Summary
The Mediator Role of Time Perspective on the Relation between Autobiographical Memory and Future Time Perception

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Autobiographical memory functions is a concept that includes the reasons of individuals' need for the autobiographical memory. The triple functioning structure proposed by Bluck, Alea, Habermas.ve Rubin (2005) is generally taken as basis in studies conducted in the recent years (Waters, 2014). On the other hand, in the study conducted by Er and Yaşın (2016) in the sample of Turkey, five functions of the autobiographical memory are mentioned: facing the past, remembering the past on a hint basis, mood regulation, self, and taking lessons from the past. In this study, this structure with five functions proposed by Er and Yaşın (2016) was taken as basis by taking into account the studies in the literature which exhibit the relationship between the autobiographical memory and culture (Dritschel, Kao, Astell, Neufeind and Lai, 2011; Nelson and Fivush, 2004, Han, Leichtman and Wang, 1998; Sahin and Mebert, 2013; Wang, 2001; Wang, 2011).

Self. The self-dimension means that individuals review their personal past life events in order to evaluate their self. In this context, it may be stated that individuals have an opinion about themselves by evaluating their attitudes and behaviors in the face of past events. *Taking lessons from the past.* Taking lessons from the past includes taking into account past life events in order to regulate present behavior and plans (Baddeley, 1987; Bluck, Alea, Habermas.ve Rubin, 2005). *Remembering the past on a hint basis.* This means that individuals reflect upon their experiences and think about their memories when they come across reminding hints. These reminders may be tangible objects, individuals which a significant place in a person's life, or foreigners who may cause associations. *Mood regulation.* This means that individuals think about their past lives in order to balance their present mood. According to this, individuals use past life events both to achieve present well-being and to balance existing positive mood. *Facing the past* It is a dimension in which individuals reflect upon

past experiences and think about their memories in order to question their personal past experiences and to face these experiences. The dimension of facing the past includes facing the past for the purpose of increasing awareness regarding events, rather than reaching a particular goal or taking lessons.

Time perspective theory (Zimbardo and Boyd, 1999) suggests that past life events and possible future evaluations are at the center of present life of individuals. According to this theory, individual and social experiences are separated into meaningful and consistent classifications (past, present, and future) and take part in unconscious processes, and these classifications may affect present emotions, thoughts and behaviors of individuals. On the other hand, although it is the most optimum if all time dimensions affect the individuals in a balanced manner, authors pointed out that one of these time dimensions may be dominant and handled time perspective in this context. Accordingly, individuals have a tendency towards one of past/positive, past/negative, present/hedonistic, present/fatalistic, and future time perspectives (Zimbardo, 2002).

It is seen that individuals with tendency towards *past/negative time perspective* remember past negative events more. The reason for this may be unpleasant experiences, traumatic events, negative reconstruction of some events or combination of all these conditions. Individuals with high tendency towards past/*positive time perspective*, however, have a tendency towards being affected from positive events in their past life (e.g. attaching importance to nostalgic values, longing for the past) (Zimbardo and Boyd, 1999). Individuals with *Present/hedonistic time perspective* live on the basis of "taking pleasure". For these individuals who avoid distress and painful events and focus on pleasing events, "living in the moment" is prioritized instead of investing for the future. (Zimbardo, Keough and Boyd, 1997). Individuals with *Present/fatalistic time perspective* believe that they

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do not have much control on their future and their life (Zimbardo and Boyd, 1999). The fact that they have a high tendency towards believing in luck and fate causes them to associate the results of their own behavior more with external factors. It is the most basic characteristics of the individual with future time perception to direct their present behavior by planning future time in line with hopes, beliefs, expectations and desires. These individuals see the moment they are in as a step towards reaching their future goals.

Future Time Perception is defined as the effect of near or distant future goals of an individual on his/her present actions (Lens, 1988; Lens and Tsuzuki, 2005). It has a subjective structure because it involves individual differences. In this study, future time perception is handled as based on four dimensions proposed by Husman and Shell (1996, 2008): value, distance, connectedness, and speed. *Value* refers to the importance of near or distant future goals for the individual (De Volder and Lens, 1982). *Connectedness* is defined as association by the individual between the present actions and the future goals (Brown and Jones, 2004; Shell and Husman, 2001). *Distance* is the future time dimension which involves how far the future goals determined by the individual are (Daltrey and Langer, 1984). *Speed* is defined as the perception of the individual regarding how fast the time passes (Gjesme, 1979; Husman and Shell, 1996,; 2008).

When the related literature was examined, there were no studies investigating the relationship between autobiographical memory functions and future time perception. However, Pillemer (2003) emphasizes that the autobiographical memory is related to the future as well as to the past. Similarly, a few studies on the relationship between autobiographical memory and future time perception revealed a significant relationship between past and future (Addis and Schacter, 2008; Suddendorf, and Busby, 2005). In light of this information, the main purpose of this study is to analyze the relationship between autobiographical memory functions and the future time perception both directly and indirectly, through time perspective (see figure 1). The basic research hypothesis established in line with the purpose of the study are summarized briefly as follows.

1) Taking lessons from the past is expected to predict connectedness,value and speed dimensions of future time perception positively via future time perspective.

2) Remembering the past on a hint basis is expected to predict connectedness dimension of future time perception negatively via present/hedonistic time perspective.

3) Facing the past is expected to predict value dimension of future time perception positively via past/negative time perspective.

Method

Participants

The sample of this study consisted of 803 people. The mean age of participants was 31.10 (SD=15.05).

Measurements

Functions of Autobiographical Memory Scale (FAMS). FAMS was developed by Er and Yaşın (2016) to measure differences on reasons of thinking past events. The Cronbach's alphas coefficient for the subscales ranged between .79 and .84. The Cronbach's alphas coefficient for the subscales in this study ranged between .78 and .83.

Zimbardo Time Perspective Inventory (ZTPI). ZTPI was developed by Zimbardo and Boyd (1999) to measure to individual's past, present and future time perspective. It was adapted into Turkish by Erginbilgiç (in preparation). The Cronbach's alphas coefficient for the subscales ranged between .60 and .81. The Cronbach's alphas coefficient for the subscales in this study ranged between .54 and .79.

Future Time Perspective Scale (FTPS). FTPS was developed Husman and Shell (1996) to measure to individuals' future time perception. It was adopted into Turkish by Avcı and Erden (2009). The Cronbach's alphas coefficient for the subscales ranged between .72 and .82. The *Cronbach's alphas coefficient for* the subscales in this study ranged between .65 and .83. Because the Cronbach's alphas coefficient for distance dimension was found .10, it was not included in the analysis.

Procedure

At first, participants were informed about the study. Participation was voluntary and answers were kept anonymously. Scales were given the university students in classroom at their university. However, it was reached non-student participants by personal contact of researchers. The completion of the questionnaire took 20-30 minutes.

Results

The Intermediary Effect of Time Perspective in the Relationship between Autobiographical Memory Functions and Future Time Perception

In this study, the model created in order to analyze the relationship between autobiographical memory functions and the future time perception both directly and indirectly, through time perspective, was tested with path analysis. The first model acquired after the non-significant relationships were excluded was not coherent. Analyzes were performed in line with the error associations

suggested in the modification index (see Table 2). The data of the latest model acquired are fairly good (X^2 (31, N=803)=90.85), p=.00 GFI=.98, AGFI=.96, CFI=.98, RMSEA=.05).

Significance levels of the indirect effects

According to the results of the bootstrap method for testing the indirect effects, it is seen that autobiographical memory functions significantly predict connectedness dimension through past/negative (b = .03, GA: .011, .052, p < .05), past/positive (b = -.02, GA: -.029, -.007, p < .01) and present/fatalistic (b = -.03, GA: -.048, -.015, p < .01) time perspectives of facing with the past dimension. On the other hand, significant effect of present/fatalistic time perspective on the relationship between facing with the past and speed (b = -.06, GA: -.082, -.032, p < .01). Moreover, facing the past dimension significantly predicts value through past/positive (b = -.01, GA: -.018, -.002, p < .05) and past/negative (b = .08, GA: .053, .102, p < .01) time perspectives. It is seen that remembering the past on a hint basis dimension primarily predicts connectedness dimension of future time perception through past/positive (b = .036, GA: .021, .052, p < .01), present/hedonistic (b = -.01, GA: -.022, -.005, p < .01), and future (b = .03, GA: .011, .056, p < .01) time perspectives. On the other hand, remembering the past on a hint basis significantly predicts value through past/positive (b = -.02, GA: -.022, -.033, p < .05), present/hedonistic (b = -.02, GA: -.034, -.009, p < .01) and future (b = .02, GA: .007, .034, p < .05) time perspectives. Only future time perspective serves as intermediary in the relationship between remembering the past on a hint basis and speed dimension of future time perception (b = .03, GA: .009, .046, p < .05). Thinking about the past for mood regulation significantly predicts connectedness through present/hedonistic (b = -.01, GA: -.021, -.004, p < .001), past/positive (b = .03, GA: .022, .049, p < .001), and past negative (b = -.012, GA: -.022, -.003, p < .05) time perspectives. On the other hand, it is seen that mood regulation significantly predicts value through past/negative (b = -.03, GA: -.042, -.017, p < .01), present/hedonistic (b = -.02, GA: -.031, -.009, p < .001), and past/positive (b = .02, GA: .005, .033, p < .05) time perspective. Taking lessons from the past significantly predicts connectedness through past/negative (b = .01, GA: .003, .020, p < .05), and future (b = .06, GA: .013, .041, p < .001) time perspectives. Similarly, taking lessons from the past significantly predicts value through past/negative (b = .03, GA: .013, .041, p < .001), and future (b = .04, GA: .023, .055, p < .001) time perspectives. Moreover, it is seen that taking lessons from the past significantly predicts speed dimension through present/fatalistic (b = .023, GA: .009, .039, p < .001)

and future time perspective (b = .05, GA: .032, .076, p < .001) . In addition, only this dimension significantly predicts the value and speed dimension of future time perception directly.

Discussion

The results of the analysis point out to significant relationships between autobiographical memory functions and the future time perception both directly and indirectly, through time perspective. First, it was observed that facing the past dimension significantly predicts value and connectedness dimension through past/positive time perspective. It is not surprising that tendency towards thinking about past experiences for the purpose of facing the past negatively predicts past/positive time perspective which includes more optimistic and nostalgic values (Zimbardo and Boyd, 1999, Ely and Mercurio, 2011). On the other hand, researches (Goldenberg and Maslach, 1996, Ely and Mercurio, 2011) point out to positive relationships between past positive time perspective and future time perception, On the other hand, it was observed that facing the past significantly predicts value and connectedness through past/negative time perspective positively. Taking into consideration that individuals with past/negative perspective have a tendency towards remembering negative experiences (Zimbardo and Boyd, 1999), it is conceivable that these individuals may have a tendency towards attaching more value and connect to future goals in order to avoid experiencing same negativities again. Additionally, it was seen that facing the past predicts speed negatively through present/fatalistic time perspective. Facing the events in the past may be strengthening the beliefs of individuals with present/fatalistic time perspective towards that they do not have control over those events. Moreover, studies in the literature show that there is a negative relationship between present time perspective and future time perspective (Horsmantof and Zimitat, 2008; Pluck et al., 2008; Zimbardo and Boyd, 1999, 2009). Therefore, the fact that the perception towards speed of time passing increases as the present/fatalistic perspective increases is consistent with the literature. Similarly, it was seen that facing the past predicts negatively connectedness through present/fatalistic time perspective.

Remembering the past on a hint basis significantly predicts connectedness and value dimension of future time perception through past/positive, present/hedonistic, and future time perspectives. First of all, it was seen that as the tendency towards remembering the past on a hint basis increases, the tendency of individuals towards past/positive time perspective and, thus value and commitment to future goals increases. On the other hand,

in consistence with the expectations, it is seen that remembering the past on a hint basis reduces value and commitment to future goals through present/hedonistic time perspective. Individuals with present/hedonistic time perspective continue their lives based on "taking pleasure", thus, they have a tendency towards avoiding investing for the future and taking into consideration the future results of their behavior (Bonimwell and Zimbardo, 2004; Zimbardo and Boyd, 1999). For this reason, the fact that these individuals attach less importance to future goals is consistent with the literature. Lastly, it was seen that as the tendency towards remembering the past on a hint basis increases, tendency towards future time perspective and, value and commitment to future goals by means of this increases. Moreover, remembering the past on a hint basis significantly predicts speed dimension through future time perspective positively.

In terms of mood regulation dimension, firstly, it was found that mood regulation predicts value and connectedness through present/hedonistic time perspective. Considering that individuals with present/hedonistic perspective have a tendency towards acting impulsively (Zimbardo and Boyd, 1999), it is consistent with the literature that they reflect upon their past in order to achieve their present well-being and therefore, attach less importance to future goals. Moreover, reflecting on the past for mood regulation increases the connectedness and value attached to future goals through past/positive time perspective. As these individuals have a tendency towards thinking about their past experiences in order to increase their current mood or to protect their existing mood (Er and Yaşın, 2016), it is not surprising that mood regulation allows for recalling positive past events and increases tendency towards past/positive time perspective. On the other hand, it was seen that the increase in thinking of the past for the purpose of mood regulation decreases tendency towards past/negative time perspective and by this means, connectedness and the value attached to the future goals and the tendency towards making plans for the more distant future. Thinking about the past for the purpose of mood regulation may make individuals more positive. This can lead to a decrease in the tendency towards past/negative time perspective. It is thought that individuals with past/negative time perspective may have a tendency towards attaching more value to future goals and plan for more distant future as a method for coping with their negative past experiences. Therefore, the positive relationship between past/negative time perspective and value and distance dimensions seems to be consistent.

Model test results show that taking lessons from the past positively predicts connectedness, value and speed through future time perspective. Taking lessons from the past indicates that individuals set future goals based on their experiences and organize present time in line with these goals (Bluck et al., 2005, Conway, 2003; Er and Yaşın, 2016; Lockhart, 1989). In this context, the fact that taking lessons from the past positively predicts future time perception through future time perspective is consistent with the expectations. In addition to this, taking lessons from the past significantly predicts connectedness, and value past/negative time perspective. Thinking about past events for taking lessons may cause recalling negative experiences and increase the tendency of the individual towards past/negative time perspective. As stated earlier, it is conceivable that individuals with past/negative time perspective may look more positively into the future as a coping strategy. Therefore, the fact that this tendency increases commitment to future goals, the value attached seems to support this opinion. Finally, it was seen that taking lessons from the past positively predicts speed dimension of future time perception through present/fatalistic time perspective.