitarian impact and its impact on the Kurdish issue in Turkey. Thus, it was placed at the intersection of these two key dimensions in all groups.

We also observed differences across representations of voters of different parties. Critically, in the data from CHP voters, a separate 4th dimension emerged (see Figure 4). This dimension captured events that had a major impact on this particular in-group's identity, thus was labelled as such. In particular, we argue that for CHP voters, AKP coming to power, Gezi protests and the Madimak attack may all related to perceived threats to their social identities, resulting in a unique dimension. The second remarkable difference we observed across voter groups was in how the events were clustered in the third dimension, reflecting power struggles. The Gezi protests and AKP's coming to power were consistently clustered together across parties. Critically though, other events that were the nearest neighbors to these events differed across the voter groups, with ideology-compatible events clustering with these two key events. In the AKP voters' data, the Gezi protests and AKP's coming to power were neighbor to events related to the number of military coups and operations typically against Islamists in the Turkish history (i.e. the February 28 coup; also called post-modern coup, the execution of A. Menderes, and Ergenekon trials) while in the CHP voters' data, these two events were neighboring events related to struggle between groups having different ideologies (i.e. the Madimak attack and Syrian civil war).

Differences between the AKP and CHP groups' representational spaces were consistent with the differences in ratings of generational importance and valence for these events between the two groups (for the details of analyses, see Table S4 and Table S5). The AKP

voters rated the execution of Menderes and the February 28 coup as well as the Gezi protests as more important for their generation (all $F_s > 4.14$, all $p_s < 0.05$) and more negative than the CHP voters (all $F_s > 12.21$, all $p_s < 0.001$). They rated AKP's coming to power and Ergenekon trials as more positive than the CHP voters (all $F_s > 13.03$, all $p_s < .001$).⁴ These data support the idea that people with different sociopolitical views within a nation may have different evaluative criteria to link public events to each other. Furthermore, the emergence of group-specific dimensions may be an indicator of the non-national collective memory. Overall, these data may indicate an association between the collective memory organization and political polarization in the society (e.g. Erdogan, 2016; Gürsoy, 2012; Kalaycıoğlu, 2012; Keyman, 2007). It seems that the third and fourth dimensions mirror the major ideological differences across voter groups in terms of how the recent past is represented.

Figure 3. The AKP supporters' three-dimensional MDS configuration for public events

Figure 4. Four-dimensional MDS configuration for supporters of the main opposition party. (Figure 4A shows Dimension 1 and 2. Figure 4B shows Dimension 3 and 4). The events that are ambiguously placed at the intersections of dimensions and misleadingly seem neighboring with other events are shown by light gray markers

Discussion

In this study, using MDS, we revealed the dimensions and clusters underlying collective memory representations and the variations in these representational structures across members of different sociopolitical identities. To our knowledge, this is the first study to empirically address organization of public event memories within a nation. The MDS approach allowed us to investigate public event representations in an interconnected manner, rather than as discrete representations of public events. In this regard, we argue that MDS is a promising tool to deal with the complex, fragmented representations of public events that are highly linked to one's identity and are formed based on one's perspective of a particular historical and sociopolitical context (Liu et al., 2012).

We found that the main dimension by which public events were clustered was the political-nonpolitical distinction, with further clusters amongst the political events reflecting particular sociopolitical divides, in this case particular to Turkey. While the MDS solutions revealed considerable overlap among voters of the two main parties with three dimensions emerging in both groups (i.e. political vs. nonpolitical events, ethnicity issues, and power struggles), unique dimensions also emerged from data belonging to voters of these two parties. There was also different clustering of events within a particular dimension for different voter groups, which we believe reflected different sociopolitical views and a selective focus on certain aspects of the same events. These findings are consistent with the idea that the collective memory representations are linked to sociopolitical identity and indicate that collective memory, as suggested by many researchers, may best be understood at the level of specific cultures/groups (e.g. ethnic or sociopolitical groups) rather than at a larger (e.g. national) level (e.g. Hirst and Coman, 2018; Muller et al., 2016). While our results are derived from a Turkish sample, the variations in the public event representational space, with unique dimensions and clusters emerging only for opposition party voters, may similarly

hold true in many countries with distinct ethnic or political groups. Future research is necessary to further test this possibility.

One key finding from this study is that people clearly distinguished the nonpolitical events (e.g. earthquakes) from the political ones (e.g. the military coups). This is in line with Brown (1990), who suggested that a distinction between political and nonpolitical events is a fundamental dimension by which people categorize public events. While our data does not reveal why such a distinction emerges, it is possible that emotionally intense, nonpolitical events are more likely to be stored with readily available information about personal context. However, political events are more likely to be embedded in a social, political, historical context with several causal and temporal links to other events and concepts (Brown, 1990; Brown and Lee, 2010; Van Dijk, 1984).

Another major finding from this study is that voting behavior impacts how some public events are clustered in the representational space. In the Turkish context, political events are differentiated into dimensions related to ethnicity issues or power struggles and most variation in public event clusters based on voting behavior occurred under these dimensions. Group differences in these dimensions (as depicted in Figure 4) are consistent with a number of previous theoretical and empirical studies that point out the social and political polarization in Turkey (e.g. Erdogan, 2016; Gürsoy, 2012; Kalaycıoğlu, 2012; Keyman, 2007). For example, in the MDS space, both AKP and CHP voters considered AKP rule to be closely related to the Gezi protests. However, these two events were associated with different sets of events by AKP and CHP voters. These types of dissociations in representational clusters among voter groups highlight that the same events (e.g. AKP rule and the Gezi protests) may be linked to one another for different reasons. The differences between the AKP and CHP voters' ratings of generational importance and valence for AKP rule and the Gezi protests support this idea. These findings are consistent with the conclusion that even if there is an agreement about the

centrality of an event across communities (i.e. nations), each community may represent its meaning in a different way (Liu et al., 2005). Different retrieval patterns of public events across groups in Lithuania (Corning et al., 2013) and the US (Griffin, 2004) may also be reflections of such within-nation variations.

It is possible that communicative acts of remembering, such as conversations, media coverage, or rituals can promote these community-specific public event representations (Hirst and Coman, 2018; Paez et al., 2009). Studies have shown that selective retrieval of some memories and retrieval induced forgetting of others in communicative context may lead to mnemonic convergence specific to members of one community and not necessarily others (e.g. Coman et al., 2009; Coman and Hirst, 2011; 2015; Cuc et al., 2007; Hirst and Coman, 2018). The same mechanism may be possible for the community-specific collective memory structures. Selective retrieval of some particular events in relation to one another in a community may strengthen the links between those events in that community.

Although there are no studies directly addressing whether the selective retrieval of information about public events influence the structure of collective memory representations, evidence has shown that media coverage (e.g. Hirst et al., 2009; Marsh and Rajaram, 2019; Wang, 2019) as well as communication acts in dyads or larger social networks (Coman et al., 2009; 2014; Coman and Hirst, 2012; Harris et al., 2010; Stone et al., 2019) may influence how people perceive and remember public events. For example, Hirst et al. (2009) compared the media coverage of the Challenger explosion and the terrorist attack of 9/11 with the rate of forgetting the facts about these events, concluding that the media coverage predicted the rate of forgetting. It is also possible that individuals tend to choose the information or sources (e.g. news media) that is consistent with their personal interests and ideologies (e.g. Coman et al., 2014; Hirst and Meksin, 2009; Marsh and Rajaram, 2019; Posta et al., 2015; Stone et al., 2019; Wang and Aydın, 2009; Wang, 2019; Yardi and Boyd, 2010). This in-group bias can

also be observed in the selection of information to be remembered. The selective focus on information or information source that preserves group membership and group identity may lead how people link public events to each other. This in turn may expose individuals to public event clusters that may be more consistent with their prior and socio-politically biased opinions. Thus, it is likely that the voter-specific MDS solutions reflects the outcome of selective retrieval of information and preferences for “echo chambers”.

Our results also suggested that a public event may be related to a number of other events on the basis of its various attributes, such as the event’s political and nonpolitical characteristics. For example, the data indicate that people may have rated the similarity of the Syrian civil war to other events by focusing on both its political significance and its humanitarian consequences. This is consistent with the accounts of event memory organization which suggest that event memories can be organized simultaneously through cross-classification based on a number of attributes (Lancaster and Barsalou, 1997).

While we believe that the MDS approach is an apt tool to empirically study collective memory organization, the solutions MDS provides is necessarily limited by the number of event pairs participants rate. In this particular study, we used a total of 225 pairs of events, constructed from the most frequently recalled 15 public events in Turkey’s collective memory (Tekcan et al., 2017). Of these 15 events, only two were natural disasters. Had there been more nonpolitical events there may have been more variation in the representational space in terms of nonpolitical events; but the lack of variation may also be due to the highly political nature of collective memory (Paez et al., 2009). What is critical from our perspective is that this approach has the potential to demonstrate organization of mental representations regarding the most important public events that constitute collective memory of a nation and pick up on similarities and differences among groups.

In addition, we do not claim that the voter-specific representational spaces that emerged in this particular dataset reflect the collective memory organization of all voters of these two parties in Turkey. We used a convenience sample of university students, 73% of whom were women. Although this restriction helped us to match participants on demographical variables, such as age and education, it is possible that the results we obtained may not generalize to all party-voter groups across generations. Nevertheless, it should be noted that Turkey has a young population with a median age of 30 (Turkish Statistical Institute, Census, 2014) and a very high voter turn-around rate (Konda, 2016). Studies with nationally representative samples have shown that 77% of the young population (between the ages of 18-28) in Turkey reported always participating in national elections (Konda, 2016) despite frequent elections.⁵ Moreover, young citizens' political engagement is not different from the rest of the population in Turkey (Erdogan and Uyan-Semerici, 2017). Thus, young participants in the present study are likely to be no less politically engaged than older people.

It could still be argued that older adults' representational space for public events would reveal different dimensions and clusters. This argument could be based on suggestions there are generational differences in collective memory; however, the data on this issue is mixed at best (e.g. Koppel, 2013). Furthermore, in a recent work from our lab, we have reported little variation across age groups, with high convergence for the top two or three events across age groups (Boduroglu et al., 2017).⁶ Another related issue regarding the dimensions revealed may have to do with whether those who experience the public events directly as opposed to those who learned about them vicariously may represent and remember things distinctly (Koppel, 2013; Muller et al., 2015; Hirst and Manier, 2008; Schuman and Rodgers, 2004). Recent research has shown that individuals who experienced particular events are more likely to rely on personal recollections and include more causal statements in their memories for public events than those who did not personally experience those events (Muller et al., 2015).

Interestingly, in the present study even though the date of events ranged from 1960s to 2013, they were not clustered in a temporal fashion. Although none of our participants experienced the events that occurred before the 1990s and they all experienced the events that occurred after the 2000s, event clusters varied by sociopolitical identity only, reflecting current national sociopolitical debates. Taken together, collective memory representations may be above and beyond the mere temporal aspects of the events and/or personal experiences. It is likely that collective memories may be represented based on shared conceptual knowledge that is formed and maintained in a social and historical context. Nevertheless, more direct and extensive studies are necessary.

Finally, our data do not allow us to distinguish whether the structure and organization biasing individuals' similarity judgments is associative or schema-like. Schematic narrative templates (Wertsch, 2002; 2009) may underlie or may be emergent consequences of the relationships between the public event representations (for a similar approach, see Rogers and McClelland, 2004). Either way, the clusters we discovered may reflect abstract, schematized representations of the past in a particular sociopolitical group.

The present research is a first step in quantifying the collective memory representations across sociopolitical groups in a nation. Our findings suggest an overall convergence on the fundamental dimensions of the public event representations and these dimensions tap into the current sociopolitical issues in the country. However, there are some variations in the perception of events that reflect different sociopolitical views and a selective focus on different aspects of the same events within a nation. Our approach would allow collective memory researchers to transform complex data into visual representations that can be easily comprehended and generate further hypotheses. We expect that the findings on the organization of collective memories may provide insights into the "collectively shared knowledge" of a group that interacts with the group identity (e.g. Assmann, 1995, p. 130).

Future research that addresses this issue may provide further insight into the cognitive mechanisms underlying the formation and retrieval of collective memories.

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NOTES

¹ We also presented the data from supporters of other political parties in the supplementary material.

² There was not an impact of gender on similarity ratings, ($F(1, 449) = .70$, $MSE = 4.11$, $p = .40$). Therefore, we do not present further gender-based analyses.

³ The Cyprus Peace Operation did not form an obvious cluster with the other events as can be seen from its placement on the MDS space. Thus, we chose not to further interpret the meaning of the Cyprus Peace Operation and we left this event out of our discussion.

⁴ Generational importance and valence ratings for the events in other dimensions did not differ across the voting groups (all $ps > .05$) except for the arrest of A. Öcalan, PKK leader. Although both groups rated this event as relatively positive (i.e. above the median), the event's valence rating was higher in the AKP group than the CHP group ($p = .018$).

⁵ Between 2014 and 2019 Turkish people have voted nine times; in two presidential, three general, three local elections, and one presidential referendum. The turnout rate has not dropped below 74% in any of these (Gumuscu, 2019).

⁶ In the data obtained from an undergraduate sample in 2017, the September 12 military coup (14.3%), the AKP rule (8.9%), the Gezi protests (5.9%), and Marmara earthquake (5.5%) were among the top 5 events despite the occurrence of a major event (July 15, 2016 coup attempt) in Turkey.

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