THE STRUCTURE AND ORGANIZATION

OF

COLLECTIVE MEMORY REPRESENTATIONS

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DECLARATION OF ORIGINALITY

I, Aysu Mutlutürk, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;

- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;

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ABSTRACT

The Structure and Organization of Collective Memory Representations

This dissertation investigates the structure and organization of collective memories. In three studies, we specifically explored the semantic relationships between the public event representations. In the first study, participants were asked to rate the similarity of different pairs of 15 public events (Tekcan et al., 2017). They were also asked to report for which political party they had voted in the most recent election. In the second study, by employing the same methodology, we assessed whether the structure and organization of collective memory representations remained stable across three waves of data collection: May 2016, November 2016, and August 2017. Using Multidimensional Scaling (MDS), we consistently found that people represented public events by distinguishing the events' political and nonpolitical characteristics, and clustering the political events according to their specific attributes. Findings also suggest that voting behavior influenced how people perceived and interpreted public events while linking them to each other. Finally, despite a substantial stability in the organization of collective memories across three time points, there were changes in a particular group those of which members were closer to the governing political party. These findings suggest that collective memories may be associatively organized and that political identity may impact the organization of collective memories. In the third study, performance in identifying a public event was not facilitated when preceded by a related public event rather than an unrelated public event. We discussed this finding in relation to lessons learned from this experiment and suggestions for the future studies of collective memory.

ÖZET

Toplumsal Bellek Temsillerinin Yapısı ve Organizasyonu

Bu tez, toplumsal belleğin semantik yapısı ve organizasyonunu araştırmaktadır. Araştırma, toplumsal olay temsilleri arasındaki semantik (anlamsal) ilişkileri incelemeyi amaçlayan üç çalışmadan oluşmuştur. Birinci çalışmada, Türkiye'de en sık hatırlanan 15 olayın tüm ikili kombinasyonları oluşturulmuş ve katılımcılardan bu olay çiftleri için benzerlik değerlendirmeleri yapmaları istenmiştir. Katılımcılara ayrıca son genel seçimde hangi partiye oy verdikleri de sorulmuştur. İkinci çalışmada, Mayıs 2016, Kasım 2016 ve Ağustos 2017olmak üzere üç farklı zaman diliminde toplanan veriler karşılaştırmalı olarak incelenmiştir. Elde edilen veriler, Çok Boyutlu Ölçekleme (ÇBÖ) yöntemi ile analiz edilmiştir. Bulgular, bireylerin toplumsal olayları politik ve politik olmayan olaylar olarak sınıflandırdıklarını, politik olayları ise kendi aralarında özgül niteliklerine göre ayırt ederek kümelediklerini tutarlı bir biçimde göstermiştir. Ayrıca insanların toplumsal olayları birbirleriyle nasıl ilişkilendirdikleri oy verme davranışına göre farklılık göstermiştir. Son olarak, toplumsal belleğin organizasyonu zaman içinde önemli ölçüde sabit kalmakla beraber, bazı değişimler de göstermektedir. Bu değişimler, iktidar partisine oy verdiğini belirten katılımcıların verilerinde öne çıkmaktadır. Özetle, bu bulgular, toplumsal olayların bireylerin belleğinde ilişkisel biçimde organize edildiğini ve politik kimliğin bu organizasyonun yapısını etkilediğini göstermektedir. Üçüncü çalışmada, bir anlamsal hazırlama görevinde hazırlayıcı ve hedef toplumsal olayın birbiriyle ilişkili olduğu koşulda ilişkili olmadığı koşula kıyasla bir performans artışı olmadığı gözlemlenmiştir. Bu bulgular, toplumsal belleğe ilişkin ileriki çalışmalar ve bu çalışmalarda dikkat edilmesi gereken hususlar bağlamında tartışılmıştır.

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CHAPTER 1

INTRODUCTION

In everyday life, we frequently retrieve information about public events while thinking and talking about national and political issues. In many cases, what we remember about these public events rely on both our own recollections of the events and the knowledge we acquired from other sources, such as the media, and/or others' recollections (Zerubavel, 1997). Thus, memories for public events are beyond personal remembrances; they are shared between individuals, formed and maintained through social processes (Hirst & Manier, 2008). A general term used to refer to this distributed form of memories is collective memory (Hirst & Manier, 2008; Wertsch, 2004).

Various disciplines such as sociology, history, anthropology, and psychology have studied collective memory, resulting in a wide variety of definitions for the concept. Both sociology and anthropology conceptualize collective memory as a form of memory represented in cultural symbols and practices, such as archival records or commemorations (e.g., Harris, Paterson, & Kemp, 2008; Hirst & Manier, 2008; Olick & Robins, 1998; Wertsch & Roediger, 2008). Psychology focuses primarily on the fact that collective memories are remembered by the individual (for a review, see Hirst & Manier, 2008). Thus, from a psychological perspective, collective memories can be considered as "shared individual memories" (Coman, Brown, Koppel, & Hirst, 2009, p. 129). Psychological research in collective memory has commonly addressed the following issues: (1) what individuals retrieve about public events constituting collective memories (e.g., Schuman, Akiyama, Knauper, 1998; Schuman & Scott, 1989; Schuman & Rodgers, 2004; Zaromb, Butler,

Agarwal, & Roediger, 2014); (2) the lifespan retrieval patterns of collective memory (e.g., Schuman & Scott, 1989; Schuman & Rodgers, 2004; Tekcan, Boduroglu, Mutlutürk, Aktan-Erciyes, 2017); and (3) how individual memories are formed and maintained in conversational settings and transformed into a shared memory (e.g., Coman, Manier, & Hirst, 2009; Coman & Hirst, 2011; Congleton & Rajaram, 2011; Cuc, Ozuru, Manier, & Hirst, 2006; Cuc, Koppel, & Hirst, 2007; Rajaram & Pereira-Pasarin, 2007). This dissertation focuses on the organization of collective memories based on the relationships between a variety of public events.

Public events usually occur within an historical context and are often embedded in a network of other events connected to each other with causal or temporal links (Brown, 1990). Most of the time, people may encode information about these events in relation to other historical and contextual information or associate the event with other events based on similarity relationships (Brown, 1990; 2016). Moreover, in many sources such as news stories, information about public events are organized within "a semantic macrostructure" in which facts about a specific public event are presented in relation to a background, context, or previous events (Van Dijk, 1984, p. 21). For example, Lewandowsky et al. (2013) suggest that the Bush administration linked the 9/11 attacks and Iraq to characterize Iraq as the frontline in the "War on Terror" and this narrative was largely endorsed by the U.S. media. In line with this statement, Zaromb et al. (2014)'s data showed that when people were asked to outline specific events about the Iraq War, they most frequently recalled the 9/11 attacks, U.S. invasion of Iraq, and the capture and execution of Saddam Hussein. As Zaromb et al. (2014) stated, these three events may represent the beginning, middle, and endpoints of a narrative about the Iraq War. This may occur because people represented these specific events in relation to background,

context, or previous events (Brown, 1990). Given that repeated information coming from personal experience and other sources such as news stories, social media, or other people may become part of semantic knowledge over time (Bahrick, Hall, & Baker, 2013; Bahrick & Phelps, 1988), a complex network of public event memories may be formed. This idea has led us to investigate the organization of collective memories based on semantic similarities between public events. Thus, this dissertation investigated collective memory borrowing techniques primarily used in semantic memory studies.

We conducted three studies. In the first study, we investigated how individuals represent a set of public events and the semantic relationships between them. To this end, we employed an exploratory technique that has been widely used in the semantic memory literature: Multidimensional Scaling (MDS). MDS has been used to identify semantic knowledge organization for concepts based on semantic similarities. The technique converts the similarity ratings into distances and provides a visual map of the proximity patterns (Borg & Groenen, 2005). A number of studies have used MDS to examine memory organization (Caramazza, Hersh, & Torgerson, 1976; Cooke, Durso, & Schvaneveldt, 1986; Rips, Shoben, & Smith, 1973; Rubin & Olson, 1980), memory for musical tones (Krumhansl, 1979), or face processing (Papesh & Goldinger, 2010) as well as the time course of category judgments (Caramazza et al., 1976; Rips et al., 1973). MDS has also been employed in other fields of research, such as the assessment of evaluative criteria people use to organize their thinking and preferences about political parties and party leaders (e.g., Guntermann & Lavi, 2014; Jacoby, 1986). We adopted this technique to understand how people represent and cluster public events in collective memory. Given the evidence that group identity may impact retrieval of public events (e.g., Corning,

Gaidys, & Schuman, 2013; Griffin, 2004; Schuman et al., 1998; Schuman, Vinitzky-Seroussi, & Vinokur, 2003; Schuman, Schwartz, & d'Arcy, 2005), we also examined whether and how political identity has an impact on the relationships established between public events. Hence, we separately examined collective memory organization across groups of individuals who voted for different parties in the most recent election.

Previous research has also demonstrated that while some collective memories are resistant to change, others are impacted by contextual variables and consequently change (e.g., Corning et al., 2013; Schwartz, 1991; Schuman et al., 2005). While public event representations may be open to contextual moderation, it is possible that the broader structure of collective memory organization is more robust. In the second study, we investigated whether the organization of collective memories remains stable over time. For this purpose, we examined how people represented and clustered public events at three time points: May 2016, November 2016, and August 2017. During this period, a major event took place in Turkey. On July 15, 2016, the country underwent a military coup attempt. Thus, we compared the collective memory representational space determined based on the data collected prior to (approximately two and a half months) the occurrence of the July 15 coup attempt with that of representational space determined by data collected approximately four months and then one year after it. We also thought that group identity might be an important factor affecting whether the structure of collective memories remains stable over time. In some cases, people preserve their collective memories to maintain group identity, but in others, collective memories may be reconstructed based on the current needs and goals of the group (e.g., Assmann, 1995; Hirst & Manier, 2008; Schwartz, 1991; Werscth, 2004; 2008). These proposals are in line

with the evidence that the stability of collective memories may be tied to group characteristics, such as political stance (e.g., Schuman et al., 2005), or ethnicity (e.g., Corning et al., 2013). Based on this theoretical and empirical work, we also explored whether political identity has an impact on the stability of collective memory organization.

In the third study, we wanted to understand whether and how the organization of collective memories influences the retrieval of collective memories. The MDS space has been considered a global representation of the semantic network of knowledge (Cooke et al., 1986; McClelland & Rogers, 2003). Given the idea that when one concept is activated in the network and that this activation spreads to other related concepts (e.g., Anderson, 1983; Collins & Loftus, 1975), we specifically questioned whether the activation of a particular public event representation would facilitate retrieval of neighboring public events in the representational space. Thus, we examined the potential role of collective memory organization in the retrieval of collective memories.

CHAPTER 2

THE ORGANIZATION OF COLLECTIVE MEMORIES

A growing body of research has been investigating the formation and retrieval of collective memories. To date, this research has explored what public events individuals retrieve and how demographic (e.g., age) and social variables (e.g., national or political identity) affect which public events are remembered (e.g., Griffin, 2004; Schuman et al., 1998; Schuman et al., 2003; Schuman & Scott, 1989; Schuman & Rodgers, 2004; Tekcan et al., 2017). Another line of research has examined the psychological mechanisms of how individual memories are transformed into shared memories in the lab setting. These studies contribute to our understanding of the impact of conversational effects on the formation and maintenance of collective memories (e.g., Coman et al., 2009; Coman & Hirst, 2011; Congleton & Rajaram, 2011; Cuc et al., 2006; Cuc et al., 2007; Rajaram & Pereira-Pasarin, 2007). One domain that has not yet been directly investigated is the structure and organization of collective memory representations. In the present study, we focused on this issue and investigated the structure and organization of collective memories. To this end, we explored how individuals represent and cluster collective memories. We also assessed whether political identity is related to how public events are clustered.

Given that people acquire facts about public events through repeated exposure to information from various sources that become part of semantic knowledge (Bahrick & Phelps, 1988; Bahrick et al., 2013; Brown, 1990; 2016), we followed a methodology that was previously used to identify the structure of semantic knowledge representations. We employed multidimensional scaling (MDS) to

investigate the structure and organization of collective memory representations. MDS is a technique for the analysis of similarity and dissimilarity data (Borg & Groenen, 2005; Jacoby & Armstrong, 2014; Kruskal & Wish, 1978; Nosofsky, 1992; Shepard, 1980) and it converts similarity ratings into distances between stimuli and visualizes relationships between them in a space (Borg & Groenen, 2005). A large body of work has demonstrated that MDS can uncover the hidden structures underlying mental representations (e.g., Caramazza et al., 1976; Cooke et al., 1986; Papesh & Goldinger, 2010; Rips et al., 1973; Rubin & Olson, 1980).

2.1 Retrieval of collective memories

A number of studies have shown that people organize information by systematically clustering it based on strategies that enhance memory of information across time (e.g., Bousfield, 1953; Congleton & Rajaram, 2014; Miller, 1956). The studies employing the MDS technique have also indicated that the structure and organization of information may play an important role in the retrieval patterns of that information (e.g., the order and timing of retrieval; Caramazza et al., 1976; Rubin & Olson, 1980). Thus, it is important to study the structure and organization of collective memories not only in terms of understanding hidden structures underlying collective memory representations but also for understanding the retrieval patterns of collective memories.

There has been substantial work that investigates important public events in a group's (e.g., a nation) collective memory and the lifespan retrieval patterns of these memories (e.g., Schuman & Scott, 1989; Schuman et al., 1998; 2003; Schuman & Rodgers, 2004; Schuman & Corning, 2012; Tekcan et al., 2017). For example, Schuman and colleagues (1989; 2004) asked a nationally representative sample in the

U.S. to recall the most important public events that had occurred within the last 50 years. They demonstrated that the majority consistently recalled public events, such as WWII, Vietnam War, or JFK assassination as the most important ones in U.S. history. They also found that people were more likely to mention public events that had occurred in their early adulthood, indicating a cohort effect. Research has also investigated what people retrieve when they are asked to outline important events about a broader, overarching event in the nation's history (e.g., Wertsch, 2002; Zaromb et al., 2014). Zaromb et al. (2014) demonstrated that people commonly remember a set of core events about overarching events in U.S. history. For example, in the case of the Iraq War, people recalled the September 11 attack, the US invasion of Iraq, and capture and execution of Saddam Hussein. Zaromb et al. (2014) postulated that the set of core events commonly recalled in relation to a broader event (e.g., the Iraq War) may reflect a schematic narrative for that event. It is possible that schematic narratives may represent the narrative organization of collective memories in which related events are clustered to form a "public narrative" about a broader event (Brown, 1990).

To our knowledge, only a few studies have addressed the organization of public event memories. Brown (1990) investigated the organization of public event memories in relation to other public events or personal information. In a verbal protocol study, he asked participants to think aloud while they estimated dates of public events. He hypothesized that when people reconstruct dates for a public event, they would also retrieve facts about other contextually linked public events or personal experiences. For example, when an individual attempted to estimate the date of "the Secretary of State Cyrus Vance resigns", s/he might retrieve that this happened during President Carter's administration (public event reference), or it was

just before moving to another city in May 1980 (personal information reference).

Brown (1990) showed that while people estimated the dates of political events in reference to other political events, they estimated the nonpolitical events (e.g., first test-tube baby born in England) in reference to personal information. Brown (1990) also asked participants to decide whether a political or non-political event occurred before or after a personal period (i.e., high school year versus college years) or public period (i.e., the Carter's presidency versus Reagan's presidency). People decided faster when they saw a political event in conjunction with a public period compared to when they saw this event in conjunction with a personal period. These findings suggest that public events may be organized in an associative network structure and there may be a distinction between political and non-political events in this network (Brown, 1990).

Recent psychological work has also emphasized the connection between collective memories and group identity (e.g., Hirst & Manier, 2008; Liu & Hilton, 2005; Paez & Liu, 2001). This emphasis is important for the current study because it is likely that identity is related to the organization of collective memory representations as well. Previous evidence has shown that the retrieval patterns of collective memories differed across groups (e.g., Griffin, 2004; Schuman et al., 1998; 2003). For example, Schuman and Scott (1989) did not find a reminiscence bump for retrieval of the Civil Rights movement in the entire sample of whites. Griffin (2004) hypothesized that southerners experienced impacts of the Civil Rights movement more intensely than non-southerners. Using both Schuman and Scott's original data and the 1993 General Social Survey (GSS), Griffin (2004) supported this hypothesis: southern whites, compared to non-southern whites, exhibited a bump for the retrieval of the Civil Rights movement. Moreover, people with different national identities

retrieved different events when they were asked to list one or two important national or world events. For example, while Americans, Japanese and Russians identified WWII as the most important public event in the world (Corning et al., 2013; Schuman & Rodgers, 2004; Schuman et al., 1998), Germans reported the German Reunification (Schuman et al., 1998) and Lithuanians reported the Lithuania's independence (Corning et al., 2013). These results suggest that group characteristics and identity may have an impact on the retrieval pattern of collective memories.

2.2 The present study

In the present study, we investigated how individuals represent and cluster collective memories based on the comparison of similarities between a set of public events that occurred in the recent history of Turkey. We also explored whether political identity impacts the representations of public events. We asked participants to rate the similarity of pairs of public events. These events were identified from nation-wide data obtained November-December 2013 (Tekcan et al., 2017). The event pairs consisted of all possible combinations of these events. Along with similarity ratings, we recorded how long it took the participants to commit to a rating. We also asked participants which political party they voted for in the most recent election (November 2015). We examined the representational space generated from both the entire sample's data and that from each one of the four major political party voters.

The most critical events reported from Turkey's last 70 years have been experienced and represented within a highly polarized sociopolitical context (e.g. Keyman, 2007). Below, we briefly outline the sociopolitical context of Turkey to help the reader in processing the MDS solutions.

Much recent work has pointed out that political polarization has been increasing at all levels of Turkish society (e.g., Erdogan, 2016; Gürsoy, 2012; Kalaycıoğlu, 2012; Keyman, 2007; Konda, November 2014; March 2016; May 2017). It has been suggested that there are two major divides in Turkey (e.g., Gürsoy, 2012; Keyman, 2007). The first is the conservative versus the secularist division. The ruling party (AKP) and the main opposition party (CHP) represent these opposite ends of the political spectrum, respectively (See Appendix A). The second major division reflects the polarization between Kurdish and Turkish nationalists. While Kurdish voters vote predominantly for HDP, Turkish nationalists traditionally vote for MHP, but both CHP and AKP have gained traction among nationalist groups (Gürsoy, 2012). A recent nationally-representative survey presenting a map of Turkey's social structure is consistent with the major divides and sociopolitical polarization suggested above (Konda, March 2016). The results demonstrate that ethnicity and religiousness are two key dimensions of Turkey's social structure. People who identified themselves as Turkish versus Kurdish were located at opposite ends of the first dimension. People who were high versus low in religiousness were located at opposite ends of the second dimension. Another nationally representative survey demonstrated the extent of social and political polarization in Turkey (Erdogan, 2016), who, for instance, reported that approximately 75% rejected the idea of doing business with someone who had voted for the "other" party and of their kids playing with kids whose parents had voted for the "other" party. These results suggest that political polarization has turned into social distance in society and individuals have evaluated social and political issues based on their favorite political party. Finally, it has also been shown that what people remember as the most

important event in Turkey's recent history differs according to voting behavior (Konda, May 2017).

Our approach did not specify in advance how people represent and cluster collective memories. However, previous data allowed us to make some predictions. For example, based on the Brown's finding of the political-nonpolitical public event distinction, it is possible to expect that people would distinguish the Marmara and Van earthquakes from other events that were dominated by political characteristics. Based on our review of the sociopolitical landscape of Turkey and empirical evidence for the social structure, we expected MDS to reveal clusters that tap into the two major divides in Turkey (e.g., ethnicity issues and power struggles between secular and conservative ideologies). We expected the response time data to complement the pattern we observed in the ratings. Specifically, we predicted events that were perceived as both very similar and very dissimilar would be rated more rapidly than other pairs. This expectation is in line with the findings from Caramazza et al. (1976). Thus, whenever a nonpolitical event (earthquakes, in our case) was paired with a political event, we expected these pairs to be judged as very dissimilar and judged faster. This is also in line with the political-nonpolitical event distinction proposed by Brown (1990).

2.3 Method

2.3.1 Participants

One hundred forty seven undergraduates from Boğaziçi University participated in the study in return for extra course credit. We excluded participants who had extensive missing data (more than 5% of all trials) and/or who had judged the identical event pairs with a rating referring to "very dissimilar" or "somewhat dissimilar" (more than

5 of 15 identical pair trials), as we assumed that they had misunderstood the instructions. Thus, we excluded data from eight participants, leaving us with data from 139 participants (101 women[1]; M_{age} = 20.26, SD = 1.51). All participants provided informed consent and they were debriefed at the end of the session. The data were collected in May 2016.

2.3.2 Materials and procedure

We identified the 15 most frequently recalled events by the national sample (n = 1205) in Tekcan et al. (2017). The recall percentage for the events ranged between 1% and 15%. These events are listed and briefly described in Appendix B.[2] To help the reader make sense of the global organization of collective memories in Turkey, we listed these events according to the clusters they were located within the MDS solution.

In this task, participants had to rate the similarity of two simultaneously presented public events. We generated public event pairs with 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' keypresses for ratings appeared in this box on the screen (Figure 1). Each pair was presented twice, with the location of the events

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[1] There was no impact of gender on ratings, ($F(1, 449)$ = .70, MSE = 4.11, p = .40). There was no a main effect of gender on the response time ($F(1, 111)$ = 1.54, MSE = 6953777, p = .22) nor a significant interaction effects of gender and the rating ($F(8, 111)$ = 1.00, MSE = 7885484, p = .43). Therefore, we do not present further gender-based analyses.
[2] The lifespan retrieval patterns of public events based on the participants 40 years or older in this sample are presented in Tekcan et al. (2017). The events we used in the current study were identified from the entire sample of participants in that survey.

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 would use the scale as we instructed.
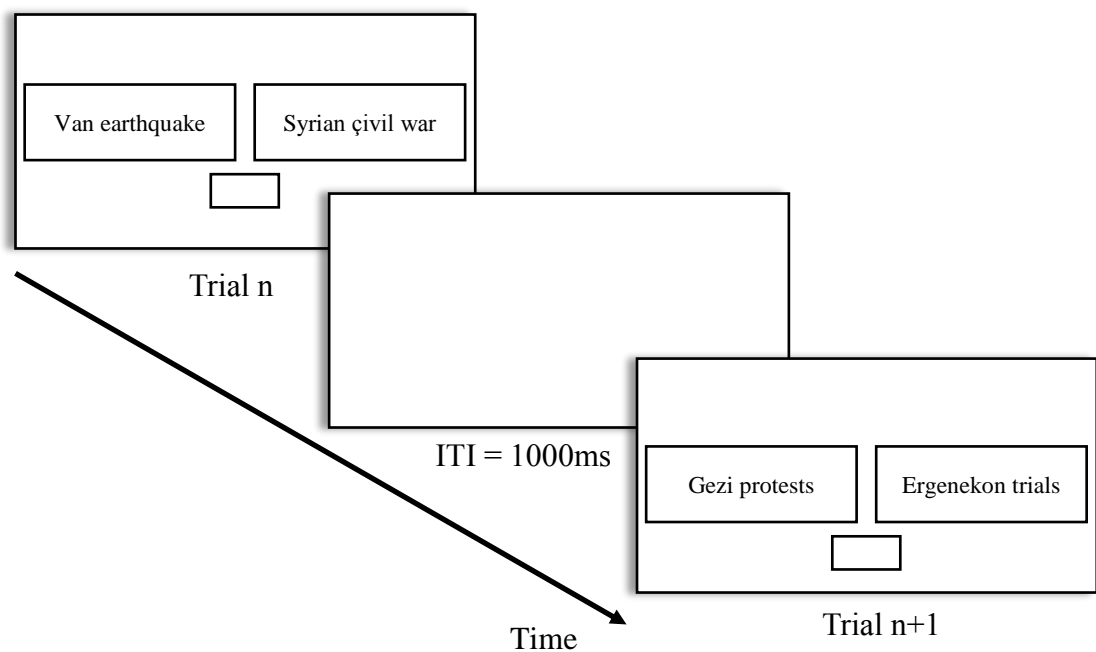
Fig. 1 A typical trial sequence in the procedure

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 with three events. These three practice events were not used in the actual trials. 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"

(high dissimilarity) and 9 indicating "absolutely" (high similarity). Participants were instructed to respond/rate 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. The list of questions is presented in Appendix C. Here, we discuss only the relevant variables in this questionnaire in detail. Descriptive data for the variables that are not discussed here are also presented in Appendix D.

2.4 Results

2.4.1 The MDS solution

Given the evidence that the direction of comparison may affect the similarity ratings (e.g., the less prominent event may be rated as more similar to the more prominent event than vice versa; Tversky, 1977), we first assessed whether the symmetry assumption was violated in the similarity ratings. We calculated the average ratings for each pair and examined the correlation between pairs whose members located in the left-right and the right-left direction. There was a strong positive correlation, $r(105) = .98$, $p < .001$. We also identified four pairs whose members were one of the two most frequently recalled and one of the two least frequently recalled events in the national sample as we assumed that they represented more prominent and less prominent events, respectively. Taking the direction of comparison (i.e., left-right versus right-left) as the within-subject factor, we compared the ratings for each pair. Similarity ratings were similar across different directions of comparison (all ts < 1.33, all ps > .18). These results suggest that the direction of comparison did not

affect the similarity ratings; the judged similarity of a less prominent event to a more prominent event did not exceed the judged similarity of a more prominent event to a less prominent event in our data.

MDS solutions are based on the representation of dissimilarities between stimuli through inter-point distances; greater dissimilarity between two stimuli is indicated by greater distance between two points, and vice versa. With the similarity data, however, greater values indicate stimuli that are more similar. Therefore, as recommended by Kruskal and Wish (1978), we first transformed similarity ratings to dissimilarity ratings. Thus, we reversed the rating scale so that higher numbers represented greater distance (e.g., very dissimilar events rated as 1 became 9). We then used these dissimilarity ratings as input to a nonmetric MDS procedure. A nonmetric MDS attempts to retain rank order of ratings as ordered by distance and fitted distances, which are called disparities. To assess a full matrix of 225 mean pairwise dissimilarities between public events, we used the ALSCAL procedure for nonmetric MDS included in the SPSS package.

There are different ways to assess goodness of fit and choose the optimal number of dimensions in MDS. Two goodness-of-fit indices are scaling stress (Stress or S) and r-squared correlation (RSQ). Stress indicates the degree of correspondence between distances in the MDS map and the input data. Because high Stress is a consequence of high error in the data, the rule of thumb is that the smaller the stress value, the better is the fit. It has been suggested that any stress value below .10 indicates an excellent fit (e.g., Borgatti, 1997; Koch, Imhoff, Dotsch, Unkelbach, & Alves, 2016). RSQ is the squared correlation coefficient between the distances and the data, showing the variance accounted for in the solution. RSQ should be preferably high for the goodness of fit.

Another method to determine the number of dimensions with the best fit is to examine the scree plot, which plots Stress values as a function of the number of dimensions. In the scree plot, the number of dimensions is determined based on "elbow" criterion. An elbow on the scree plot means that increasing the number of dimensions would have little further effect on the stress value. It has been widely suggested that in assessing goodness of fit and the number of dimensions, one should consider balancing goodness of fit and interpretability of dimensions. That is, the MDS solutions should be accepted if the dimensions identified by the MDS are be meaningfully interpreted (Borg & Groenen, 2005; Borgatti, 1997; Koch et al., 2016). There are two things in the interpretation of MDS dimensions: clusters and dimensions. Clusters are groups of items that are closer to each other, and dimensions are evaluative criteria that order the items along a continuum. In order to interpret a dimension, a simple strategy is to focus on extremes in each direction on the dimension. Then we can look at other stimuli to see if they fall along the dimension in an orderly way in line with our interpretation (Borg & Groenen, 2005; Borgatti, 1997).

2.4.2 The collective memory representational space

Considering the balance between goodness of fit and interpretability of dimensions, we looked for Stress < .10 and number of dimensions ≤ 4. Table 1 shows the *S* and RSQ values for the data varying from 2- to 6-dimensional solutions. As shown in Table 1, a three-dimensional MDS solution provides an excellent fit to our data. Our inspection of the scree plot also revealed an elbow corresponding to a 3D solution; 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 Six 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

We want to emphasize that we focused on the psychological aspects of the organization of collective memories and on uncovering the events that were clustered together. Therefore, we refrained from going into a deep sociopolitical analysis of each cluster. We interpreted obvious links between the events to be able to identify how people clustered them, and we left deeper analyses of these links to other fields of social sciences.

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. All disparities between the events (d) were presented in Appendix E. As shown in Figure 2, the two earthquakes (Marmara and Van) almost completely overlapped on the left side of the first dimension ($d = .73$). 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*. As seen more clearly in the aerial view of Figure 2, the Syrian civil war was located in the same quadrant as the Marmara and Van earthquakes ($d = 2.22$). However, unlike these earthquakes, the Syrian civil war's coordinates fell in between the non-political and political clusters, suggesting that the Syrian civil war

was possibly known both for its political significance for the region and the world, and for the humanitarian plight of the Syrian people.

Along the second dimension, as is more clearly visible in the aerial view of Figure 2, the PKK terror, the Kurdish-Turkish peace process, and the arrest of A. Öcalan were the events that were clustered together on the left end (d_{range} = .73 - .80). The salient features of these events were their relationship to the Kurdish issue in Turkey. The remaining political events fell on the opposite side of this dimension. This suggests that, on this dimension, events may be organized according to their relationship to ethnicity-related issues and conflicts in Turkey. Considering the common characteristics of the events ordered on the plane from left to the right, we labeled this dimension *ethnicity issues*. The Syrian civil war was also pulled toward this cluster (d_{range} = 1.12 - 2.22). The Syrian civil war may be linked to this cluster because the event has bolstered ethnicity issues in Turkey (Parlar Dal, 2017).

The events that were located along the third, horizontal dimension were relatively dispersed. The Gezi protests and the AKP's coming to power were the closest neighbors on the upper end of this dimension (d = .80). On the other extreme end of this dimension was located the Cyprus Peace Operation. The other political events that were ordered between these upper and lower ends were coup-related events (i.e., the February 28 coup, the September 12, and the May 27 military coups, the Ergenekon trials, the execution of A. Menderes). On the upper end, the Gezi protests[3] and the AKP's coming to power can be considered as reflections of the struggle between the conservative government and the non-conservative groups (e.g.,

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[3] Gezi protests were also close to the left end of the second dimension (i.e. ethnicity issues). It is possible that this event was considered as semantically associated with ethnicity issues to some degree because it has been suggested that protesters from minorities including Kurdish people took a substantial part in the Gezi protests (Kaya, 2015). It is possible that active participation of Kurdish groups in the protest strengthened the semantic links between the Gezi protests and ethnicity issues.

Atay, 2013; Dinçşahin, 2012; Erdogan & Uyan-Semerci, 2017; Konda, June 5,

2014). The events on the lower end may reflect a struggle between countries (e.g.,

Cyprus Peace Operation; Çelenk, 2007) or the government and the military (e.g., the

coup-related events; Bacik, 2011; Eligür, 2014; Narli, 1999; Sarigil, 2012). Thus, we

labeled this dimension *power struggles*. Additionally, the Madımak event was pulled

toward the Gezi protests and the AKP's coming to power ($d_{range} = 1.44 - 1.48$).

Given that the Madımak event was an incident, where a group of fundamentalists

protested a conference of secular intellectuals and set the conference hotel on fire,

killing more than 30 people, participants may also have evaluated this event in terms

of its links to the struggle between secularist and conservative ideologies (Öktem,

2008).

Taken together, these data suggest that people in Turkey evaluate the semantic

relationships between public events by distinguishing the events along two main

lines, political and non-political and further differentiating political events based on

whether they are related to ethnicity issues or power struggles.

Side View

Aerial View
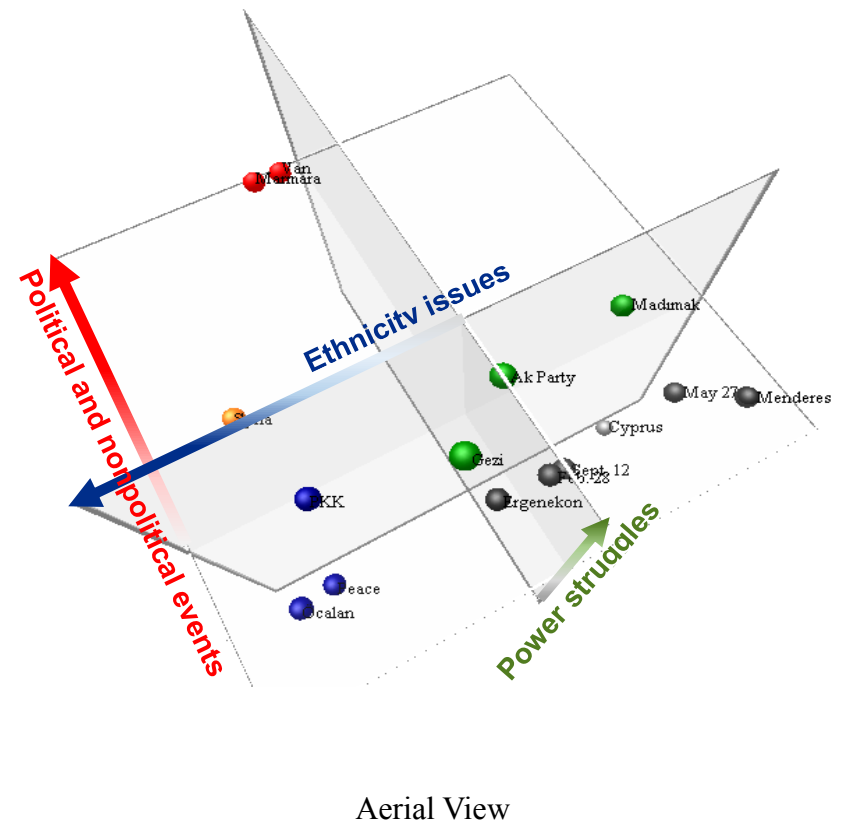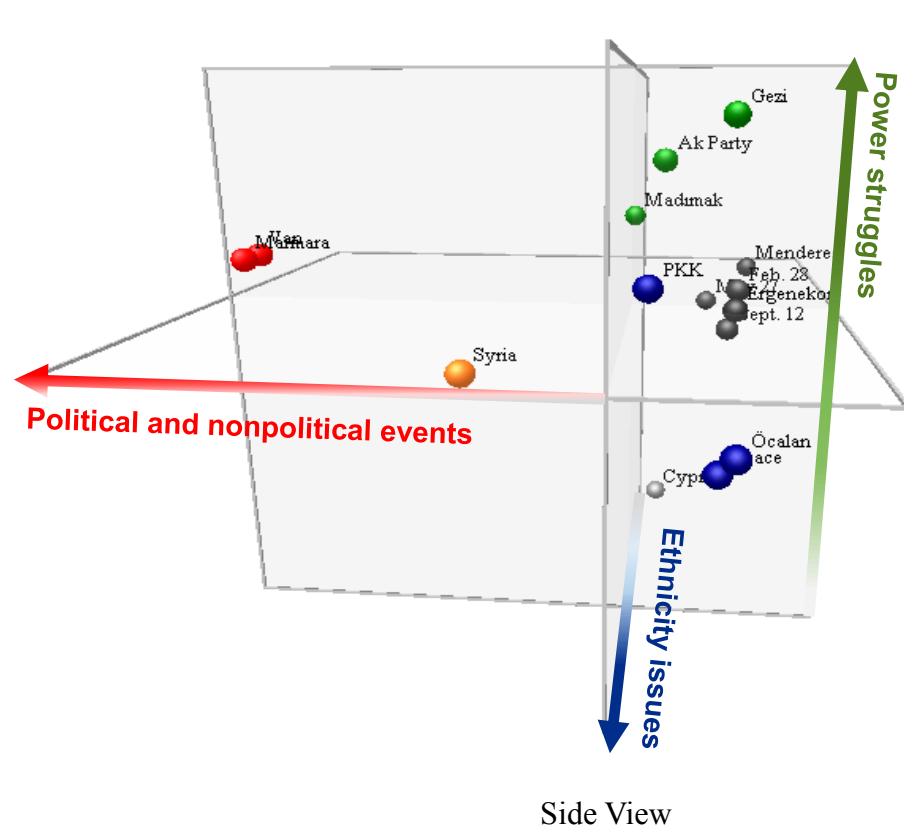
Fig. 2 Three-dimensional MDS configuration for public events

2.4.3 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 for supporters of the four major political parties (i.e., AKP, MHP, CHP, and HDP). While the sample was unevenly distributed across political parties (See Table 2), this is unlikely to be a problem for MDS. Previous research demonstrates that MDS provides reliable solutions even with sample sizes of five (Hollins, Bensmaia, Karlof, & Young, 2000) or 10 (Krumhansl, 1979). This allows us to compare the MDS representations across political identities.

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

Party	N	Dimensions	S	RSQ
AKP	25	3D	.084	.97
MHP	10	4D	.081	.95
CHP	68	4D	.084	.95
HDP	14	4D	.097	.93

We found that AKP supporters clustered public events based on three dimensions, while supporters of opposition parties 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 structures that emerged from the data of opposition party voters are shown in two 2-dimensional planes in Figure 4 and Figure 5. We observed both similarities and differences in the organization of collective memories across 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 4). This suggested that the political and nonpolitical event

dimension was preserved across the groups. The PKK, the Kurdish-Turkish peace

process, the arrest of A. Öcalan were clustered at one end of the second dimension in

all groups, showing that the events were ordered along with this dimension according

to their links to *ethnicity issues*. The Syrian civil war was located between the

nonpolitical and ethnicity-related events across all groups, suggesting that it was

evaluated both by its political and nonpolitical characteristics in all groups.

We also observed differences across parties. As previously emphasized, we

refrained from going into deep sociopolitical analysis of each cluster and labeled the

dimensions by focusing on some potential links between the events. The first

remarkable difference was observed in how the events clustered in the third

dimension, reflecting power struggles. The Gezi protests and AKP's coming to

power consistently clustered together across parties, suggesting that these two events

were in one way or another linked to each other by the voters of different political

parties. However, other events that were the nearest neighbors to these events

differed across the voter groups. For example, the Gezi protests and AKP's coming

to power were clustered together with the Madımak event in the CHP and the HDP

voters' data, while these were clustered with the Ergenekon trials in the MHP voters'

data. On the other hand, in the AKP group, the Gezi protests and AKP's coming to

power were neighboring the February 28 coup, the Ergenekon trials, and the

execution of A. Menderes. Additionally, in the HDP group, the Gezi protests were

pulled toward ethnicity-related events.

Another major difference was observed in the fourth dimension that appeared

only in the data obtained from supporters of opposition parties. Although it was

difficult to interpret the idiosyncratic fourth dimension in each of these groups, we

identified some potential explanations that require further research. For example, in the CHP group, the Syrian civil war, the Madımak event, and the Gezi protests were clustered at one end of the fourth dimension. MHP voters formed a cluster of events that included the Syrian civil war, the Madımak event, and the Cyprus Peace Operation. These events may have in common that they are violent conflicts. In the HDP group, the February 28 coup, the Ergenekon trials, the Kurdish-Turkish peace process, the Gezi protests, the September 12, and the May 27 military coups were clustered, revealing a complex network of semantic relationships. This additional cluster was dissociated from the PKK, Öcalan, and Syria, which were the events linked to ethnicity-based terrorism in Turkey (Parlar Dal, 2017; Roth & Sever, 2007). Thus, this separate cluster of events in which the Kurdish population was affected in one way or another may reflect the Kurdish issue, disconnecting this issue from terrorism (for a detailed discussion of the Kurdish issue in Turkey, see Yeğen, 2010).

These data may indicate an association between the collective memory organization and political polarization in the society (e.g., Erdogan, 2016; Konda, November 2014; March 2016; May 2017). It seems that the third and fourth dimensions mirror the major ideological differences across voter groups in terms of how the recent past is perceived. This may be the primary reason for the greater dispersion of events along the third dimension in the overall data. Taken together, these results indicated that people voting for different political parties employed different evaluative criteria to link public events to each other.
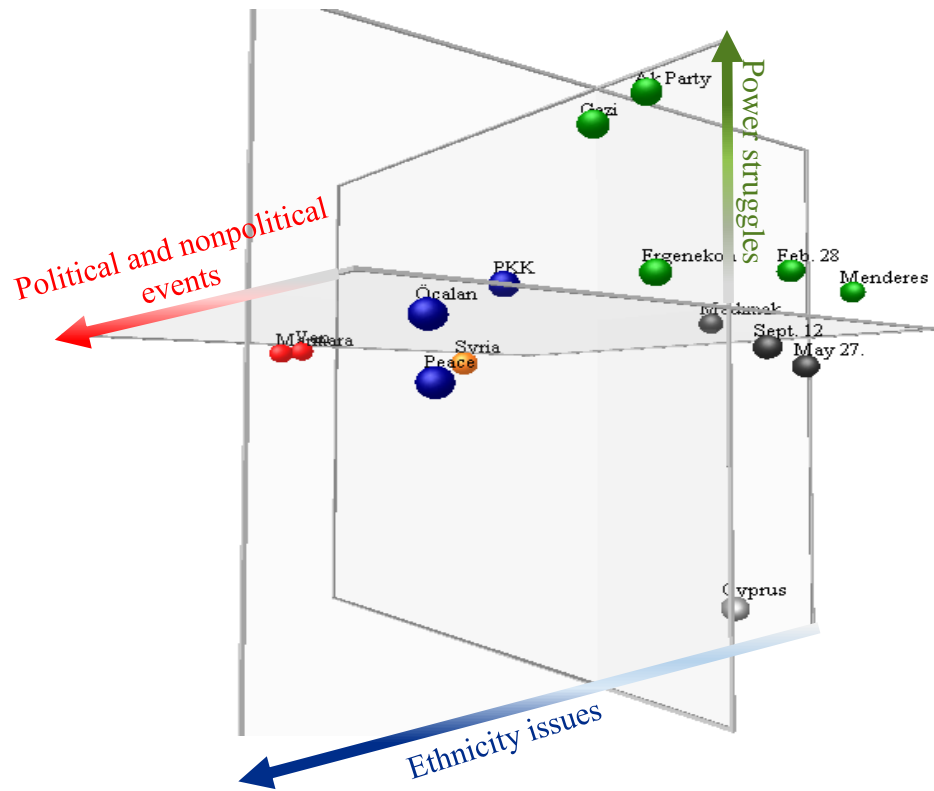
Fig. 3 The AKP supporters' three-dimensional MDS configuration for public events
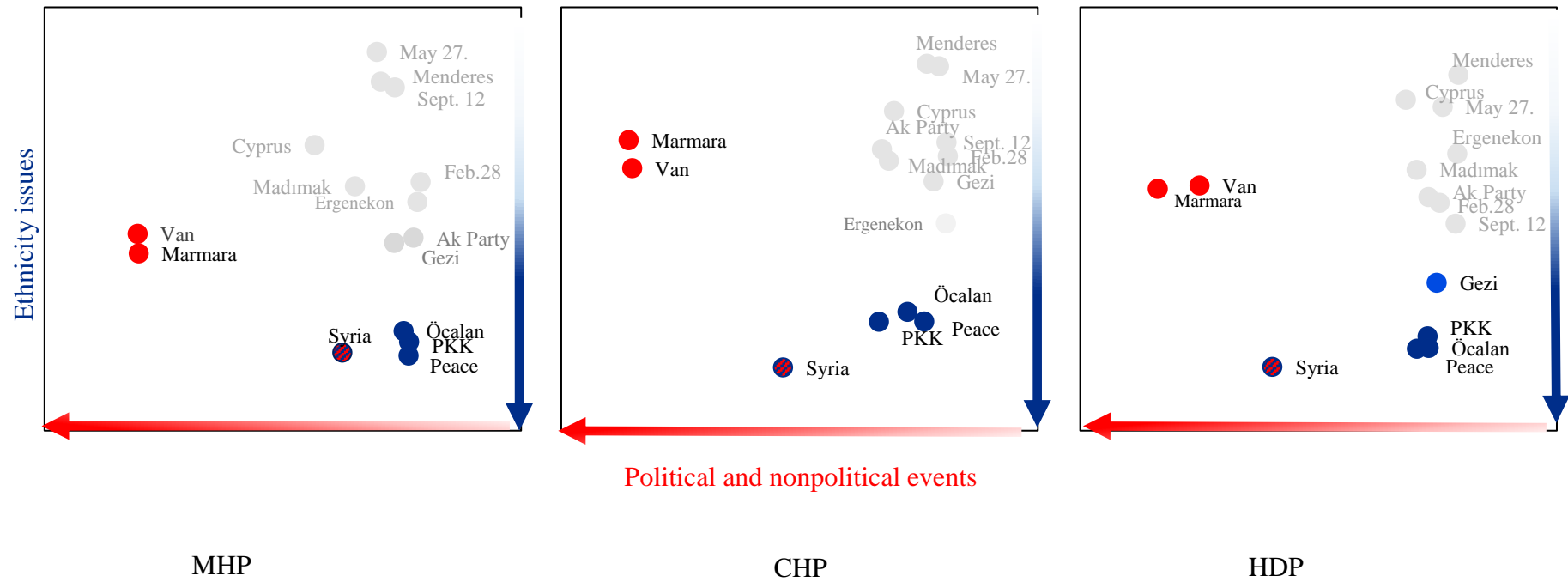
Fig. 4 Four-dimensional MDS configuration for supporters of opposition parties (Dimension 1 and Dimension 2)
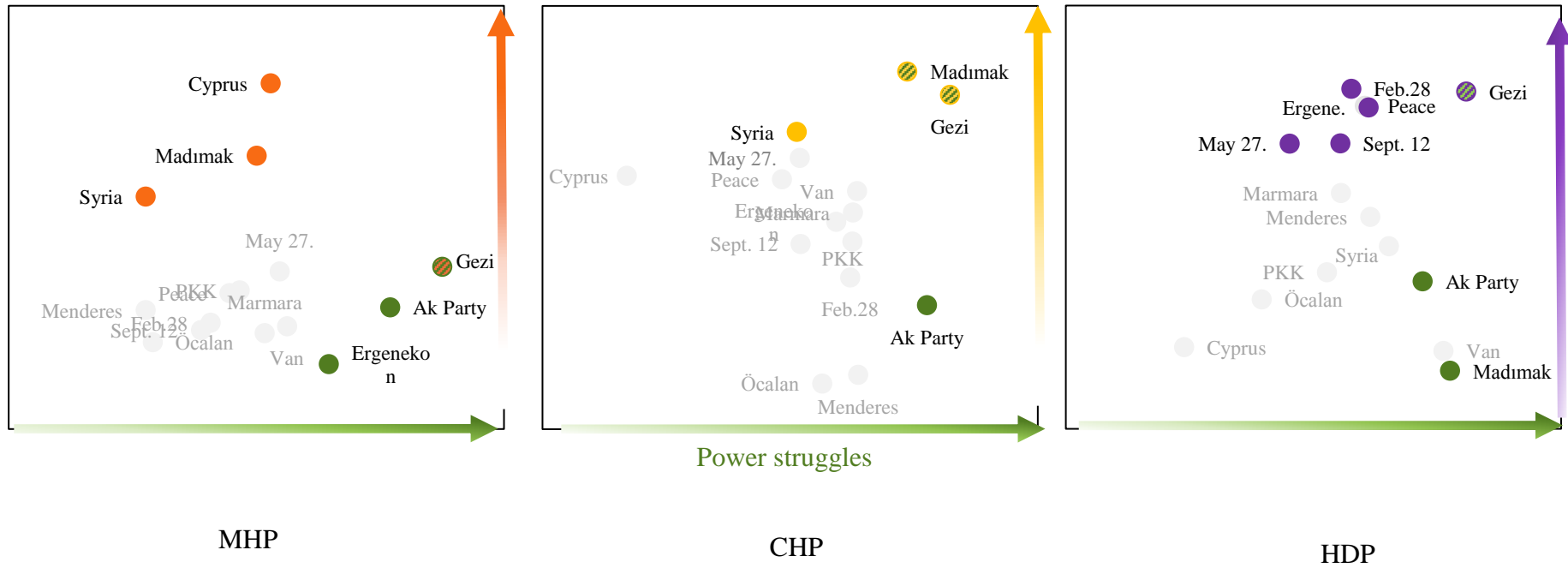
Fig. 5 Four-dimensional MDS configuration for supporters of opposition parties (Dimension 3 and Dimension 4)

2.4.4 Response time

We obtained response time data while participants rated the event pairs. In order to

assess whether ratings and voting behavior affected the response time, for each

participant, we calculated the median response time for each rating point from 1 to 9.

Then we analyzed response time as a function of ratings. A repeated ANOVA was

conducted with Rating (from 1 to 9) as within-subject factor. As shown in Figure 6, the

shortest response time corresponded to two opposite ends of the rating scale (i.e., 1 and

9), and the longest response time corresponded to the middle part of the scale (i.e., 2-8

rating interval). The results revealed an effect of Rating, $F(8, 896) = 60.27$, $MSE =$

985714.49, $p < .001$, $\eta^2_p = .35$, due to the shorter response time for the ratings 1 and 9

compared to all other ratings (i.e., 2-8 rating interval) (all $ps < .001$, Bonferroni

corrected). These results suggest that people quickly judged very similar and dissimilar

pairs, but they were slower to judge the pairs that were moderately related.

Rating	1 (Very Similar)	2	3	4	5	6	7	8	9 (Very Different)
Frequency	3256	1170	1472	1693	2263	2630	2592	3091	12882
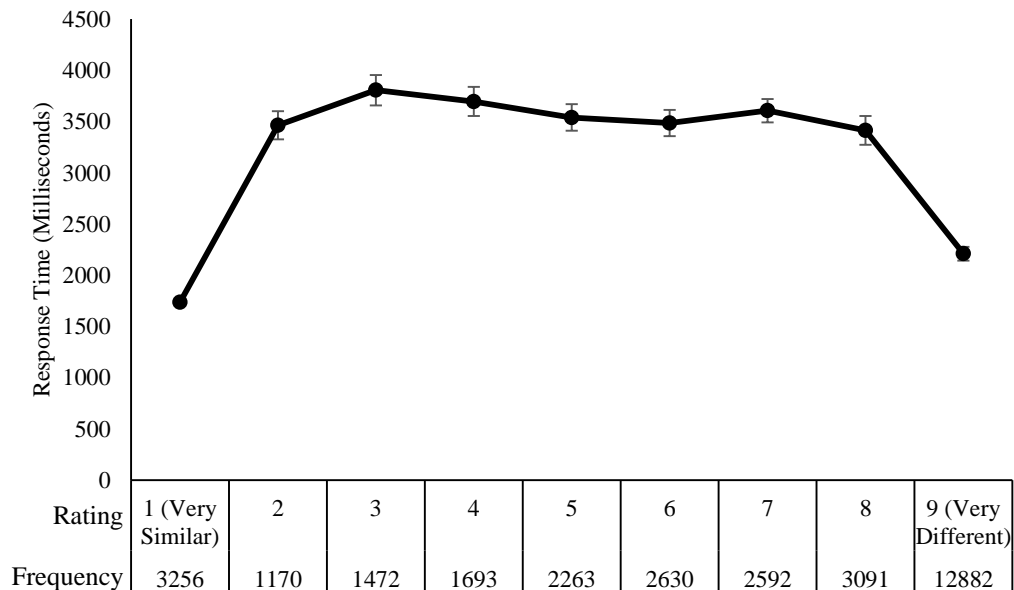
Fig. 6 Response time for event pair judgments as a function of ratings

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We further assessed which events were rated as very similar and very dissimilar. The event pairs that were most frequently judged very similar were the identical pairs (63% of all very similar ratings). The event pairs that were most frequently judged very dissimilar were those which included the Marmara or Van earthquakes as one of the pair members (46% of all very dissimilar ratings). To assess whether the faster response time for the very similar/dissimilar ratings was due to the identical pairs and the pairs with the earthquakes, we excluded these pairs from the data and re-calculated the median response time for each rating point from 1 to 9. Reanalysis of the data revealed that the response time did not differ between pairs ($F(8, 664) = 2.62$, $MSE = 1981660.43$, $p = .008$, $\eta^2_p = .003$, and for pairwise comparisons, all $ps > .08$, Bonferroni corrected).

We also inspected the response time for the pairs that included an earthquake by comparing them with the pairs that did not include an earthquake. We inspected these because we thought that there may be a few possibilities for the faster response time for these ratings: First, people may be faster in the very similar/dissimilar ratings because they frequently used these ratings for the comparison of some particular events, such as events dominated by political versus nonpolitical characteristics, or the events distinctively located in the MDS space. If this was the case, the response time data may tell us something about the nature of events. Second, people may be faster whenever they rated a pair as very similar/dissimilar. In this case, the faster response time may have to do with the rating itself rather than the events rated.

In order to understand whether the faster response time was based on the nature of the events or the rating itself, we first focused on very dissimilar pairs. [4] We calculated

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[4] The event pairs that were most frequently judged very similar were the identical pairs. We compared RTs for the identical pairs and other event pairs rated as very similar (37% of all very similar ratings).

each participant's median response time for the pairs including an earthquake as one of the pair members and pairs that did not include an earthquake. Then we compared the response time for these two types of pairs (i.e., very dissimilar pairs with and without earthquakes). Results showed that pairs with an earthquake ($M = 1946.56$, $SD = 652.63$) were judged significantly faster than the pairs without an earthquake ($M = 2758.96$, $SD = 1648.24$; $F(1, 134) = 48.58$, $MSE = 916956.70$, $p < .001$, $\eta^2_p = .27$). This result suggested that faster ratings may be due to political versus nonpolitical nature of the events, or a distinctive position of the events in the representational space (i.e., high dissimilarity from all other events in the space).

In order to understand whether faster ratings were due to the political versus nonpolitical nature of the event or the distinctive position of the events in the representational space, in addition to two nonpolitical events (the earthquakes), we identified two political events that were distinctively located in the MDS space. These events were the Syrian civil war and Cyprus Peace Operation (See Figure 2). They were the third and the fourth events that were most frequently judged as very dissimilar to other events (14% and 16%, respectively). We reasoned that if the faster response time for the pairs that included earthquakes was due to the events' distinct location in the space (i.e., high dissimilarity from all other events) rather than the nature of event (i.e., nonpolitical versus political), the response time should not differ across different pair types (i.e., pairs including earthquakes, the Syrian civil war, or the Cyprus Peace Operation). However, if the faster response time was due to the nature of events, the

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Results showed that the identical pairs ($M = 1723.65$, $SD = 330.45$) were rated significantly faster than other pairs ($M = 3572.97$, $SD = 2030.22$; $F(1, 112) = 96.77$, $MSE = 1996869.01$, $p < .001$, $\eta^2_p = .46$). Thus, faster responses for the very similar ratings may be mainly due to the identical pairs, which were both conceptually and perceptually same.

response time should be faster for the pairs including the earthquakes compared to the pairs including the Syrian civil war and Cyprus Peace Operation. To inspect this idea, we compared the response time for the pairs that included an earthquake as one of the pair members with pairs that included the Syrian civil war or the Cyprus Peace Operation as one of the pair members. Analysis revealed a significant difference across different types of pairs, $F(2, 264) = 12.21$, $MSE = 1192368.75$, $p < .001$, $\eta^2_p = .09$. Pairs with earthquakes ($M = 1946.56$, $SD = 652.63$) were judged significantly faster than pairs with the Syrian civil war ($M = 2505.79$, $SD = 1290.42$) and the Cyprus Peace Operation ($M = 2455.39$, $SD = 1782.01$; all $ps < .001$, Bonferroni corrected), but the response time for pairs with the Syrian civil war and the Cyprus Peace Operation did not differ ($p = 1.00$, Bonferroni corrected). This suggests that faster response time for very dissimilar ratings may be due to the nature of event; people may have quickly differentiated nonpolitical events from political events.

We also thought that if faster response time is due to the nature of events, the response time for the pairs with an earthquake should be faster than pairs without an earthquake for other ratings as well (e.g., very similar ratings). To assess this idea, we chose six events that were located very closely in distinct clusters in the representational space. These pairs were the Marmara-Van earthquakes (non-political events), the Gezi-AKP pair (power struggles) and the Öcalan-Kurdish-Turkish peace process (ethnicity issues) (See Figure 2). We collapsed response time for each pair, regardless of the rating. Comparison of response time for these three pairs revealed that people judged the Marmara-Van pair ($M = 2814.70$, $SD = 1672.80$) faster than both the Gezi-AKP ($M = 3639.03$, $SD = 2798.56$) and the Öcalan-Kurdish-Turkish peace process pairs ($M = 3938.14$, $SD = 2067.41$), ($F(2, 270) = 11.75$, $MSE = 3898184.75$, $p < .001$, $\eta^2_p = .08$; all

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*p*s < .007, Bonferroni corrected). The latter two pairs were judged equally fast (*p* = .69, Bonferroni corrected). This set of findings suggests that faster response time in very similar and dissimilar ratings may not depend primarily on the ratings themselves. Rather, it seems that people can quickly and easily judge events as political and nonpolitical. Moreover, faster judgments for non-political events across different ratings suggest that non-political events may be judged more quickly in general, regardless of the rating value.

2.5 Discussion

This is the first study to empirically illustrate how people organize public event memories, using an exploratory MDS approach. We identified how people clustered events along different dimensions within a collective memory representational space. We found that people represented public events by distinguishing the events' political and nonpolitical characteristics, and differentiating political events according to their specific attributes. Moreover, people with different sociopolitical views may cluster public events by focusing on different aspect of events. Below, we discuss theoretical and methodological contributions of these findings to the study of collective memory in more detail.

Both the response time and the MDS results indicated a clear distinction between political and nonpolitical events in the representations of collective memories. People quickly distinguished the nonpolitical events (e.g., earthquakes) from the political events (e.g., events related to terrorism, secularism, and coups) and they were relatively slow in distinguishing one political event from another. The explorations of the representational

space across four voter groups have revealed one major constancy: nonpolitical and political events were clearly separated. This is in line with the findings of Brown (1990), who suggests a distinction between political and nonpolitical events in memory organization. This distinction may emerge because emotionally intense, nonpolitical events are more likely to be stored with readily available information about personal context (Brown, 1990; Brown & Lee, 2010). Moreover, our findings indicated that political events are further differentiated into sub-clusters, such as ethnicity issues or power struggles. It is possible that political events are embedded in a social, political, historical context with several causal and temporal links to other events and concepts (Brown, 1990; van Dijk, 1984). This may result in a complex memory structure for political events that requires more effort and time for the judgments of semantic relationships between these events. Taken together, our findings suggest that collective memories may be associatively organized.

The public events that we used in this study have been privately and publicly rehearsed and commemorated (Tekcan et al., 2017). Given that repeated memories become a part of semantic knowledge over time (Bahrick et al., 2013; Bahrick & Phelps, 1988) and that concurrently repeated events form an associative structure (Brown, 2016), public event memories may acquire an associatively organized structure of semantic knowledge. In line with a number of empirical studies which show that MDS can produce network structures of knowledge from proximity data (e.g., Cooke et al., 1986; McClelland & Rogers, 2003; Schvaneveldt, Durso, & Dearholt, 1989), the representational space we identified through MDS may reflect an associative network of collective knowledge of public events. Our data do not allow us to determine whether this knowledge is organized based on a hierarchical network of interconnected events

(Collins & Quillian, 1969), nonhierarchical relationships between events (Collins & Loftus, 1975), or the patterns of activation of event properties across the network (e.g., McClelland & Rogers, 2003). For example, people may cluster a set of specific events, or in Wertsch's term (2008) "specific narratives" (e.g., PKK terrorist attacks, the capture of the PKK leader, Apo, and the Kurdish-Turkish peace process) based on higher-order narratives for these events (e.g., ethnicity issues). Wertsch (2008) calls these higher order narratives "schematic narrative templates." In this case, it is likely that public event clusters may reflect people's specific narratives and the dimensions indicating individuals' evaluative criteria for similarity judgments may reflect schematic narrative templates in a nation. Alternatively, the PKK terrorist attacks and the capture of Apo may be represented by similar patterns of activation across a network of property units. In this case, individuals' evaluative criteria for similarity judgments may reflect these patterns of activation. This suggests that similar events may be represented by similar patterns of activation. Further research is needed to specify the underlying organization.

We also showed that a public event may be related to a variety of events on the basis of its various aspects, suggesting that public events may be fragmented. For example, people may have evaluated the Syrian civil war by focusing on both its political aspects and the humanitarian plight of the Syrian people. In addition to the political significance of the Syrian civil war, at the time of data collection, there were 2.7 million registered refugees in Turkey (UNHR, June 2016). Incidents where refugees drowned off Turkey's Aegean coast in an attempt to reach other countries had drawn attention to the plight of the Syrian people (*The Guardian*, September 2, 2015). This fragmented nature of the event may have led people to link it to several events simultaneously. 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 & Barsalou, 1997).

Another major finding from this study is that voting behavior may impact how some events are clustered in the representational space. Group differences in the third dimension and the idiosyncratic clustering of events in the fourth dimension of collective memory representational space are consistent with a number of previous theoretical and empirical studies that point out the social and political polarization of Turkey (e.g., Casanova, 2001; Erdogan, 2016; Gürsoy, 2012; Kalaycıoğlu, 2012; Keyman, 2007; Konda, November 2014; March 2016; May 2017). This suggests that there may be different, sometimes polarized, perspectives with regard to fragmented public events. For example, while AKP voters considered the AKP's coming to power more closely related to the Gezi protests, the February 28 coup, and the execution of Menderes, CHP voters considered this event closely related to the Gezi protests and the Madımak event. The supporters of different political parties are also polarized in terms of media preferences; they get news information from reading different newspapers and watching different television channels (Erdogan, 2016; Konda, June 2014; November 2014). Substantial work has indicated that media coverage affects how people perceive and remember public events (e.g., Janssen, 2003; Lewandowsky et al., 2012; 2013). It is possible that the collective memory organization of individuals that vote for different parties is also affected by their preferences for information sources. To sum up, social and political polarization may affect how people make sense of the recent past and establish links between public events.

We should note that political polarization may not be specific to Turkey; it has been suggested that social and political polarization has been widely observed globally

(e.g., Abramowitz & Saunders, 2008; Erdogan, 2016). Thus, the present findings on differences in collective memory organization with regard to voting behavior may provide a basis for future research in different cultural and political contexts. In line with the case of Turkey outlined above, individuals' identification with a political group (e.g., Republican versus Democrat in the US context) has been found to be related to their perception of political events (Bartels, 2002). Moreover, it has been well-established that identification with a group may influence memory for both non-historical (e.g., Howard & Rothbart, 1980) and historical information (e.g., Corning et al., 2013; Griffin, 2004; Liu & Hilton, 2005; Luminet & Curci, 2009; Paez & Liu, 2011; Sahdra & Ross, 2007; Schuman et al., 1998; 2003). For example, Sahdra and Ross (2007) has shown that people who identified themselves with a group remember positive rather than negative events in their group's history, suggesting that group membership may influence on which aspects of information people focus. In this sense, our findings on differences in the collective memory organization across voters may offer important insights into the interaction between political identity and collective memory.

From a methodological perspective, using the MDS technique, we provided empirical evidence for psychological dimensions of collective memories as well as for the relationship between memories held by individuals and the society. Moreover, we assessed memory for real-world events while maintaining laboratory rigor. By adopting this methodology, we also showed that well-established models of human memory and knowledge representations can be implemented in collective memory research. Future research that addresses this possibility may provide further insight into the cognitive mechanisms underlying the formation and retrieval of collective memories.

CHAPTER 3

STABILITY AND CHANGE IN THE ORGANIZATION OF

COLLECTIVE MEMORIES

Collective memory has been defined as the shared memories of a community that

contribute to the group's collective identity (Halbwachs, 1950). According to Hirst and

Manier (2008), a memory must "be transmitted across a community, take on a similar,

shared form, and be stable over the long term in order to be properly called a collective

memory" (p. 192). Indeed, data from different national groups has demonstrated

convergence; members of a community take on a similar, shared form of memories for

some public events, such as WWII in the U.S. (e.g., Schuman & Scott, 1989; Zaromb et

al., 2014) or the September 12, military coup in Turkey (e.g., Tekcan et al., 2017).

Different people consistently recall the same events at different points in time (e.g.,

Schuman & Scott, 1989; Schuman & Rodgers, 2004; Tekcan & Tartar, 2008; Tekcan,

Boduroglu, Mutlutürk, & Aktan-Erciyes, 2015), suggesting that some public events

remain stable in national collective memories. Other studies that focused on memory for

important public events and important public figures pointed out that there was both

stability and change in what is collectively remembered about the past (e.g., Corning et

al., 2013; Schuman et al., 2005; Schwartz, 1991). However, no research to date has

addressed stability and changes in how people link public events in organizing them. In

this study, to fill this gap, we investigated the stability in the structure and organization

of collective memory representations across a period of a few years during which a

major consequential public event has taken place.

Highly accessible public events that resist changes typically impact the course of history (Pennebaker & Banasik, 1997) and influence many people's lives (Brown & Lee, 2010). These "transformative events" assimilate related events and remain salient and highly accessible across time (Corning et al., 2013, p. 374). For example, Schuman and Rodgers (2004) compared data obtained in 1985, 2000, and 2001 to address what people remembered as the most important events in a nationally representative sample of Americans. The results showed that WWII remained the most frequently recalled important event in the U.S. history from 1985 to 2000 (18.9% and 14.2%, respectively). In the data collected a few months later, following the 9/11 attacks, the 9/11 event was most often identified as the most important event. However, WWII remained as the second most frequently recalled event (19.7%), and the overall rate of report remained similar across three points in time. These findings suggest that high-impact, transformative events that took place many years ago continue to be frequently recalled over time, resisting change.

Another line of research has focused on the representations of important public figures over time. For example, Schwartz (1991) compared how Americans represented George Washington before and after the Civil War. The aristocratic image of George Washington during the pre-Civil War period (1800-1865) changed to reflect the dignity of the common man during the post-war period (1865-1920). Despite this new democratic and egalitarian image of Washington in the post-war period, his aristocratic image was also preserved across pre- and post-war periods in the society, indicating the presence of stability and change at the same time. Schuman, Corning, and Schwartz (2012) provide further evidence for the possibility of change in collective memories for public figures over time. They showed changes in the characterization of Lincoln across

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two surveys within an eight-month period (February/March 2010 – October 2010); the "honest" characterization of Lincoln was almost doubled in the second survey, which was conducted when the midterm national election campaign reached its peak. People who referred to dishonesty in contemporary politics and election campaigns in their responses in the second survey tended to mention Lincoln's honesty more frequently. Findings from these studies suggest that representations of the past generally remain stable over time, but in some cases, there may be context-driven changes.

The data have also shown that stability of collective memories may have to do to with group identity. This relationship may be twofold. First, members of a group may preserve their collective memories to preserve the group identity (Assmann, 1995; Hirst & Manier, 2008; Schwartz, 1991; Werscth, 2004; 2008). Second, collective memories may be subject to transformations to form a "usable past" in terms of the current needs and goals of the group (Wertsch, 2004). These transformations foster continuity of the group identity. Corning et al. (2013) provided evidence for how stability and changes in the collective memory was affected by group identity. They compared the collective memory of ethnic Russians and Lithuanians living in Lithuania across three surveys in 1989, 1993, and 2009. Critically, between the 1989 and 1993 surveys, there occurred some high-impact events, such as the rebirth of Lithuania (1990), the declaration of Lithuania's independence (1990), and the Vilnius TV Tower attack (1991). While these events influenced the frequency of recall of some events for ethnic Lithuanians, the ethnic Russians' retrieval patterns remained highly stable across the three surveys. For example, while WWII was consistently the second most frequently recalled event in the ethnic Russians' data across the three surveys, the recall percentage of WWII showed fluctuation in the ethnic Lithuanians' data. WWII was the second most frequently

recalled event in the 1989 and the 2009 survey, but it dropped to fourth place among ethnic Lithuanians in the 1993 survey. Events such as the declaration of Lithuania's independence interfered with ethnic Lithuanians' (but not ethnic Russians') memory for WWII. Schuman et al. (2005) demonstrated that the stability and changes in the representations of public figures also varied across different groups. They demonstrated that Americans' views of Columbus changed minimally, despite changes in how he was portrayed in history textbooks and in the media. Only a small group of people welcomed a revisionist portrayal of Columbus, and they were the ones who already had a critical stance toward the US policies. These findings altogether suggest that identity and political stance may influence changes in the representations of past.

3.1   The present study

In our first study, we obtained a set of data (in May 2016) to explore how people represent and organize their collective memories. We asked participants to rate the similarity of pairs of public events. These public events were identified from nationwide data obtained in November and December 2013 (Tekcan et al. 2017; see Appendix A). We also recorded how long it took the participants to rate the pairs. Employing the Multidimensional Scaling (MDS) technique, we demonstrated that people represent public events by distinguishing the events' political and nonpolitical characteristics and that they further differentiate political events based on specific attributes. We found that people in Turkey organize collective memory representations based on three critical dimensions: political/non-political events, ethnicity issues, and power struggles. Furthermore, we showed that people with different political views represent and cluster public events by focusing on different aspects of events. In the present study, we

explored the stability of this organization across three points in time (May 2016, November 2016, and August 2017). During this period, a major event took place in Turkey. On July 15, 2016, an attempted military coup in Turkey resulted in a death toll of more than 200. It also resulted in the declaration of a state of emergency and a subsequent crackdown on media outlets, schools, and NGO's for alleged links to the coup organizers (Yavuz & Koc, 2016). Thus, we compared the collective memory representational space prior to (approximately two and a half months) the occurrence of the July 15 coup attempt with that approximately four months and then one year after it. In addition to the coup attempt, a number of important events occurred in Turkey between 2016 and 2017, including a deadly terrorist attack at an Istanbul airport (June 2016), a football stadium (December 2016), and at an Istanbul nightclub during a New Year's Eve celebration (January 2017). We thought these high-impact events may also have the potential to impact the structure and organization of collective memory representations.

As an exploratory technique, MDS does not directly allow for testing predictions. However, based on previous studies that indicate both stability and change in the retrieval of public events or public figures (e.g., Schuman & Rodgers, Schuman et al., 2005; 2012; 2004; Schwartz, 1991), we expected to observe instances of both stability and change in the structure and organization of collective memories. Given that people remember political events in reference to other political events and nonpolitical events in reference to personal information (Brown, 1990), it is likely that the occurrence of recent political events (e.g., a coup attempt) would impact the associations between political but not nonpolitical events.

3.2 Method

3.2.1 Participants

All the data were collected from Boğaziçi University undergraduates in return for extra course credit. In each dataset, we excluded participants who had extensive missing data (more than 5% of all trials) and/or judged identical-event pairs as either "very dissimilar" or "somewhat dissimilar" (more than 5 of 15 identical pair trials), as we assumed that they may have misunderstood the instructions. We collected data at three different time points. Two were subsequent to the July 15 coup attempt (see Figure 7). In May 2016, 147 undergraduates participated in the study. We excluded data from eight participants, leaving us with data from 139 participants (101 women, M_{age} = 20.26; SD = 1.51). In November 2016, 144 undergraduates participated in the study. We excluded data from 10 participants, leaving us with data from 134 participants (76 women; M_{age} = 20.77, SD = 1.82). Demographic questionnaire data could not be obtained from three participants due to a power cut during the session, leaving us with 131 participants for the demographical data in this dataset. In August 2017, 102 undergraduates participated in the study. We excluded data from four participants, leaving us with data from 98 participants (59 women; M_{age} = 21.76, SD = 2.84). All participants provided informed consent and they were debriefed on the purpose of the study at the end of the session.

3.2.2 Materials and procedure

We collected the first wave of data between late April and early May 2016, approximately two and a half months prior to the July 15 coup attempt. We obtained the second and third waves of data in November 2016 (approximately four months after the

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coup attempt) and August 2017 (approximately one year after the coup attempt). We use

T1, T2, and T3 to refer to these time points, respectively. Materials and procedure were

identical for T1 and T2, but at T3, similarity ratings were collected after the participants

were exposed to a lexical decision task. We used some event pairs as stimuli in the

lexical decision task and the similarity judgment task. The participants who were

assigned to different conditions in the lexical decision task did not differ in similarity

ratings for these pairs (all ts < .46, all ps > .64), suggesting that the preceding procedure

did not contaminate the similarity ratings differentially. Details of the similarity

judgment task and the remaining procedure were identical to those of the first study.
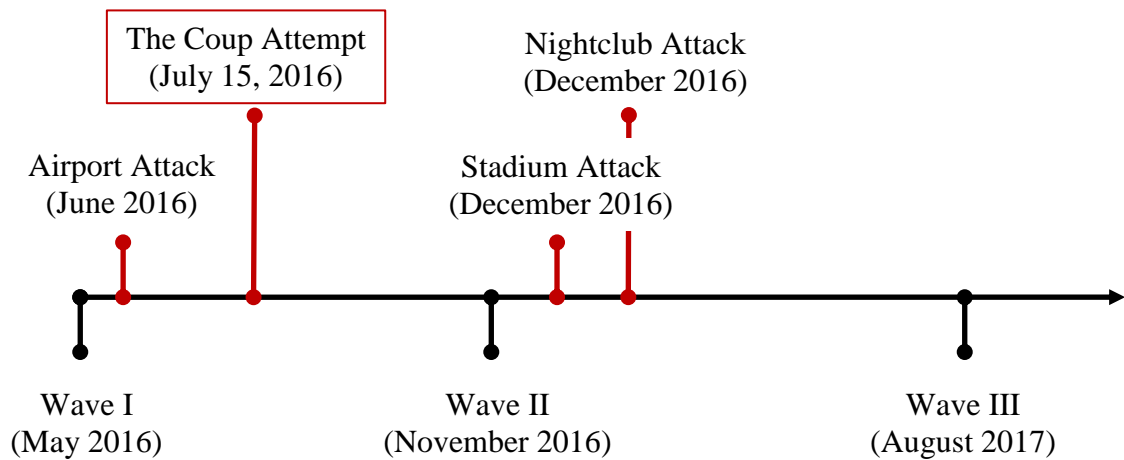
Fig. 7 Timeline of data collection and high-impact events in Turkey between May 2016

and August 2017

3.3 Results

As in the first study, we first transformed similarity ratings to dissimilarity. Thus, the

most similar items, rated as 9 by the participants, were transformed to 1, and the most

dissimilar items, rated as 1, were transformed to 9. Then, we performed an ALSCAL

procedure for nonmetric MDS included in the SPSS package. A three-dimensional MDS

solution consistently provided an excellent fit to each set of data obtained in T1, T2, and T3 (S = .083, .086, and .088, respectively and RSQ = .97 for all datasets). Our inspection of the scree plot for each set of data revealed an elbow corresponding to a 3D solution; increasing dimensions did not substantially improve the fit. Figure 8 shows the three-dimensional collective memory representational spaces before and after the coup attempt. We rotated the axes on the space using the XLSTAT-3DPlot software. We interpreted dimensions focusing on the events clustered on the poles of each axis. The disparities between the events (*d*) at three time points were presented in Table E1, Table E2, and Table E3 (see Appendix E). Since the MDS reflects a global picture of mental representations, we focused on highly remarkable changes (e.g., switching of events between clusters) in each dimension rather than minor deviations (e.g., the spatial replacement of one event with another within the same cluster).

As can be seen in Figure 8, the data was organized similarly around three major dimensions at all three time points. The Marmara and Van earthquakes were clustered on the left side of the first dimension. The remaining events with political characteristics were located on the opposite side. Thus, we labeled this dimension the political and non-political events dimension. As in T1, the Syrian civil war was the closest event to both earthquakes, suggesting that people were likely to evaluate the Syrian civil war considering the humanitarian crisis caused by the war along with its political impact.

Along the second dimension, PKK terror, the Kurdish-Turkish peace process, and the arrest of A. Öcalan were the events that were consistently clustered on the left end of the dimension across three time points. The Syrian civil war was also pulled toward this cluster. These events are all related to the Kurdish issue in Turkey. The remaining political events were located on the opposite side of this dimension. This suggests that,

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on the second dimension, the events were organized on the basis of their relationship to ethnicity-related issues and conflicts in Turkey. Thus, we labeled this dimension the ethnicity issues.

Along the third (horizontal) dimension, the Gezi protests and the AKP's coming to power were clustered on the upper end of this dimension (d_{range} = .75 - .84 across the three time points). On the opposite end of this dimension was the Cyprus Peace Operation. The other political events that were ordered between these upper and lower ends were the coup-related events (i.e., February 28 coup, the September 12, and the May 27 military coup, the Ergenekon trials, the execution of A. Menderes). The events on the upper end (i.e., Gezi protests and the AKP's coming to power) may reflect a struggle between the conservative government and the non-conservative groups (e.g., Atay, 2013; Dinçşahin, 2012; Erdogan & Uyan-Semerci, 2016; Konda, June 5, 2014). The events on the lower end may reflect a struggle between countries (e.g., Cyprus Peace Operation; Çelenk, 2007) or the government and the military (e.g., the coup-related events; Bacik, 2011; Eligür, 2014; Narli, 1999; Sarigil, 2012). Thus, we labeled this dimension power struggles. As in T1, the Madımak event was pulled toward the Gezi protests and the AKP's coming to power (d_{range} = 1.20 − 1.58 across the three time points. See Appendix E). Participants may have evaluated this event considering its links to the struggle with secular and pro-Islamic ideologies (Öktem, 2008).

We noted an apparent difference in the position of one particular event, the AKP's coming to power four months after the coup attempt. The event was pulled toward a central point among other political events at T2. An inspection of the disparities showed that the AKP's coming to power became closer to the September 12 coup at T2 ($d_{AKP\text{-}Coup}$ = .98) than T1 ($d_{AKP\text{-}Coup}$ = 1.44) and T3 ($d_{AKP\text{-}Coup}$ = 1.21).

Taken together, the comparison of the collective memory representational space over time showed that the global organization of collective memories at four months and at one year after a major event was consistent with the initial organization. People in Turkey distinguished public events based on the political and non-political characteristics of the event and differentiated political events based on whether they are related to ethnicity issues or power struggles. In comparison to the initial data (T1), four months after the July 15 coup attempt (T2), the AKP's coming to power was pulled toward another high-impact coup in the Turkish history, the September 12 coup. However, 1 year after the July 15 coup attempt (T3), the AKP's coming to power returned to its initial position at T1.
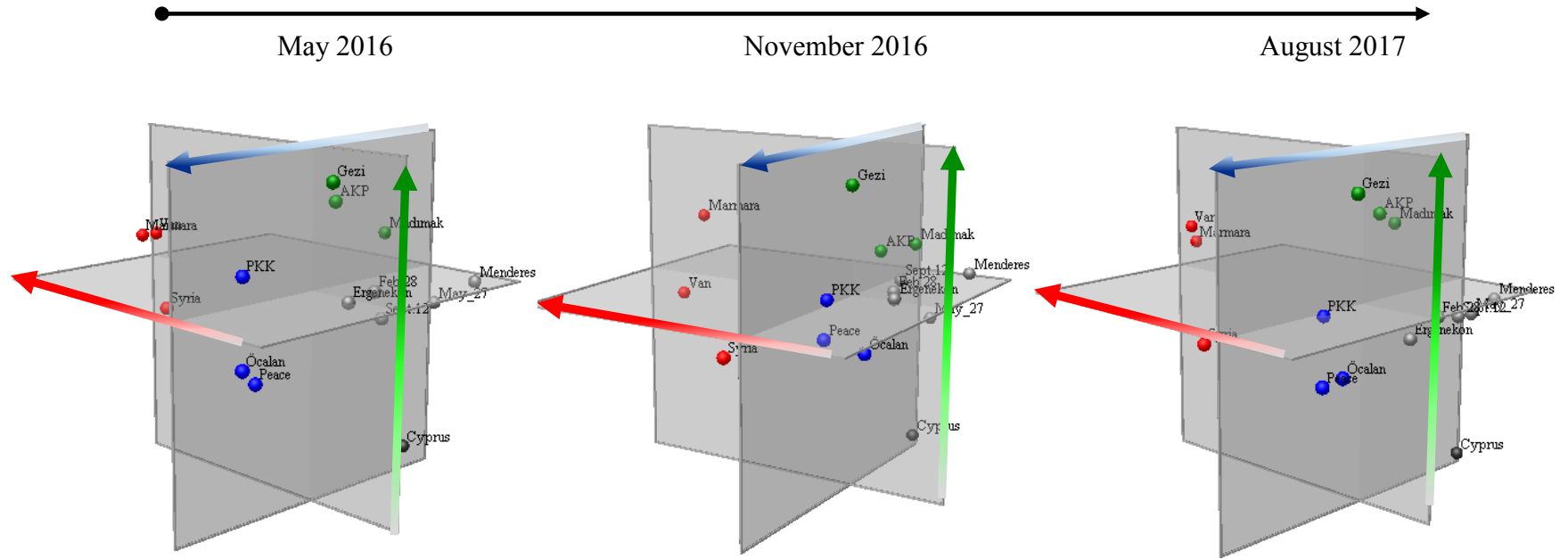
Fig. 8 The collective memory representational space for overall data at T1 (May 2016), T2 (November 2016), and T3 (August 2017)

3.3.1 The MDS space across voter groups

To determine whether the structural organization remained similar in the pre- and post-coup data in different sociopolitical groups, we separately analyzed the data of AKP and CHP voters.[5] For each voter group, we took the initial data that had been collected before the coup attempt as baseline. The CHP voters' initial data had revealed a four-dimensional MDS space and the AKP voters' initial data had revealed a three-dimensional MDS space (Table 3). Thus, we compared the four-dimensional MDS solutions for CHP voters and the three-dimensional MDS solutions for AKP voters across T1, T2, and T3.

For CHP voters, the structure did not show a remarkable change after either delay period. Similar to the initial data (T1), the Marmara and Van earthquakes were clustered together on one end of the first dimension, with the events dominated by political characteristics on the opposite end at T2 and T3. This suggests that the political and nonpolitical events dimension was preserved across time among CHP voters. They clustered the PKK, the Kurdish-Turkish peace process, and the arrest of A. Öcalan together on one end of the second dimension at all time points. Thus, this cluster represented the events with links to the ethnicity issue over time. As in the initial data, the Syrian civil war was located between the nonpolitical and ethnicity-related events, indicating the war's political aspects as well the plight of the Syrian people. On the third dimension, the Gezi protests and the AKP's coming to power were consistently clustered

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[5] We chose AKP and CHP voters because these two parties have been the ruling party and the main opposition party in Turkish politics for the past 15 years. Moreover, as reported by the Survey of Social-Political Trends in Turkey (as cited in Kadir Has University, 2017), 47.6% of people who think that Turkey is polarized believed that this polarization is driven by a secular-conservative divide. Because AKP and CHP are the main representatives of conservatives and non-conservatives, respectively (Gürsoy, 2012), we focus solely on AKP and CHP voters in this section.

together and the Madımak event was pulled toward this cluster in the CHP voters'

representational space. The remaining political events (mostly coup-related) were

located towards the opposite side of this dimension. The Gezi protests and the AKP's

coming to power on one end of this dimension may reflect the struggle between the

conservative government and the non-conservative groups (e.g., Atay, 2013; Dinçşahin,

2012; Erdogan & Uyan-Semerci, 2016; Konda, June 5, 2014). The events on the

opposite end may reflect a struggle between the government and the military (e.g.,

Bacik, 2011; Eligür, 2014; Narli, 1999; Sarigil, 2012). This may indicate enduring

power struggles between ideological groups. On the fourth dimension, the CHP group

clustered the Syrian civil war, the Madımak event, and the Gezi protests. These events

may reflect violent political conflicts. This dimension also showed persistence across

time.

Table 3. Sample Size and Goodness of Fit for Each Political Party at T1, T2, and T3

Party	Dimensions	T1 (May 2016)			T2 (November 2016)			T3 (August 2017)		
		N	S	RSQ	N	S	RSQ	N	S	RSQ
CHP	4D	68	.08	.95	56	.08	.96	33	.08	.95
AKP	3D	25	.08	.97	10	.12	.92	11	.04	1.00

Fig. 9 Dimension 1 and Dimension 2 in the collective memory representational space of CHP supporters at T1 (May 2016), T2 (November 2016), and T3 (August 2017)
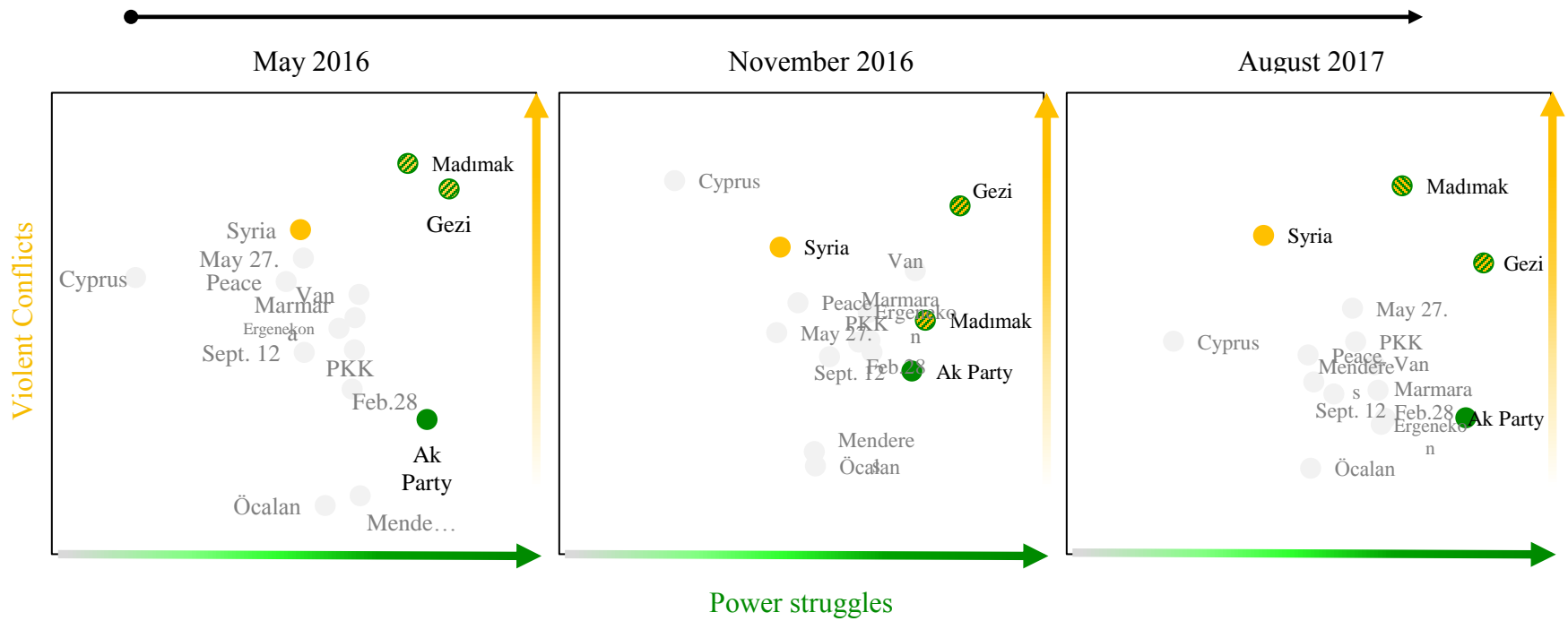
Fig. 10 Dimension 3 and Dimension 4 in the collective memory representational space of CHP supporters at T1 (May 2016), T2 (November 2016), and T3 (August 2017)

The event clusters in the AKP group are shown separately in Figure 11, for each time point. For AKP voters, the distribution of political events within the representational space showed both stability and changes. As in the CHP group, the first dimension revealed the political and non-political separation of events and this dimension was constant across time. On one end of this dimension, the Marmara and Van earthquakes were clustered together at all time (ds = .74, 1.00, .33, for T1, T2, and T3, respectively). All the remaining events with political characteristics fell in the opposite end of this dimension.[6,7]

The second dimension was also mostly similar across time. The PKK, the Kurdish-Turkish peace process, and the arrest of A. Öcalan were clustered together on the one end of the second dimension, reflecting events related to ethnicity issues in Turkey. One remarkable change in the AKP voter data was observed in the representation of the Syrian civil war across time. While the Syrian civil war was located between ethnicity issues and nonpolitical events (i.e., earthquakes) at T1, it was closer to the ethnicity issues at T2. Ultimately, the Syrian civil war was dissociated from the nonpolitical events and it was a part of the ethnicity issues at T3. It seems that AKP voters may have

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[6] Although the Marmara and Van earthquakes seem to be spatially separated at T3, this is, in fact, the result of narrowing axes of the second and third dimensions (see Figure 12). For example, while the z-axes scale was between -1.77 and 1.19 at T1, it was between -.40 and .42 at T3. Indeed, aggregation of political events around 0 in the space indicated that a two-dimensional MDS solution also provided an excellent fit to the AKP group's data at T3 (S = .047, RSQ = .997). As previously emphasized, we took the initial data as the baseline. Still, we presented the two-dimensional MDS solution for the AKP group's data at T3 in Appendix F. For all other groups, the 2-dimensional MDS solutions provided fair fit (all Ss > .10).

[7] We preferred to present figures with original axes of each dimension rather than adjusting axes to equalize the distance in each dimension. This allowed us to preserve optimal visibility for political events ordered in the second and third dimensions. Otherwise, the events would completely overlap, rendering it impossible to distinguish them. Because the axes had different scale ranges, visual inspection of plots could have been misleading in that events at T1 could have appeared closer than at T2. To make sure this would not impact our interpretation, we also paid attention to the disparities.

increasingly focused on the political characteristics of the Syrian civil war in relation to ongoing ethnicity-related issues.

Major changes were observed in the third dimension across time. At T1, the AKP's coming to power and the Gezi protests were clustered together on the upper end of this dimension (as in the T1 data of the CHP group), but at T2 and T3, both events were shifted closer to the remaining events identifying political struggles/ideological clashes within Turkey. Specifically, the position of the AKP's coming to power drastically changed at T2 and T3 compared to the initial data. AKP voters tend to pull the AKP's coming to power toward a central point among the political events, positioning it as a close neighbor to both the ethnicity- and the coup-related events. Additionally, among AKP supporters, the Gezi protests approached PKK terror after the coup attempt. This shift may have been partly driven by repeated claims of aggressive use of police force in the Gezi protests may have been a plot of FETO (Fethullah Terrorist Organization) to create chaos and anarchy in Turkey (Taş, 2017). Since FETO has been considered the terrorist organization behind several tumultuous events, including both the Gezi protests and the coup attempt, the AKP group may have evaluated the Gezi protests as more semantically linked with terrorism-related events (e.g., PKK terror) in the after-coup data. Taken together, these findings suggest that, despite some stability, people may remember some past events that are relevant to their political identity in the light of present context.
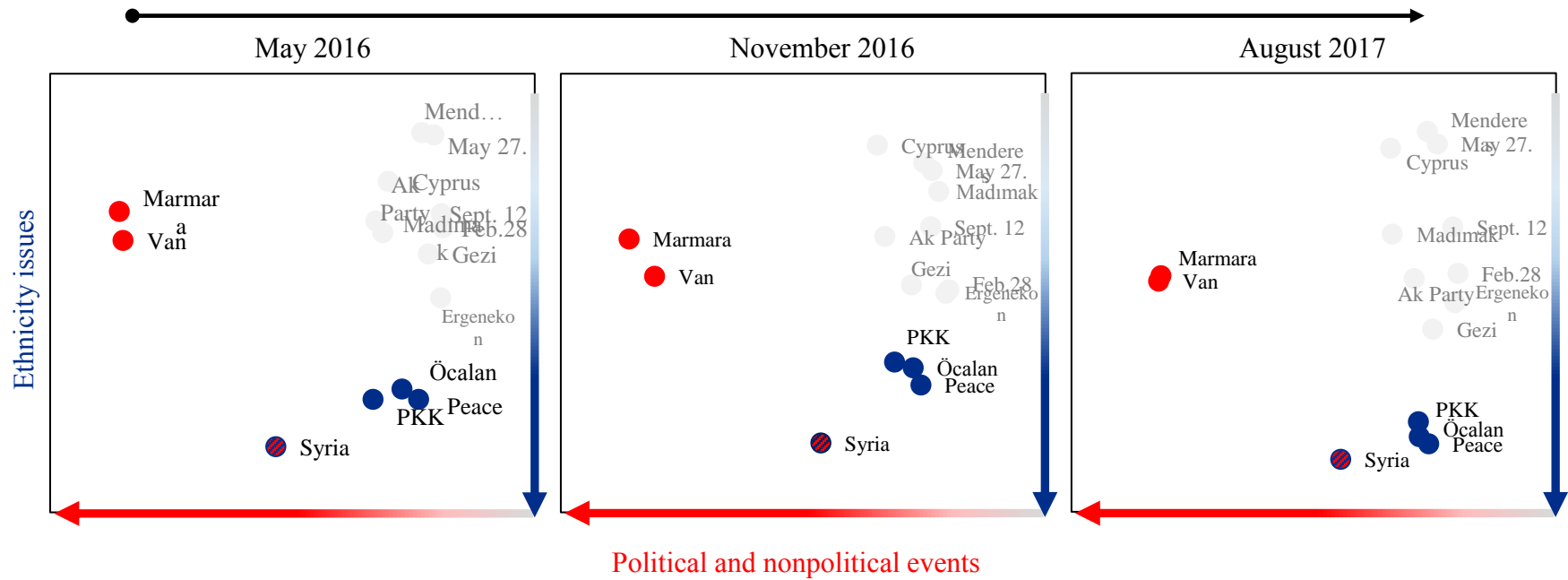
Fig. 11 The collective memory representational space of AKP supporters at T1 (May 2016), T2 (November 2016), and T3 (August 2017)

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3.4 Discussion

We investigated whether the structure and organization of collective memory representations remain stable over time. We explored how people represented and clustered public events at three time points, before (approximately two and a half months) and after (approximately four months, and one year) the July 15 coup attempt in Turkey. We demonstrated that collective memory representations remained quite stable over this period despite the occurrence of a high-impact public event. At three time points, people preserved the major dimensions of the collective memory representational space and consistently clustered public events on the basis of three critical dimensions: political and nonpolitical events, ethnicity issues, and power struggles. We also showed changes in the representations of individual public events. Since MDS maps the data into continuous space and reflects a global picture of mental representations, we focused on highly remarkable changes (e.g., switching of events between clusters). These changes were pronounced in the AKP group. We observed three critical replacements in the organization of AKP voters' representational space across time. First, the AKP's coming to power was pulled toward a central point among the political events. Second, the Syrian civil war was obviously clustered with terrorism-related events at T3, despite its position close to the natural disasters and tragic events at T1. Third, the Gezi protests were closer to the terrorism-related events at T3 than T1 and T2. The fact that these changes were pronounced in the AKP group might have been because AKP supporters felt an affinity with the governing political party, which was the main target of the coup attempt. Below, we discuss these findings in more detail.

The finding that global structure and organization of public event representations did not differed over time is in line with the previous evidence. For

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instance, people consistently recalled WWII as the most important event in U.S. history (Schuman & Rodgers, 2004); traditional images of Columbus and George Washington was preserved in Americans' memories despite revisions in the portrayal of them over time (Schuman et al. 2005; Schwartz, 1991). This stability may be a reflection of the link between collective memory and collective identity. That is, the society needs a sense of continuity with the past and enduring collective memories to maintain this continuity (e.g., Assmann, 1995; Hirst & Manier, 2008; Wertsch, 2004). It is possible that the major dimensions of collective memory representations remain stable over time, even after the occurrence of a major event, because they are schema-like knowledge structures that shape group identity (Wertsch, 2004) and constitute the "culturally instutionalized heritage of a society" (Assmann, 1995, p. 130). As Wertsch (1997; 2008) points out, these schema-like knowledge structures may tend to resist change and therefore remain stable across time. Wertsch (2004) introduces the term "schematic narrative templates," which represents the schema-like knowledge structures of collective memories. It is possible that the major dimensions/clusters we uncovered reflect schematic narrative templates for the primary issues in Turkey's collective memory. For example, people cluster a set of specific events, or in Wertsch's term (2008), "specific narratives" (e.g., PKK terrorist attacks, the capture of the PKK leader, Apo, and the Kurdish-Turkish peace process), and constitute a higher-order knowledge structure for a dominant issue in the community (e.g., "Ethnicity related concerns and terrorism may be linked in Turkey"). As Wertsch suggested (2008), these higher-order narratives may play a key role in shaping the community's identity, and they may be resistant to change, at least over a relatively short period.

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Another main finding of this study is that the changes in the collective memory organization may also depend on the group identity. An assessment of the data across two different voter groups (i.e., CHP and AKP) representing a major divide (i.e., secularist and conservative) in Turkey showed that the CHP voters' representational space was almost identical before and after the coup attempt, but there were some remarkable differences in the AKP voters' representational space. The central position of the AKP's coming to power among other events after the coup attempt may indicate that the AKP and its challenges became the focus point for the party's supporters in the evaluation of public events. The aggregation of several events (e.g., the Syrian civil war and the Gezi protests) around the terrorism-related events at T3 may reflect the effects of recent terrorist attacks in Turkey and the emphasis of official accounts on the concept of terrorism in many cases, especially after the coup attempt (Oz, 2016; Taş, 2017; Yavuz & Koc, 2016).

Our results are consistent with the previous findings that show substantial stability as well as some changes in different groups' retrieval patterns of public events. For example, Corning et al. (2013) found that the occurrence of some high-impact events between the 1989 and 1993 surveys in Lithuania (e.g., the rebirth of Lithuania, the declaration of Lithuania's independence, and the Vilnius TV Tower attack) interfered with the collective memory retrieval pattern of ethnic Lithuanians, but not that of ethnic Russians. Ethnic Lithuanians recalled the rebirth and independence more frequently than ethnic Russians in both the 1993 and 2009 surveys, dropping WWII to fourth place in the 1993 survey. Moreover, most ethnic Lithuanians who recalled the rebirth and independence in the 2009 survey lived in Vilnius or other major cities. Corning et al. argued that these people may have directly experienced demonstrations and protests during the rebirth period, increasing

the event's personal significance and making it distinct in their memories. Corning et al. (2013) suggested that memory for these public events may be "commitments to a particular set of experiences and to the beliefs and identities they represent for individuals" (p. 392). In a similar vein, the differential impacts of the major events on the stability of collective memory organization across voter groups may be linked to the major events' relevance to identity and whether individuals took part in the course of events (e.g., taking to the streets, participating in "democracy watch" rallies during and in the aftermath of the coup attempt). Although the coup attempt has a number of serious consequences for many people in Turkey regardless of social identity, the event may have a greater material and psychological impact for AKP voters. In Brown's terms (Brown & Lee, 2010; Svob et al., 2012), the coup attempt may have greater "transitional impact" on AKP voters. We do not have data directly measuring the "transitional impact" of the event; however, AKP voters reported the greatest amount of rage against the coup (Konda, August 2016). Moreover, 65% of AKP voters reported that they took to the streets during and following the coup attempt, compared to 29% of CHP voters (Konda, August 2016). These data may support the idea that the psychological and physical involvement of AKP voters in the event may be more intense. These emotionally intense public events may be stored with information about personal context, changing the fabric of daily life and closing one lifetime period and setting the beginning of next (Brown, 1990; Brown & Lee, 2010; Brown, 2016). This transition may occur through the termination of one set of associations and indicating the formation of a new set of associations among events (Brown, 2016). The unique change among AKP voters' collective memory organization may be the result of such a transitional process, terminating or changing a set of associations among the events and forming new sets of associations.

To sum up, we found both stability and change in the collective memory representational space after the occurrence of a high-impact national event. We specifically demonstrated stability and change in relationships between the public event representations within a global organization of collective memories, rather than memory for discrete events. This is a novelty of our approach. Furthermore, this is the first study to show that stability and change in collective memory representations over time may have to do with political identity. This result also supports our previous findings (See Study 1), which suggest that collective memory representations are influenced by political identity. This suggests that group identity in the present is shaped by collective renderings of the past, while how we remember the past can be shaped by the present concerns and the needs of the group. From a methodological perspective, using the MDS technique, we found substantial consistency in the collective memory representational space across three waves of data, showing the validity and reliability of our approach.

CHAPTER 4

THE SEMANTIC PRIMING IN COLLECTIVE MEMORIES

In everyday life, we frequently think and talk about national and political issues.

Imagine that you are in a conversation with friends or family members about a

national issue such as terrorism. What public events would you talk about during that

conversation? How would you retrieve the events relevant to the topic of the

conversation? Would they come to your mind in an unorganized, random fashion, or

would one event relevant to the topic lead to another in an organized fashion? It has

been shown that when people are asked to outline specific events about a dominant,

historical event, such as WWII or the Iraq War, they recall a set of specific events

about an overarching event (e.g., Wertsch, 2002; Zaromb et al., 2014). This points to

the possibility that collective memories are retrieved in an organized fashion. In the

second study, we aimed to directly investigate the effects of collective memory

organization on the retrieval of collective memories. To this end, we focused on

whether activation of a certain public event in memory would trigger the retrieval of

related events rather than unrelated events.

    In our first study, we provided evidence that collective memories are

associatively organized; however, we do not have a clear understanding of whether

and how the organization of collective memories impacts retrieval processes. Given

that the MDS space provides global information about the semantic network of

knowledge (Cooke et al., 1986; McClelland & Rogers, 2003), in this study, we

question whether cognitive mechanisms underlying the retrieval of collective

memories can be understood through the semantic network of public event

representations. This question led us to examine whether the activation of a public

event in the collective memory representational space triggers the retrieval of neighbor events through the process of spreading activation (e.g., Anderson, 1983; Balota & Lorch, 1986; Collins & Loftus, 1975; Neely, 1977; Roediger, Balota, & Watson, 2001).

4.1 The present study

In the current study, we investigate whether performance in identifying a public event in lexical decision task (LDT; Meyer & Schvaneveldt, 1971) would be facilitated when it is preceded by a related public event relative to when it is preceded by an unrelated public event. For this purpose, we used a modified version of LDT. Primes were short noun phrases (e.g., PKK TERROR). Targets were single words (e.g., SYRIA). Nonword targets were pronounceable letter strings constructed from a legal word in Turkish (e.g., MARUG from "marul" – lettuce in Turkish). Participants were asked to respond to each target by pressing either a key labeled YES or a key labeled NO for a word or nonword decision. There were three conditions: Related, Unrelated, and Unprimed. In the *related* condition, the public events were paired with a related public event (i.e., a neighbor event in the MDS space). In the *unrelated* condition, the prime-target pairs were rearranged so that primes would be paired with an unrelated target (i.e., a distant event in the MDS space). In the *unprimed* condition, all targets were primed by a neutral string of characters (i.e., ##### #####).

We obtained both the RT and accuracy data, but our primary predictions and analyses relied on the RT data. The rationale underlying the study is as follows: If the activation of a public event representation triggers the neighbor events' representations, we expect that performance will be facilitated in the related

condition compared to the unrelated and unprimed conditions. This would suggest that activation of a public event spreads to other related events and concepts for the retrieval of relevant information. We also conducted a similarity judgment task at the end of the priming task in order to assess whether the distance between the events in the MDS space would be correlated with RT data.

4.2 Method

4.2.1 Participants

One hundred and two undergraduates from Boğaziçi University participated in the study in return for extra course credit (58 women; $M_{age} = 21.72$, $SD = 2.80$). All participants provided informed consent, and they were debriefed at the end of the session. The data were collected in August 2017.

4.2.2 Apparatus

The participants were tested in a well-lit room. A computer with an Intel Core 2 Duo processor, an Intel G41 Express Chipset display adapter, and a 17-inch CRT Philips 107S6 monitor were used to present stimuli. The screen resolution was set to 1280 x 1024 with a refresh rate of 75Hz. The experiment was programmed in E-Prime 2.0 (Psychology Tools, Inc.). Participants viewed the computer screen from approximately 57cm, where 1cm corresponds to 1° visual angle.

4.2.3 Materials and procedure

Primes were short noun phrases and word targets were single words. The length of the primes ranged from eight to 18 letters ($M = 11.46$; $SD = 2.40$). The length of the

targets ranged from three to nine letters for words ($M = 5.92$; $SD = 1.38$) and five to six letters for non-words ($M = 5.50$; $SD = .51$). All stimuli were displayed in black capital letters in the center of the screen on a white background.

In a typical priming design, the stimulus list consists of the related, unrelated, and unprimed conditions (i.e., a within-subject design). However, each participant has to identify each target only once. Otherwise, the same target may be identified faster the second time than the first time because of repetition. For that reason, researchers usually prefer a counterbalanced design, in which the related pairs in one list become the unrelated pairs in another and participants are randomly assigned to one of the lists (For a review, see Pollatsek & Well, 1995). Thus, in a typical LDT, a mixed design is used. We adopted the same approach. We created three lists that counterbalanced pairs (For an example of test lists, see Appendix G).

In our design, there were three lists. Each list had a total of 24 pairs, including the word-target and the nonword-target trials (12 word target and 12 nonword targets). For the word-target trials, six of the pairs were critical public events selected from the MDS study (Study 1) considering both distances and appropriateness of phrases for the current study. Six of the pairs in the word-target trials were made up of filler items. One third of the critical public event pairs were related; primes and targets were selected among the nearest neighbors (disparity range in the MDS = 0.73 – 1.12). Another one-third of the critical public event pairs were unrelated; the prime-target pairs were rearranged so that they turned out to be unrelated pairs (resulting disparity range in the MDS = 1.96 – 4.27). The remaining critical events were unprimed; targets were primed by a neutral string of characters (i.e., ##### #####).

Filler items were also arranged in a similar fashion. Filler primes in the word-target trials consisted of the names of three famous people and three indefinite noun phrases. Filler targets were the single-word concepts or objects. With regard to the prime-target relation, the distribution of six filler pairs were identical to the critical public events (1/3: related; 1/3: unrelated; 1/3: unprimed). The related and unrelated filler pairs were rated by a separate group of participants ($n = 10$) on a 9-point scale (1 indicating high dissimilarity and 9 indicating high similarity between pair members). Average ratings were 7.47 ± 0.45 for related pairs and 2.16 ± 0.48 for unrelated pairs. Filler items served two functions: First, they were used to prevent participants from becoming aware that the study was about memory of public events and thinking about these events in advance. Second, they increased the distance between public event trials in the list to make the public event trials disconnected as to minimize any possibility of interaction between them.

In the nonword trials, primes were the names of six uncritical public events randomly selected from Tekcan et al. (2015), the names of three famous people, and three indefinite noun phrases. Thus, the type of primes in the nonword-target trials corresponded to the types of primes in the word-target trials (i.e., 6 public events, 6 filler items). The nonword targets were pronounceable letter strings with five to six letters. They were constructed from Turkish words by replacing one letter with another letter.

The constraints outlined above allowed us to balance both the relatedness proportion (RP; proportion of trials on which the prime and target are related) and the nonword ratio (NR; proportion of trials on which the target is a non-word) in the list (For a visual summary of the list structure, see Appendix H). This balanced structure was intended to prevent participants from using a strategy or showing a bias

based on an expectancy for the upcoming target. The critical public events were presented in a pseudorandom order to rule out potential primacy and recency effects on the RT data. The filler trials were held constant across the lists.

The practice list consisted of 24 trials, and it was constructed with constraints similar to those of the test list. The exception was that all participants were presented with the same practice list. The items used in the practice list were not used in the test lists.

Participants were tested in individual cubicles. Before beginning the test, they were given verbal and written instructions. They were told that we were measuring how fast people are in judging letter strings as word or nonword. The flow of each trial was as follows: After a fixation cross for 1000ms, a two-word phrase (prime) appeared on the screen for 300ms. This prime duration was determined based on the previous studies that displayed one-word primes for 150ms (e.g., Neely, 1977). Participants were instructed to focus on fixation cross and to read the upcoming phrase carefully. Following an inter-stimulus interval (ISI) of 50ms (thus resulting in a prime- target stimulus onset asynchrony – SOA – of 350ms), the target was presented. The SOA was determined based on evidence that expectancy for upcoming target and strategic processing was minimized at short SOA (e.g., Neely, 1977; de Groot, 1984). Participants were asked to press either a key (D) labeled YES or a key (K) labeled NO for a word or nonword decision for target. They were instructed to respond as fast and accurately as possible and were told that an average person's RT in this task should be below 1000ms. In order to encourage fast and accurate responses, participants were informed about their RT and accuracy after each trial. The feedback screen was presented for 2000ms followed by the "ready"

screen for 1000ms. Thus, inter-trial interval (ITI) was 3000ms (For a visual summary of trial flow, see Appendix I).

The priming task lasted about 15 minutes. After the priming task, a brief distractor task followed in which participants completed a simple executive function task (i.e., shape matching). The task lasted about 5 minutes. Then they performed the similarity judgment task for the MDS. The similarity judgment task was identical to the one in the first study. The task lasted about 35 minutes. Finally, they provided demographic information and answered strategy questions.

4.3 Results

In order to control whether our selection of related and unrelated pairs reflected the collective memory representations of the current sample, we first examined how the participants represented and clustered public events. As in the first study, a three-dimensional MDS solution provided an excellent fit to our data (S = .088, RSQ = .97). Participants represented public events based on three critical dimensions after the coup attempt: the nonpolitical and political events, ethnicity issues, and power struggles. The public events clustered in each dimension overlapped the previous dataset. In addition to visual inspection of the global MDS space, we compared the average similarity ratings for each related (e.g., the September 12 Coup – Ergenekon) and unrelated pair (e.g., 12 Eylül Darbesi – Suriye) in the priming task. Paired samples t-tests revealed that each unrelated pair (M_{range} = 6.53-8.68, SD_{range} = .85-2.51) was rated more dissimilar than its corresponding related pair (M_{range} = 3.33-6.33, SD_{range} = 2.51-3.05) (all ts > 3.49, all ps < .001, Cohen's ds > .36).

Before analyzing the data, we excluded inaccurate trials (11% of all trials). Then, we calculated a cutoff value based on all correct RTs (i.e., the mean ± 2SD).

RTs exceeding this value were also removed (3.92% of all trials). We focused our primary analyses on "critical public event" trials. As recommended by McNamara (2005), we treated counterbalancing lists (i.e., List A, List B, and List C) as a grouping variable. We conducted a 3 (List) X 3 (Relatedness) mixed Anova by taking the RT for critical public event trials as the dependent variable. There was not an effect of the relatedness, $F(2, 186) = 1.97$, $MSE = 7395.85$, $p = .14$ on the RT. There was also not a main effect of the list, $F(1, 93) = .12$, $MSE = 16701.76$, $p = .73$ nor an interaction, $F(2, 186) = 2.42$, $MSE = 7395.85$, $p = .09$.

In order to understand whether the lack of difference between the related and the unrelated conditions were caused by a few idiosyncratic public events (e.g., the events showing weak priming), we compared the RT between targets across the related, unrelated, and unprimed conditions. Thus, we conducted a 3 (List) X 6 (Target) mixed Anova by taking the list as between-subject and the target as within-subject factors. There was a main effect of target on the RT, $F(5, 275) = 5.86$, $MSE = 8182.20$, $p < .001$, $\eta^2_p = .10$. This main effect was due to the fact that the RT for pairs with Ergenekon ($M = 607.98$, $SD = 95.23$) and Menderes ($M = 620.91$, $SD = 104.29$) were longer than the RT for pairs with Gezi ($M = 542.38$, $SD = 92.94$) and Syria ($M = 560.55$, $SD = 94.64$, all $ps < .017$). There was not a main effect of the list, nor an interaction (all $ps > .20$). These results suggested that the RT for Ergenekon and Menderes was longer than the RT for Gezi and Syria, regardless of relatedness (i.e., the list). In order to inspect whether the pairs with these two events (i.e., Ergenekon and Menderes) affected our main analyses, we excluded RTs for these events from the data and we recalculated the average RTs for each participant. Re-analysis of the data did not change the results; the RT did not differed across the relatedness conditions, $F(2, 156) = 1.29$, $MSE = 8896.12$, $p = .28$.

To examine whether the lack of relatedness effect was specific to public events, we performed a 3 (List) X 3 (Relatedness) mixed Anova for "filler items" as well. Results revealed an effect of Relatedness on the RT, $F(2, 182) = 3.49$, $MSE = 6321.51$, $p = .032$, $\eta^2_p = .04$. For filler pairs, the RT in the related condition ($M = 513.01$, $SD = 90.39$) was faster than the unrelated and the unprimed conditions ($M = 589.94$, $SD = 119.83$ and $M = 581.98$, $SD = 96.12$, respectively, and all ps < .001). There was not a main effect of counterbalancing lists, nor an interaction (Fs < .22, all ps > .64). This suggests that the absence of a semantic priming effect was unique to the public event trials; we observed the facilitatory effects of related primes on targets in the filler trials (Figure 12).
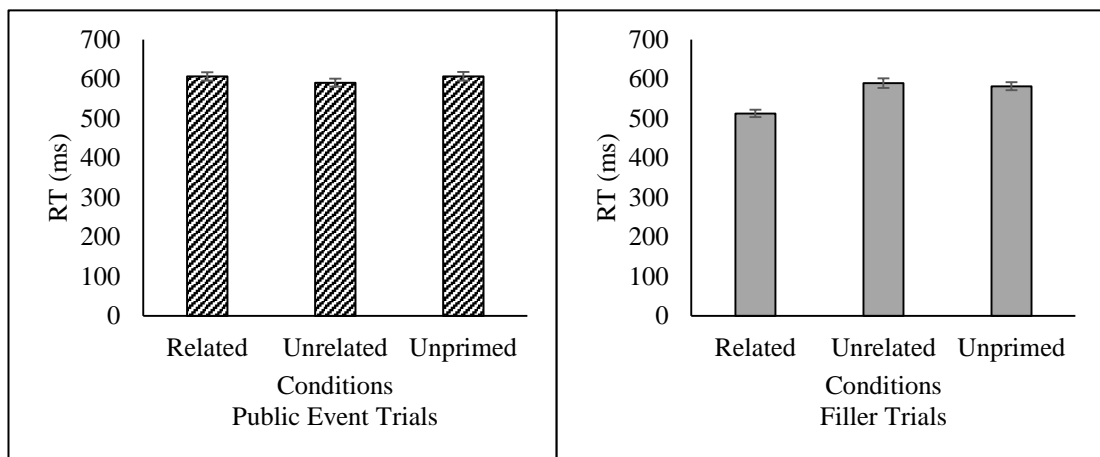
Fig. 12 Reaction time for public event and filler trials across related, unrelated, and unprimed conditions

Finally, we assessed whether there was a correlation between the priming RT and the similarity ratings or similarity judgment RT in the MDS. There was no correlation between these variables, all rs < .18, all ps > .101. Taken together, these results suggested that the prime-target relatedness affected the RT only in the filler trials but not public event trials. Moreover, the absence of any correlation between the priming RT and the MDS rating or RT showed that the RT for lexical decisions was not associated with the similarity judgments for public events.

4.4 Discussion

In this study, we assessed whether the activation of a public event representation facilitated retrieval of neighbor events in the representational space. For this purpose, we employed a lexical decision task by using public events and filler items. In line with the literature, we found a priming effect for filler items; participants responded to targets faster when they were primed by related concepts compared to unrelated concepts or neutral letter strings. However, we did not find a priming effect for public event trials. Moreover, unlike Lund and Burgess (1996), we found no relationship between the priming RT and semantic distance in the MDS space.

There may be several possibilities for our failure to obtain a priming effect for public events. One possibility may be the type of materials we used in the design. It is known that several variables may affect semantic priming, such as word length (New, Ferrand, Pallier, & Brysbaert, 2006), word frequency (e.g., Balota & Chumbley, 1984; Plaut & Booth, 2000), or associative strength (e.g., Canas, 1990). In the current study, the small set of stimuli did not allow us to control this kind of physical characteristics of target words. Other factors that could have affected our results even if we had had a larger set of stimuli. For example, Pecher (2001) has shown that lexical decision responses are slower for words that have a synonym than for words that do not. In many cases, public events are commonly named and communicated in a society (e.g., World War II or the Syrian civil war). However, in some cases, there may be some other expressions for these events (e.g., the Izmit earthquake and the Marmara earthquake, as used in Brown and Lee, 2010 and Tekcan et al., 2017, respectively). Moreover, since public events are usually named on the basis of particular features (e.g., the name of the place where the event

occurred), and target words for public events may have connotative meanings (e.g., "Gezi" for the Gezi protests, the Gezi Park, or just "tour"[8]).

Another important factor that may have influenced our results may be the associative strength between the prime and the target. It has been widely shown that strongly related prime-target pairs produce larger facilitation effects than weakly related prime-target pairs (e.g., Canas, 1990). Even though we selected the stimuli from among the nearest neighbors in the MDS space, the MDS space provides global information about the relationships between concepts (Cooke et al., 1986), and our assumptions on the associations between events were based on this global structure. Since we did not have controlled association norms as would be used in a typical semantic priming study, we cannot assert that the prime-target pairs in the current study can be defined a normatively strong association.

Finally, collective memories may be processed and retrieved differently than other concepts, and they may not be reduced to mental lexicon in a lexical decision task. Collective memories are constituted by public "events". Unlike simple concepts (e.g., objects or animals), event memories are made up of a number of components that include location, time, objects, participants, or activities (Barsalou, 1988). Thus, in terms of their complexity, collective memories may differ from the stimuli that are used in a typical semantic priming task. Given the evidence that words may not show a priming effect when they are embedded in a complex sentence (McKoon, Ratcliff, & Ward, 1994), the complex nature of collective memories may not be appropriate for the direct implementation of laboratory tasks designed for simple stimuli.

The constraints we outlined above led us to think about better ways to examine the organization of collective memories in an experimental design. One way to

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[8] In Turkish, "gezi" means sightseeing or tour.

obtain data to address the retrieval search mechanisms of collective memories may

be to focus on the order of recall in a free-recall task. This approach is not new in the

semantic memory literature. Bousfield (1953) asked people to recall a list of

randomly arranged associates in an open-ended free recall task and assessed the

order of recall. The data revealed an interesting phenomenon: people tended to

cluster related items by recalling them next to each other, based on semantic

categories. Similar approaches were later used to investigate the structure of

semantic knowledge representations (e.g., Caramazza et al., 1976; Rubin & Olson,

1980) and the retrieval organization (e.g., Congleton & Rajaram, 2014; Friendly,

1972; 1977; Zaromb & Roediger, 2010). Taken together, lessons we have learned

from the null effect in the current study point to two major needs for the investigation

of collective memories. First, we need future exploratory studies to specify several

characteristics of collective memories, such as associative strength between events.

Second, we suggest that employing open-ended tasks with minimal constraints such

as free-recall would allow for more sound experimental designs to investigate the

organization of collective memories. Future studies that meet these needs would help

us to implement experimental control over natural events in a laboratory setting.

CHAPTER 5

CONCLUSIONS

In this dissertation, the primary goal was to investigate the organization of collective memories. We were primarily interested in whether people systematically clustered their public event representations based on some evaluative criteria. Our findings demonstrate that public events may be linked to each other and clustered together based on semantic similarities. In our first study, we found that people organized their public event memories mainly according to the nonpolitical versus political nature of the events and their relationship to the ethnicity issues and power struggles between ideological stances. Given the findings that the structural organization of collective memories differed across groups who had voted for different parties, we argued that the criteria that people relied on to link the events may depend on their political identity.

In the second study, we examined whether the organization of collective memories remained stable over time. We explored how people represented and clustered public events at three time points: before, approximately four months after, and one year after the July 15 coup attempt in Turkey. We found that collective memory organization may show substantial stability over time despite the occurrence of major events. Yet we also observed changes; the way people perceived and interpreted public events and linked them to other events may show changes based on the present context, altering the global organization of collective memories. The finding that these changes were more pronounced in a particular group (i.e., the supporters of the ruling party) suggested that stability and changes in the collective memory organization may have to do with political identity. To sum up, in two studies, we consistently found that people organized their knowledge of public

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events by clustering them into higher-order conceptual units (e.g., political and nonpolitical events, ethnicity issues, or power struggles). We also found that individuals with different political identities may impose their own evaluation criteria on this organization, affecting both the collective memory organization and its stability over time.

The present dissertation has presented a new approach to the study of collective memory. The novelty of our approach lies in the way we addressed collective memories. First, we focused on the relationships between the public event representations within a global organization of collective memories, rather than as memory for discrete events. Public events are rarely isolated from other events and the historical context (Brown, 1990). In many cases, information about these events is encoded and interpreted in relation to other historical and contextual information or associate the event with other events based on similarity relationships (Brown, 1990; 2016; Van Dijk, 1984). Thus, we believe that the present research is informative for the understanding of how people connect public events to each other and classify them in making sense of these events.

Second, our research was motivated by the desire to capture semantic relations between public events. To our knowledge, the present research is the first attempt to provide empirical evidence for the semantic nature of collective memories. Semantic memory refers to memory for facts, meanings, concepts, and general knowledge about the world (Jones, Willits, & Dennis, 2015). Memory for public events is beyond our personal recollections; it incorporates the facts we acquired from other sources, such as media, or others' recollections (Zerubavel, 1997) and repeated information coming from personal experience as well as other sources that may be a part of semantic memory over time (Bahrick et al., 2013; Bahrick & Phelps, 1988).

Hence, we modeled our research based on work in the semantic memory literature. At three time points, we consistently found that people represented public events by distinguishing the events' nonpolitical and political characteristics and further clustering the political events according to their specific attributes (i.e., ethnicity issues and power-struggles). This suggests that people have a general knowledge structure for public events. We expect that our findings on the structural organization of collective memories may provide insights into the "collectively shared knowledge" of a group transmitted across generations (e.g., Assmann, 1995, p. 130).

These findings may also have implications for the retrieval of collective memories. The memory organization may be central to predicting recall order or the probability of an item being recalled. It has been well-established that people chunk information into higher-order conceptual clusters (e.g., Miller, 1956; Tulving, 1962) and recall information from the same cluster together (e.g., Bousfield, 1953; Friendly, 1972; 1977; Rubin & Olson, 1980). As shown by Bousfield (1953), people tend to recall related items consecutively during free recall of word lists. It is possible that people recall related public events in a similar fashion; they may recall a set of related public events consecutively during free recall of an event list. Future research is needed to investigate whether the semantic distance between public events may contribute to their recall order (for a similar approach, see Caramazza et al., 1976; Rubin & Olson, 1980). This research may allow us to understand how people commonly retrieve a set of specific public events when they are asked to outline specific events about a dominant, historical event (e.g., WWII or the Iraq War; e.g., Wertsch, 2004; Zaromb et al., 2014).

Furthermore, we observed that the organization of collective memories corresponded directly to the social structure of Turkey, as suggested in both

theoretical and empirical work (Casanova, 2001; Gürsoy, 2012; Keyman, 2007; Konda, March 2016).vWe showed that voting behavior may impact how people established links between some events, indicating that political identity may affect how individuals perceive and interpret public events. Thus, investigation of the organization of collective memories may provide insights into social and political issues in a given society.

From a methodological perspective, by employing the MDS technique, we provided empirical evidence for the psychological dimensions of collective memories as well as the relationship between memories held by individuals and the society. We also assessed real-world events while maintaining laboratory control. Future research that addresses the representation of public event knowledge using similar approaches may provide further insights into the cognitive mechanisms underlying the formation and retrieval of collective memories.

In our final study, we employed a semantic priming task to investigate whether performance in identifying a public event in a semantic priming task would be facilitated when the event is preceded by a related public event as opposed to when it is preceded by an unrelated public event. We could not reject the null hypotheses. We discussed our findings in relation to lessons learned from this experiment and have recommended future studies of collective memory in experimental procedures. We suggest that there is a need for future exploratory studies to specify various characteristics of collective memories.

The present research is not without limitations. First, MDS provides a global map for relationships between concepts (Cooke et al., 1986). From this global map, researchers need to infer the underlying dimensions in the data by subjectively assessing the configurations in the space (Hout et al., 2013). Moreover, the limited

number of events in the space is identified by the researcher. For example, we identified fifteen most frequently recalled events by the national sample in Tekcan et al. (2017), leaving us with two nonpolitical, natural disasters (i.e., the Marmara and Van earthquakes). Further research is needed to understand what would happen when various types of nonpolitical events (e.g., a flood or a hurricane) are introduced into the space. Still, we should note that while other techniques (e.g., factor analysis) identify underlying dimensions based on individuals' judgments for attributes determined by the researcher, MDS does not rely on attributes determined by the researcher. Thus, the evaluative criteria that individuals employed in their similarity judgments are not contaminated by the researcher's preconceptions. Moreover, as an initial step, MDS provided us an informative picture of collective memory organization. MDS maps are useful for reducing complex data into primary dimensions and making them more accessible to the human mind.

The second limitation of our study is the sampling. Turkey is a relatively unstable country, characterized by frequent coups, coup attempts, assassinations as well as a number of high-toll earthquakes (Tekcan et al., 2017). By taking into account this point, we wanted to collect data within a narrow period and minimize the potential impact of unforeseen developments. Therefore, this study was conducted using convenience sampling of Bogazici University undergraduate students. Our sample was not nationally representative of Turkey. Given that university graduates account for approximately 12% of the population of Turkey (TUIK, 2016), our undergraduate sample may represent only a small segment of the adult population in the country. Although we do not have direct evidence for whether and how educational level influences the organization of collective memory representations, educational level may be one of the potential factors that influences

individuals' opinions on public events. For example, a nationally-representative survey has shown that age, educational level, and news sources affected the attitude of individuals towards the Gezi protesters (Konda, June 2014). According to this survey, as the educational level of individuals increased, the rate of individuals who supported the protesters increased.

We should also acknowledge the issue of an uneven and relatively small sample for some political parties. Indeed, in the most recent election (November 2015), AKP won 49.5% of the vote, while CHP won 25.3%. However, in our sample, the percentage of AKP voters was lower (i.e., 18%) than CHP voters (i.e., 49%), suggesting that the distribution in our sample was not representative of the most recent election in Turkey. Although MDS can provide reliable solutions even with small sample sizes (e.g., Hollins et al., 2000; Krumhansl, 1979), the reader should be cautious about generalizing these results to the national population.

Overall, this dissertation investigated the structure and organization of collective memory representations using MDS. At three time points, we consistently found that people represented public events by distinguishing the events' nonpolitical and political characteristics and clustering political events according to their specific attributes (i.e., ethnicity-related issues and power-struggles). Our findings also suggest that voting behavior influences how people perceive and interpret public events while linking them to each other. Finally, despite a substantial stability, we found changes in the organization of collective memories over time. However, these changes were observed particularly in the supporters of the governing political party. Taken together, these findings suggest that collective memories may be associatively organized and that sociopolitical identity may have an impact on the organization of collective memories and its stability over time.

THE FOUR MAJOR POLITICAL PARTIES IN THE GRAND NATIONAL ASSEMBLY OF TURKEY

People's Democratic Party (HDP)	Republican People's Party (CHP)	Nationalist Movement Party (MHP)	Justice and Development Party (AKP)
The opposition party that is pro-Kurdish and pro-minority.	*The opposition party* that is secularist, social liberal, and social-democratic.	*The opposition party* that adheres to Turkish nationalism and cultural conservatism.	*The ruling party* that is conservative and moderately Islamist.

Left-wing ←——————————————————————→ Right-wing

APPENDIX B

THE FIFTEEN PUBLIC EVENTS USED IN THE MULTIDIMENSIONAL SCALING PROCEDURE

Cluster	Event	Description
1	Marmara Earthquake (1999)	A devastating earthquake (magnitude 7.4) struck the industrial northwestern region of Turkey. Official records indicate that 17,127 people died, 43,953 were injured, and a quarter of a million were displaced.
1	Van Earthquake (2011)	A devastating earthquake (magnitude 7.2) occurred in Van, in eastern Turkey. Official reports indicate that 604 people died, 4,152 were injured, and thousands were displaced.
1, 2	Syrian civil war (2011 - present)	An ongoing multi-sided armed conflict in Syria in which international interventions have taken place. The Syrian civil war has also exacerbated ethnicity-related conflicts as well as Islamist terrorist attacks in Turkey.
2	PKK Terrorism (1984 - present)	A terrorist organization that has waged against Turkish state for the autonomy of the Kurdish people in Turkey. The death toll of PKK terror is estimated to be no less than 40,000.
2	The Arrest of A. Öcalan (1999)	The founder and leader of the PKK, Abdullah Öcalan (also known as Apo), was arrested in 1999 and sentenced to aggravated life imprisonment.
2	The Kurdish-Turkish peace process (2011-2015)	The Kurdish-Turkish peace process aimed to resolve the Kurdish–Turkish conflict and PKK actions. The process was speeded up in 2013 but it was halted after July 2015.
2, 3	Gezi protests (2013)	A civil unrest began in Istanbul, Turkey, to initially protest an urban development plan for Gezi Park. These protests developed into wider anti-government demonstrations.

THE FIFTEEN PUBLIC EVENTS USED IN THE MULTIDIMENSIONAL SCALING PROCEDURE

Cluster	Event	Description
3	AKP's Coming to Power (2002)	After the 2002 elections, the Justice and Development Party (AKP), which is a conservative political party, came to power; they have been in power since then. Secularists have argued that the party harbors an Islamist agenda that could harm Turkey's secular foundation.
3	Madımak event (1993)	A group of Islamic fundamentalists protested a meeting of Alevi intellectuals in the Madımak Hotel. The crowd set the hotel on fire, killing 33 intellectuals and 2 members of the hotel staff.
3	May 27 Military Coup (1960)	On 27 May 1960, the military overthrew the civilian government that was accused of softening secularist policies.
3	The execution of A. Menderes (1961)	Adnan Menderes, the Turkish Prime Minister, was executed by a military junta after the May 27 coup. A fervently secular group had the opinion that the coup was a "revolution". Conservatives, however, considered this event as blameworthy. Menderes thus became the symbol of the conservatives' opposition to secularists.
3	February 28 Coup (1997)	The February 28 Turkish Military Memorandum, sometimes referred as a "post-modern coup," was issued at the National Security Council (NSC) meeting the National Security Council meeting in an attempt to limit Islamic activities for the sake of secularism. The coalition government was dissolved by decree following this meeting
3	September 12 Military Coup (1980)	On September 12, 1980, the military overthrew the civilian government. More than 500 people were sentenced to death; 50 were executed. Approximately 650,000 people were arrested.

THE FIFTEEN PUBLIC EVENTS USED IN THE MULTIDIMENSIONAL SCALING PROCEDURE

Cluster	Event	Description
3	Ergenekon Trials (2010)	A series of trials during which hundreds of people (e.g., military officers, commanders, journalists) were accused of being members of a secularist clandestine organization that was allegedly plotting against the Turkish government.
3	Cyprus Peace Operation (1974)	In 1974, the Turkish military conducted an operation and sent soldiers into Cyprus in response to a military coup trying to annex the island to Greece.

Note. In order to provide an organized synopsis of Turkey's collective memory, we listed the events according to the clusters where they were located in the MDS solution (Fig 2). We labeled these clusters as follows: 1: Political and nonpolitical events; 2: Ethnicity issues; 3: Power struggles.

THE QUESTIONNAIRE

Ratings for Public Events*

How important was the event for you?
1- Very unimportant to 7- Very important

How important was the event for your generation?
1- Very unimportant to 7- Very important

How positive or negative was the event?
1- Very negative to 7- Very positive

This event is (...)
    a part of my identity.
    1- Definitely no to 5- Definitely yes

    a reference point for my new experiences.
    1- Definitely no to 5- Definitely yes

    a turning point in my life.
    1- Definitely no to 5- Definitely yes

Sociopolitical Views

Position yourself on the left-right scale?	1- Left to 10-Right
Position yourself on the nationalism scale?	1- Not at all to 10-Very much
Position yourself on the religiousness scale?	1- Not at all to 10-Very much

Voting Behavior

For which party did you vote in the November 15, 2015 election?
For which party would you vote if there was an election next Sunday?

Demographical Information

Age
Gender

***Ratings for the public events section of the questionnaire were not used at T3.

APPENDIX D

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D1. Positive/Negative Emotion and the Centrality to Identity Ratings across Voting Groups at T1 (May 2016)

	Positive – Negative Emotion								Centrality to Identity							
	AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)		AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Marmara	1.88	1.27	1.78	1.10	1.43	1.09	1.30	0.67	1.72	0.84	1.54	0.87	1.36	0.84	2.10	1.29
Van	1.20	0.50	1.38	0.77	1.21	0.43	1.30	0.95	1.44	0.58	1.28	0.54	1.21	0.43	1.50	1.27
Syria	1.60	1.04	1.29	0.52	1.14	0.36	1.00	0.00	2.36	1.35	1.82	0.98	2.36	1.22	1.70	0.67
Peace	3.76	1.16	3.49	1.52	4.57	1.65	2.40	1.17	1.96	1.27	1.41	0.74	1.93	1.07	1.70	1.34
PKK	1.00	0.00	1.13	0.45	2.21	1.63	1.00	0.00	2.84	1.49	2.84	1.35	2.79	1.19	3.40	1.35
Apo	6.08	1.71	5.25	1.38	4.64	1.69	6.60	0.97	1.52	0.92	1.22	0.57	1.29	0.61	1.70	1.06
Gezi	2.24	1.33	5.37	1.48	5.29	1.27	4.80	1.81	1.56	0.92	3.49	1.25	3.21	1.19	2.60	1.17
AKP	5.56	1.08	1.78	1.05	1.71	0.91	2.10	0.99	2.52	1.45	2.72	1.49	3.64	1.50	2.40	1.71
Madımak	2.24	1.09	1.79	1.10	1.36	0.74	1.50	0.97	1.32	0.56	1.51	0.92	1.86	1.23	1.20	0.42
Ergenekon	3.32	1.35	2.25	1.24	2.79	1.25	2.60	1.35	1.60	0.96	1.44	0.74	1.36	0.63	1.10	0.32
February 28	1.84	1.18	2.90	1.32	2.43	1.02	3.50	1.78	2.44	1.29	1.29	0.73	1.21	0.43	1.20	0.42
September 12	2.00	1.04	2.37	1.28	1.93	0.92	3.00	1.83	1.76	1.09	1.46	0.87	1.50	0.85	1.60	1.26
May 27	2.32	1.31	2.84	1.29	3.43	1.60	3.60	1.51	1.40	0.87	1.32	0.70	1.07	0.27	1.20	0.42
Menderes	1.56	0.92	2.62	1.40	2.57	1.55	2.10	1.29	2.08	1.26	1.24	0.63	1.07	0.27	1.10	0.32
Cyprus	4.56	1.53	4.41	1.38	3.71	1.38	5.10	1.52	1.24	0.52	1.18	0.54	1.14	0.53	1.30	0.67

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D2. Psychological and Material Impact Ratings across Voting Groups at T1 (May 2016)

	Psychological Impact								Material Impact							
	AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)		AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Marmara	2.80	1.35	2.60	1.26	2.07	1.27	3.20	1.40	1.88	1.33	1.87	1.11	1.71	1.33	1.60	1.26
Van	2.64	1.32	3.00	1.52	3.21	1.25	3.10	1.66	1.24	0.44	1.25	0.61	1.07	0.27	1.10	0.32
Syria	3.72	1.28	3.22	1.31	3.64	1.22	3.50	1.43	2.12	1.30	2.31	1.55	2.64	1.65	1.90	1.66
Peace	2.24	1.23	2.34	1.23	2.57	1.50	2.70	1.64	1.44	1.00	1.59	1.07	1.64	1.15	2.00	1.63
PKK	4.12	1.24	4.18	1.02	4.21	1.12	4.60	0.52	2.68	1.63	2.63	1.57	2.79	1.58	2.50	1.96
Apo	1.88	1.09	1.81	1.07	2.29	1.33	2.70	1.49	1.60	1.04	1.15	0.43	1.64	1.28	1.70	1.49
Gezi	2.36	1.25	3.81	1.20	4.07	1.14	3.30	1.34	1.56	1.04	1.91	1.06	1.93	1.00	1.30	0.48
AKP	2.96	1.51	3.91	1.19	4.29	0.99	3.70	1.16	2.96	1.62	3.24	1.48	4.14	1.17	3.40	1.71
Madımak	1.52	0.71	2.47	1.52	3.43	1.79	2.10	1.45	1.16	0.47	1.26	0.75	1.57	0.94	1.00	0.00
Ergenekon	1.76	1.05	2.41	1.21	2.36	1.55	1.60	1.07	1.56	1.00	1.34	0.77	1.64	1.08	1.40	1.26
February 28	2.92	1.19	1.43	0.80	1.79	1.12	1.90	1.10	2.28	1.59	1.37	0.79	1.57	0.94	1.30	0.95
September 12	2.12	1.09	2.22	1.22	2.57	1.34	2.00	1.25	1.60	1.19	1.56	1.00	2.00	1.41	2.10	1.79
May 27	1.64	0.99	1.60	0.93	1.93	1.21	1.10	0.32	1.52	1.08	1.26	0.61	1.36	0.84	1.60	1.26
Menderes	2.76	1.54	2.01	1.28	2.29	1.33	1.70	1.06	1.60	0.87	1.25	0.68	1.29	0.61	1.10	0.32
Cyprus	1.32	0.75	1.29	0.67	1.29	0.83	1.4	0.52	1.44	0.58	1.28	0.54	1.21	0.43	1.50	1.27

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D3. Personal and Generational Importance Ratings across Voting Groups at T1 (May 2016)

	Personal Importance								Generational Importance							
	AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)		AKP (n = 25)		CHP (n = 68)		HDP (n = 14)		MHP (n = 10)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Marmara	5.16	1.37	4.18	1.67	3.57	1.34	5.20	1.87	5.12	1.51	4.88	1.62	4.93	1.64	5.40	1.43
Van	4.24	1.48	4.09	1.75	3.71	1.33	4.90	1.79	5.00	1.73	4.68	1.74	4.71	0.99	4.50	1.51
Syria	5.60	1.29	4.90	1.55	5.36	1.15	5.70	0.82	5.56	1.23	5.51	1.33	6.07	1.00	6.10	0.88
Peace	4.56	1.76	3.96	1.72	4.79	1.81	4.50	2.32	5.12	1.33	4.96	1.40	5.07	1.21	5.50	2.01
PKK	6.32	1.14	6.28	1.02	5.71	1.44	6.90	0.32	6.40	1.00	6.66	0.66	6.14	1.29	6.90	0.32
Apo	5.16	1.95	4.24	1.74	4.21	1.19	6.70	0.95	4.96	1.70	4.96	1.52	5.14	0.95	6.60	0.70
Gezi	4.24	1.59	6.15	1.19	5.93	1.07	5.60	1.65	5.96	1.02	6.68	0.68	6.71	0.47	6.70	0.67
AKP	5.72	1.24	5.99	1.34	6.50	0.85	5.80	1.69	6.20	0.96	6.60	0.90	6.93	0.27	6.70	0.48
Madımak	2.56	1.00	3.51	1.99	3.86	1.96	3.80	2.30	3.16	1.25	3.78	1.59	3.71	1.59	4.20	2.15
Ergenekon	3.72	1.72	3.75	1.52	3.64	1.86	3.20	2.39	4.40	1.35	4.75	1.44	4.14	1.10	4.80	1.75
February 28	5.08	1.55	2.90	1.71	3.43	1.22	3.30	2.06	4.56	1.56	3.75	1.75	4.29	1.20	4.40	2.22
September 12	3.80	1.53	3.54	1.64	3.71	1.64	4.10	2.64	3.92	1.61	4.00	1.45	4.21	1.67	4.40	2.63
May 27	2.96	1.62	2.71	1.45	2.71	1.33	3.60	2.32	3.16	1.49	3.09	1.38	3.36	1.55	3.50	2.27
Menderes	4.88	1.81	3.12	1.85	3.21	1.76	3.50	1.96	4.36	1.55	3.50	1.52	3.36	1.28	3.80	2.44
Cyprus	2.40	1.41	2.13	1.23	2.00	1.24	2.30	1.57	2.96	1.57	2.49	1.22	2.57	1.50	2.50	1.43

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D4. Positive/Negative Emotion and the Centrality to Identity Ratings across Voting Groups at T2 (November 2016)

	Emotion								Centrality to Identity							
	AKP (n = 11)		CHP (n = 60)		HDP (n = 17)		MHP (n = 10)		AKP (n = 11)		CHP (n = 60)		HDP (n = 17)		MHP (n = 10)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Marmara	2.09	1.04	1.55	0.98	1.94	0.97	1.50	0.97	1.88	0.90	1.94	0.84	1.72	0.82	2.07	1.06
Van	1.73	1.68	1.28	0.76	1.12	0.49	1.50	0.71	1.91	0.76	1.69	0.76	1.55	0.72	1.43	0.45
Syria	1.55	0.82	1.40	0.74	1.06	0.24	1.10	0.32	2.76	0.97	2.63	0.96	3.00	0.90	2.57	1.25
Peace	4.18	1.94	3.12	1.50	3.94	1.85	4.40	1.65	2.30	1.00	1.73	0.83	2.04	0.61	2.47	1.16
PKK	1.00	0.00	1.17	0.62	2.00	1.41	2.90	1.66	3.55	1.33	3.07	0.99	2.88	1.06	3.83	1.16
Apo	5.55	1.37	5.28	1.61	1.94	1.60	1.50	0.85	2.15	0.85	1.72	0.90	1.53	0.47	2.10	1.15
Gezi	2.64	1.29	5.30	1.45	6.12	1.05	4.80	1.69	2.39	0.84	3.67	0.94	3.88	1.11	2.73	0.77
AKP	5.00	1.48	1.48	0.81	4.76	1.60	5.20	1.48	2.61	1.16	3.74	1.17	3.71	1.41	2.90	1.42
Madımak	1.73	1.19	1.77	1.16	1.82	1.01	2.80	1.40	1.61	0.55	1.92	1.01	2.31	1.19	1.47	0.42
Ergenekon	3.09	0.94	2.13	1.21	2.25	1.24	2.20	1.03	2.03	0.89	2.15	0.91	1.73	0.86	2.20	1.08
February 28	2.36	1.50	2.98	1.26	3.71	1.21	4.80	2.30	1.76	0.87	1.41	0.59	1.35	0.55	2.30	0.88
September 12	2.36	1.03	2.47	1.44	1.31	0.60	1.60	0.70	1.73	0.70	1.62	0.64	2.14	0.88	1.87	0.86
May 27	1.73	1.10	2.78	1.51	6.53	0.80	6.10	1.10	1.64	0.91	1.38	0.49	1.29	0.54	1.73	1.05
Menderes	1.45	0.82	2.18	1.26	3.94	1.03	3.30	1.42	2.21	1.00	1.41	0.56	1.35	0.34	1.83	0.79
Cyprus	4.55	2.16	4.35	1.27	5.88	1.27	3.60	1.78	1.51	0.75	1.23	0.55	1.14	0.21	1.27	0.34

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D5. Psychological and Material Impact Ratings across Voting Groups at T2 (November 2016)

| | Psychological Impact | | | | | | | | Material Impact | | | | | | | |
| | AKP (n = 11) | | CHP (n = 60) | | HDP (n = 17) | | MHP (n = 10) | | AKP (n = 11) | | CHP (n = 60) | | HDP (n = 17) | | MHP (n = 10) | |
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Marmara	2.18	1.17	2.54	1.29	1.35	0.79	1.60	1.07	1.36	0.67	1.49	0.77	4.12	1.27	3.90	1.45
Van	2.64	1.29	2.82	1.31	1.59	0.87	2.50	0.85	1.45	0.93	1.30	0.83	1.88	1.17	2.50	1.35
Syria	3.55	1.29	3.25	1.34	1.12	0.49	1.40	0.84	2.18	1.72	2.40	1.51	1.41	1.18	1.40	0.97
Peace	2.27	1.35	1.82	1.11	3.24	2.02	4.10	2.23	1.73	1.27	1.58	1.01	4.59	2.24	3.40	1.90
PKK	4.09	1.30	4.02	1.20	2.76	1.68	4.10	1.85	2.64	1.96	2.62	1.53	3.65	1.77	4.40	2.12
Apo	3.00	1.79	1.88	1.24	2.71	1.49	1.40	0.70	1.82	1.47	1.33	0.80	1.65	1.11	1.60	0.84
Gezi	2.45	1.51	3.88	1.08	3.88	1.80	5.60	2.07	1.82	1.40	1.82	1.03	6.53	0.80	5.00	1.83
AKP	2.82	1.47	4.25	1.10	2.94	1.92	4.50	2.01	3.18	1.60	3.70	1.50	3.82	1.81	3.30	1.64
Madımak	1.55	0.52	2.37	1.39	2.76	1.25	4.30	1.77	1.18	0.60	1.12	0.49	4.41	1.54	5.10	1.45
Ergenekon	2.45	1.63	2.55	1.28	1.41	1.00	1.80	0.92	1.64	1.12	1.45	0.87	2.88	1.41	1.70	0.67
February 28	1.64	0.81	1.43	0.83	2.35	1.73	1.70	1.06	1.36	0.67	1.23	0.65	2.94	1.39	2.80	1.62
September 12	1.82	1.08	1.90	1.10	1.35	1.00	1.80	1.23	1.64	1.43	1.57	1.06	1.65	1.37	1.10	0.32
May 27	1.82	1.25	1.45	0.65	4.82	2.13	5.50	1.35	1.55	1.21	1.27	0.55	6.94	0.24	6.10	1.37
Menderes	2.55	1.37	1.72	0.99	1.59	0.80	2.60	1.65	1.45	1.04	1.17	0.46	4.18	1.19	3.80	1.48
Cyprus	1.09	0.30	1.20	0.63	4.41	1.80	6.60	0.70	1.27	0.65	1.18	0.39	1.59	1.00	3.10	1.10

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS

Table D6. Personal and Generational Importance Ratings across Voting Groups at T2 (November 2016)

	Personal Importance								Generational Importance							
	AKP (n = 11)		CHP (n = 60)		HDP (n = 17)		MHP (n = 10)		AKP (n = 11)		CHP (n = 60)		HDP (n = 17)		MHP (n = 10)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Marmara	4.45	1.81	4.17	1.68	2.65	1.50	3.00	1.76	5.27	1.79	5.07	1.44	2.71	1.40	2.80	1.55
Van	4.00	1.18	3.97	1.62	2.24	1.39	2.00	0.94	4.27	1.56	4.52	1.56	2.65	1.37	3.00	1.49
Syria	5.91	1.14	4.98	1.62	2.06	1.39	1.90	1.10	5.45	1.51	5.75	1.22	1.47	1.01	2.20	1.40
Peace	4.73	2.00	3.45	1.73	3.76	1.95	3.40	1.71	4.73	1.62	4.75	1.48	3.00	1.73	4.50	1.65
PKK	6.55	0.93	6.32	0.91	4.35	1.97	4.40	1.78	6.45	0.82	6.68	0.77	4.53	1.70	4.80	1.99
Apo	5.36	1.36	4.35	1.79	1.35	0.79	1.30	0.67	5.27	1.62	5.02	1.52	3.53	1.70	2.70	1.83
Gezi	4.91	1.76	6.33	1.00	6.00	1.06	6.50	0.85	6.36	0.67	6.73	0.69	5.53	1.23	5.20	1.55
AKP	5.09	2.17	6.15	1.12	4.06	1.71	4.20	1.62	6.18	0.98	6.60	0.85	3.76	1.89	4.80	1.23
Madımak	2.82	1.17	3.85	1.86	4.18	1.74	4.40	1.78	3.45	1.44	3.77	1.65	5.06	1.52	5.20	1.93
Ergenekon	3.73	2.10	4.22	1.75	2.59	1.28	2.00	0.82	4.27	1.68	4.83	1.46	1.47	1.07	2.80	1.40
February 28	3.36	1.86	2.92	1.52	2.00	1.50	1.70	0.82	3.91	1.04	3.60	1.43	4.00	1.73	2.60	1.78
September 12	3.82	1.94	3.45	1.71	1.18	0.53	1.30	0.48	4.09	1.64	3.73	1.55	1.47	1.07	2.10	1.60
May 27	2.45	1.51	2.67	1.41	6.24	0.97	6.60	0.84	3.45	1.63	3.00	1.31	5.82	1.38	5.90	0.99
Menderes	4.18	1.99	2.93	1.44	3.59	1.12	4.20	1.03	4.18	1.08	3.50	1.56	3.94	1.20	3.10	1.20
Cyprus	2.09	1.51	2.23	1.49	2.18	1.63	1.00	0.00	2.82	1.33	2.30	1.23	1.41	0.94	1.00	0.00

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS
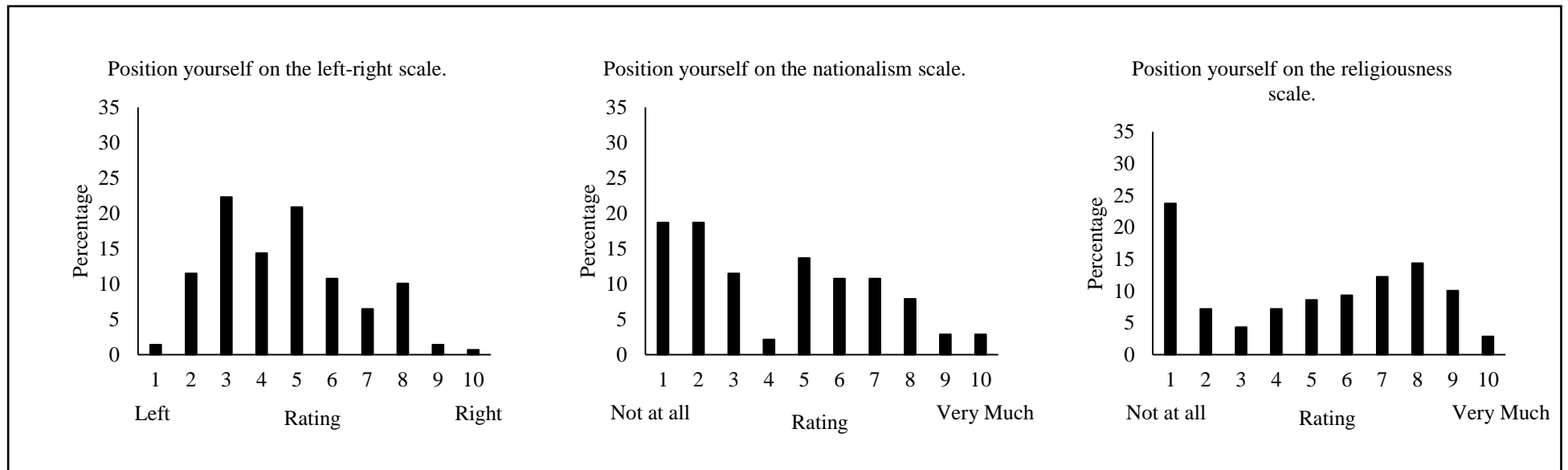
Fig. D1 The distribution of ratings for ideological variables at T1 (May 2016)

THE QUESTIONNAIRE RATINGS FOR PUBLIC EVENTS
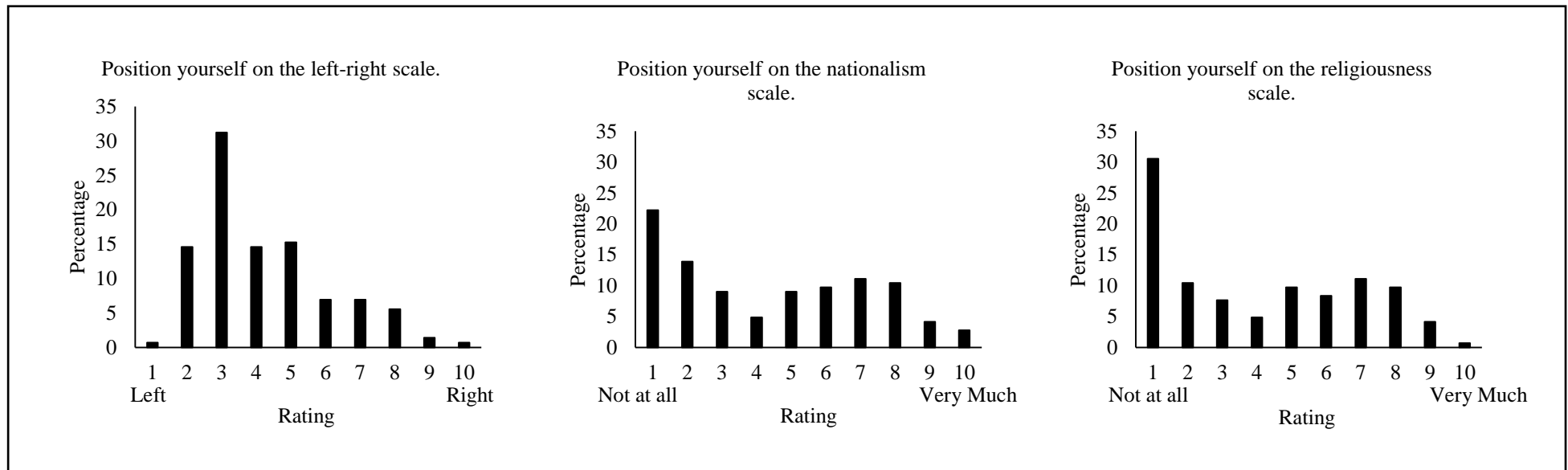
Fig. D2 The distribution of ratings for ideological variables at T2 (November 2016)

APPENDIX E

DISPARITIES BETWEEN EVENTS

Table E1. Disparities between Events at T1 (May 2016)

	Gezi	Cyprus	Feb.28	Peace	Syria	Van	PKK	Sept. 12	Marm.	Madı.	AKP	Erg.	May 27	Öcalan	Mend.
Gezi	0														
Cyprus	3.31	0													
Feb.28	1.44	2.22	0												
Peace	1.44	2.22	1.44	0											
Syria	2.22	2.9	2.22	1.44	0										
Van	4.27	4.28	4.31	4.23	2.22	0									
PKK	1.44	2.9	1.44	0.8	1.12	3.58	0								
Sept. 12	1.44	1.96	0.8	1.44	2.22	4.28	1.44	0							
Marmara	4.28	4.35	4.28	4.28	2.22	0.73	3.58	4.27	0						
Madımak	1.48	2.22	1.44	2.22	2.22	3.31	1.44	1.48	3.58	0					
Ak Party	0.8	2.91	0.8	2.22	2.22	3.58	0.8	1.44	3.58	1.44	0				
Ergenekon	1.44	2.22	0.8	1.12	2.22	4.24	1.12	0.8	4.25	1.48	0.8	0			
May 27.	1.48	1.48	1.12	1.96	2.67	4.25	1.96	0.8	4.28	1.48	1.44	1.44	0		
Öcalan	2.22	2.67	1.48	0.8	2.22	4.31	0.73	1.48	4.28	2.22	1.44	1.44	2.22	0	
Menderes	2.22	2.22	1.12	2.22	3.31	4.74	2.22	0.8	4.74	1.48	1.44	1.44	0.8	2.22	0

Note. Marm. = Marmara earthquake; Madı. = Madımak event; Erg. = Ergenekon trials.

DISPARITIES BETWEEN EVENTS

Table E2. Disparities between Events at T2 (November 2016)

	Gezi	Cyprus	Feb.28	Peace	Syria	Van	PKK	Sept. 12	Marm.	Madı.	AKP	Erg.	May 27.	Öcalan	Mend.
Gezi	0														
Cyprus	3.48	0													
Feb.28	1.2	2.16	0												
Peace	1.2	2.68	1.2	0											
Syria	2.22	3.12	2.22	1.2	0										
Van	3.93	4.17	4	3.93	3.12	0									
PKK	1.32	2.68	1.2	0.84	0.98	3.57	0								
Sept. 12	1.35	2.15	0.84	1.52	2.35	3.93	1.93	0							
Marmara	3.93	4.63	4.17	4.31	3.57	0.84	3.93	3.93	0						
Madımak	1.35	2.16	1.2	2.03	2.68	3.93	1.2	1.2	4	0					
Ak Party	0.84	3.53	0.84	2.16	2.22	3.57	0.84	0.98	3.57	1.2	0				
Ergenekon	1.2	2.16	0.84	1.1	2.15	4.14	0.98	1.04	4.31	1.2	0.84	0			
May 27.	2.16	1.32	1.2	2.03	3.12	4	2.03	0.84	4.17	1.35	1.2	1.2	0		
Öcalan	2.22	2.58	1.2	0.84	2.03	4.45	0.84	1.35	4.73	2.03	1.2	1.2	2.15	0	
Menderes	2.35	2.16	1.2	2.22	3.57	4.73	2.15	0.84	4.63	1.2	1.04	1.2	0.84	2.03	0

Note. Marm. = Marmara earthquake; Madı. = Madımak event; Erg. = Ergenekon trials.

DISPARITIES BETWEEN EVENTS

Table E3. Disparities between Events at T3 (August 2017)

	Gezi	Cyprus	Feb.28	Peace	Syria	Van	PKK	Sept. 12	Marm.	Madı.	AKP	Erg.	May 27.	Öcalan	Mend.
Gezi	0														
Cyprus	3.45	0													
Feb.28	1.58	1.85	0												
Peace	1.47	2.32	1.47	0											
Syria	2.32	3.05	2.32	1.52	0										
Van	4.37	4.46	4.43	4.37	2.75	0									
PKK	1.47	2.32	1.52	0.76	1.21	3.49	0								
Sept. 12	1.58	1.58	0.84	1.58	2.75	4.43	1.21	0							
Marmara	4.45	4.46	4.46	4.45	2.88	0.7	3.49	4.45	0						
Madımak	1.58	2.32	1.47	1.92	1.92	3.45	1.21	1.58	3.49	0					
Ak Party	0.75	2.75	0.84	1.92	2.32	3.45	0.84	1.21	3.7	1.58	0				
Ergenekon	1.52	1.85	0.84	0.85	2.32	4.43	0.84	0.85	4.46	1.58	0.84	0			
May 27.	1.58	1.52	0.84	1.58	2.75	4.46	1.67	0.75	4.46	1.58	1.52	0.85	0		
Öcalan	1.67	2.32	1.21	0.84	1.85	4.46	0.7	1.47	4.46	1.92	1.47	1.21	1.92	0	
Menderes	2.32	1.85	0.84	2.32	2.05	4.46	1.67	0.84	4.46	1.58	1.47	1.47	0.76	1.58	0

Note. Marm. = Marmara earthquake; Madı. = Madımak event; Erg. = Ergenekon trials.

TWO-DIMENSIONAL MDS SOLUTION FOR THE AKP VOTER DATA AT T3

Derived Stimulus Configuration
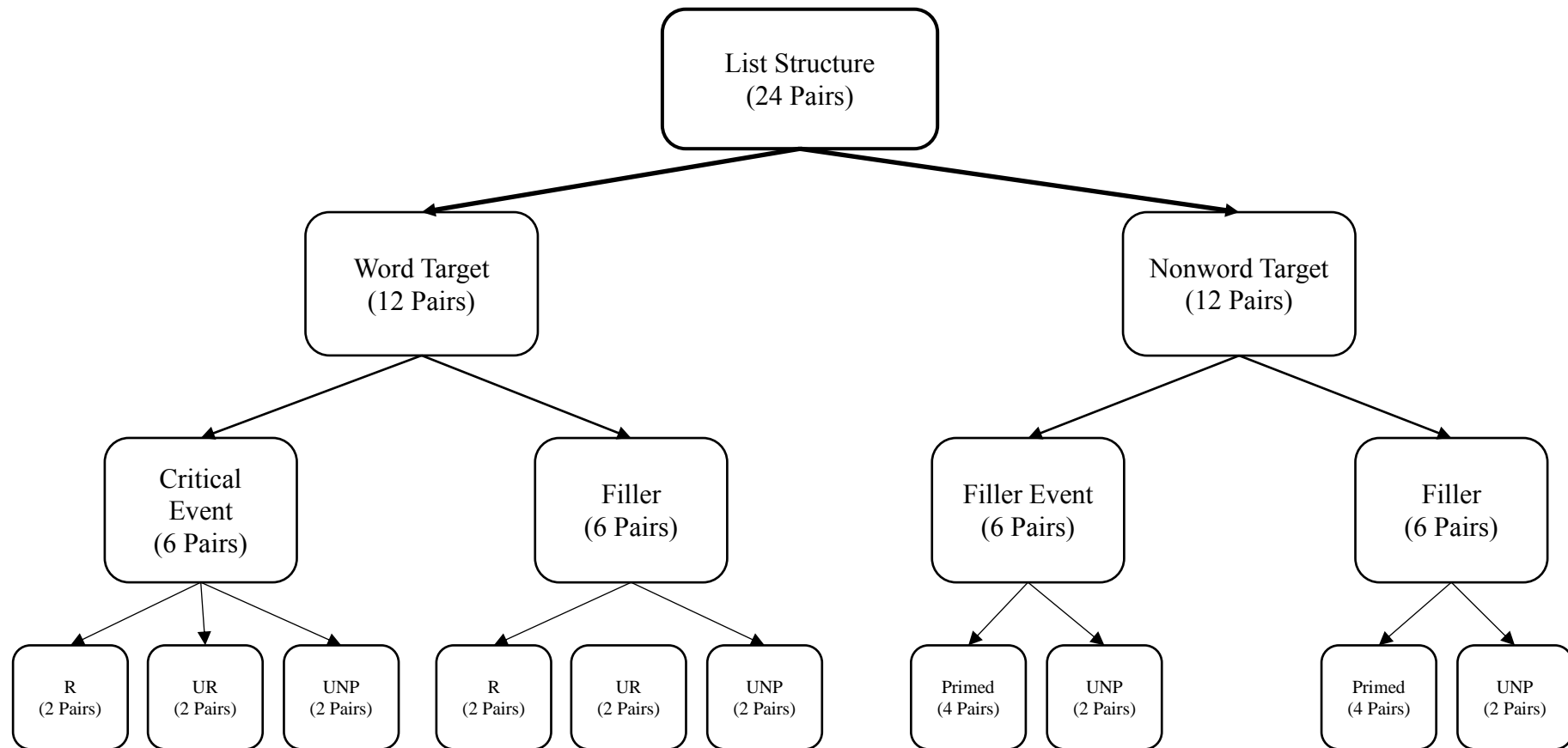
Euclidean distance model
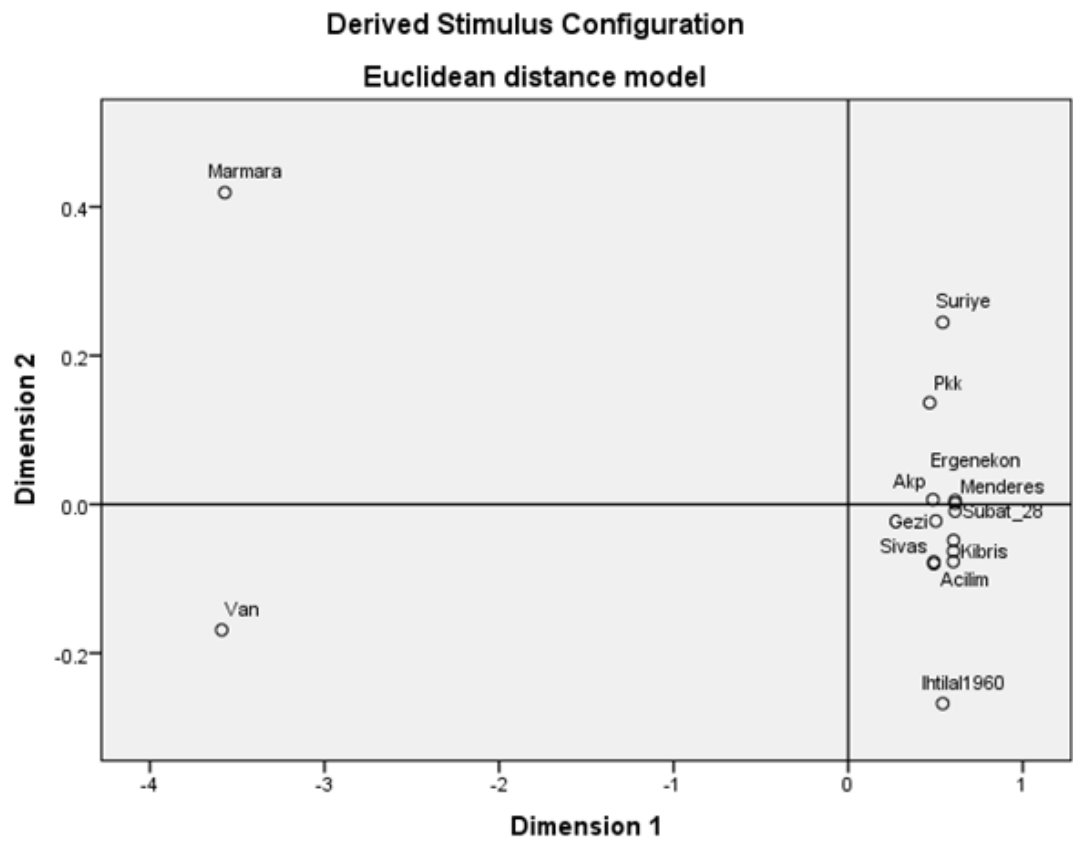
AN EXAMPLE OF TEST LISTS IN LEXICAL DECISION TASK (LDT)

Condition	Prime	Target
PF	Maraş olayı (Maraş event)	Kamgon
FF	Kemal Sunal (An actor)	Şaban (A film character)
UNP	##### #####	Kemey
CR-R	12 Eylül darbesi (September 12 coup)	Ergenekon (Ergenekon trials)
PF	Kıbrıs harekatı (Cyprus Peace Operation)	Çenget
OF	Kül tablası (Ashtray)	Sigara (Cigarette)
FF	Adile Naşit (An actress)	Marug
CR-UNP	##### #####	Van (Van earthquake)
FF	Barış Manço (A singer)	Söpük
OF	Cep telefonu (Mobile Phone)	Duman (Smoke)
UNP	##### #####	Takbur
CR-R	Pkk terörü (Pkk Terror)	Suriye (Syria)
PF	Kardak krizi (Kardak Crisis)	Armit
UNP	##### #####	Tespih (Bead)
OF	Plaj havlusu (Beach Towel)	Hüzgeç
CR-UR	Abdullah Öcalan (The founder of Pkk terrorist organization)	Menderes (Execution of Menderes)
FF	Rıdvan Dilmen (A football player)	Macun (Paste)
UNP	##### #####	Carap
OF	Saç tokası (Hair clips)	Şeynir
CR-UNP	##### #####	Gezi (Gezi protests)
UNP	##### #####	Bardak (Beaker)
PF	Susurluk kazasi	Bilebik
UNP	##### #####	Tılnak
CR-UR	1960 darbesi	Açılım (Kurdish-Turkish peace process)

Note. English translation (or explanation) of each stimulus is presented in parentheses. The remaining stimuli are non-word. CR-R = Critical public event in the related condition; CR-UR = Critical public event in the unrelated condition; CR-UNP = Critical public event in the unprimed condition. PF = Public event filler; FF = Famous person filler; OF = Object filler.

APPENDIX H

OVERALL LIST STRUCTURE IN LEXICAL DECISION TASK

```
                              List Structure
                               (24 Pairs)
                    ┌──────────────┴──────────────┐
              Word Target                    Nonword Target
               (12 Pairs)                      (12 Pairs)
          ┌────────┴────────┐            ┌────────┴────────┐
      Critical                         Filler Event        Filler
       Event          Filler            (6 Pairs)         (6 Pairs)
     (6 Pairs)      (6 Pairs)
   ┌────┼────┐    ┌────┼────┐         ┌──────┐          ┌──────┐
   R    UR   UNP  R    UR   UNP    Primed   UNP      Primed   UNP
(2 Pairs)(2 Pairs)(2 Pairs)(2 Pairs)(2 Pairs)(2 Pairs)(4 Pairs)(2 Pairs)(4 Pairs)(2 Pairs)
```

R = Related; UR = Unrelated; UNP = Unprimed.

FLOW OF A TRIAL IN THE LEXICAL DECISION TASK

Feedback

Fixation   Prime   Target   Ready

+   THE SEPTEMBER   I S I   ERGENEKON   Correct!   Ready for next trial
              12 COUP   Your response
                                                       time is 0.472sec.

1000ms   300ms   50ms   Until Response   1000ms
                                       (Word/Nonword?) Incorrect!
                                                       Your response
              SOA = 350ms   time is 0.472sec.

                                                       2000ms
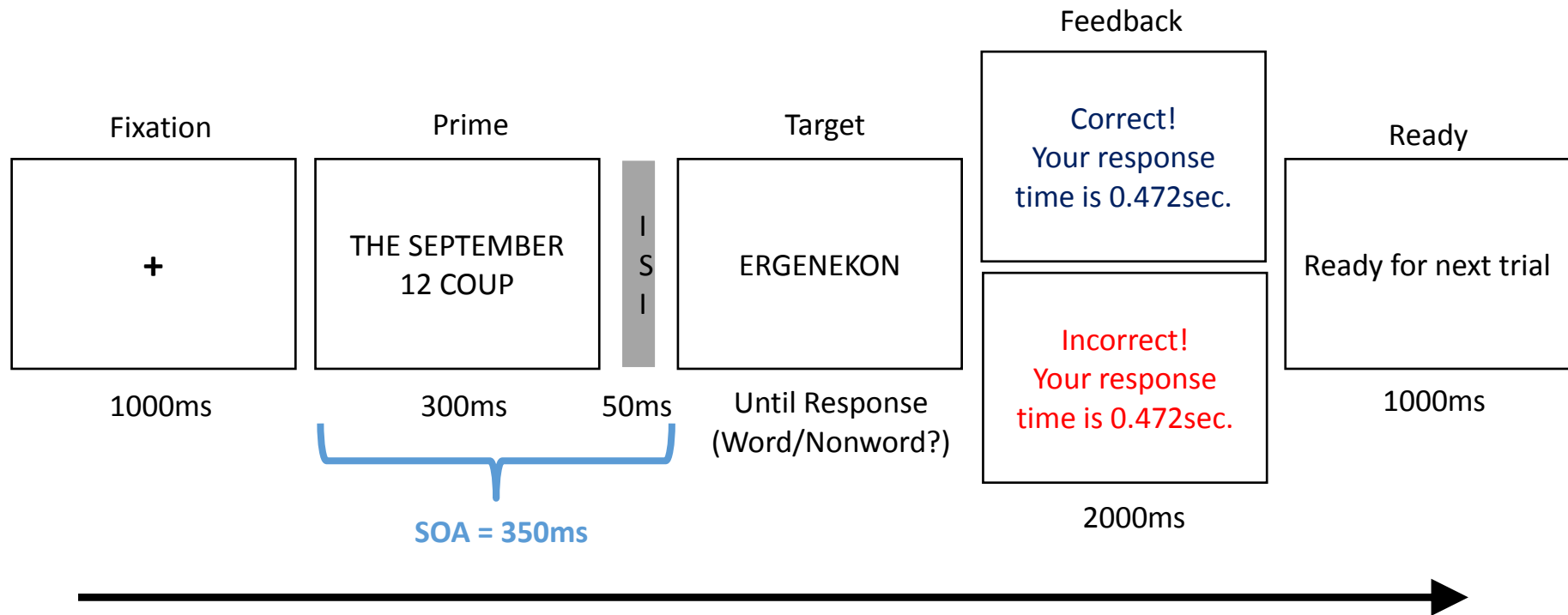
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