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Posttraumatic Growth and Posttraumatic Stress Disorder among Breast Cancer Survivors

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Abstract
The aim of the study is to examine the mediating effect of rumination types in relationship with centrality of event and the path of posttraumatic growth and posttraumatic stress disorder symptoms among 40 breast cancer survivors aged between 29 and 79 (M = 47.33, SD = 9.32) from all around Turkey. The results of the current study revealed that deliberate rumination partially mediates the relationship between centrality of event and posttraumatic growth and the relationship between centrality of event and posttraumatic stress disorder. Moreover, the results of the current study revealed that intrusive rumination partially mediates the relationship between centrality of event and posttraumatic growth and the relationship between centrality of event and posttraumatic stress disorder.

Keywords: Centrality of Event, Traumatic Growth, Traumatic Stress, Rumination

1. Introduction

The growing amount of interest in the negative and positive trauma consequences relationship has been occurred in the related literature. Having diagnose of cancer and facing ongoing medical procedures' process of treatment has psychological effects on the person with its side effect (McCready, 2004). According to Amir and Ramati (2002), breast cancer survivors have experience significantly increased level of posttraumatic stress symptoms. Additively, there is a growing body of research on posttraumatic growth among survivors of breast cancer. Previous studies have been shown that breast cancer survivors, just like many cancer survivors of other cancer types, reported positive life changes after their diagnosis (Bellizzi, 2004; Antoni & Carver, 2003; Sears, Stanton, & Danoff-Burg, 2003). However, there has been a lack of research that focused on the role of the centrality of the event and types of rumination at the same time on the path of posttraumatic growth and posttraumatic stress symptoms.

1.1. Research on Breast Cancer and Psychological Well Being

Breast cancer is defined as outgrowth of malignant cells, which occurs in the breast tissues in the body (National Cancer Institute, 2018). All around the world, the breast cancer is the most common cancer type among women (Barthakur et. al, 2016; Jemal et. al, 2011). In the last decades, it was also shown that the ratio of the breast cancer diagnose has increased globally (Anderson & Jakesz, 2008; Porter, 2008). Having a cancer causes various amount of

psychological effects and reactions depends on the person who is having it within procedures of treatment process and adaptation to living with the cancer itself. Diagnosed with breast cancer process also effects the person for adapting to the quick changing decisions within those treatment process and their side effects (Tedeschi & Calhoun, 2004). Having a diagnosis of any kind of cancer would likely to have an effect on different domains of individual within several treatment procedures, their effects on individual by urge to adaptation and reactions toward it. In 1959, Aitken-Swan and Paterson suggested that being diagnosed as breast cancer can lead several changes of individual life as emotional reactions like denial or avoiding of event and anxiety within perception of the individual; and they focused on after treatment process and found out that survivor of breast cancer might be in need of adaptation in differences in own's body image, social connections with others and reconsidering the fear of relapse. According to Amir and Ramati (2002), breast cancer survivors have high level of posttraumatic stress disorder symptoms, especially after the recovery of breast cancer; in contrast to that, women who have been diagnosed with breast cancer also can develop posttraumatic growth.

While it was considered the place of cancer deaths, breast cancer is ordered in the 3rd place in Europe in both sexes however when just women were considered in the situation, breast cancer is the most common reason of death in cancer types (Ferlay et al., 2007). Eryılmaz et. al (2010) showed that breast cancer in one of the most prevalent cancer type which is causing death among women in Turkey. Mortality rate of breast cancer in Turkey leads several studies to investigate the demographic characteristics of the diagnosed population. From the study, it could be concluded that the higher level of breast cancer women who are between 51 to 70 age range (Özmen, 2006).

The high level of diagnosing with breast cancer was also found related with other factors like higher age, higher age at first pregnancy, genetics, dieting style, alcohol consumption and smoking amount, hormone differences and radiation receiving from several treatment procedures (McPherson et. al, 2000). According to several research about breast cancer's psychological effect on the patients, it has been found that diagnose of the breast cancer and the process of treatment indicate anxiety, depressive symptoms, fatigue without medical reasons, and cancer recurrence fear in the person (Wang, 2011; Harrington et al., 2010; Cordova & Andrykowski, 2003). In the light of several studies, which are related to breast cancer survivors have revealed a significant relationship between quality of life, optimism and hope (Allison et al., 2001), depression (Epping-Jordan et al., 1999) and emotional adjustment (Synder et al., 1991). Pauwels et al. (2013) conducted a research with 547 breast cancer survivors after their treatment between 3 weeks to 6 months and they found 56% of breast cancer survivors indicated who are receiving social support develop adaptive psychological functioning.

After the treatment of breast cancer of an individual, negative psychological effects have addressed by several studies (Costa-Requena, Rodrigues, Fernandez, Palomera, & Gill, 2011; Amir & Ramati, 2002; Jacobsen et al., 1998). After a patient's treatment procedure, has been terminated, an individual would most probably faced with high level of depressive symptoms and anxiety (Costa-Requena, Rodrigues, Fernandez, Palomera, & Gill, 2011), PTSD symptoms (Cordova et al., 1995), high level of ideation of committing suicide (Schairer et al., 2006), adjustment disorders and sexual functioning disorders (Fallowfield & Hall, 1991). Moreover, depression is found more frequent in breast cancer survivors than general population (Yi-Long et al., 2013; Argyropoulou, & Karvelis, 2007). Also, Reyes et al. (2012) conducted a longitudinal study in Texas with 240 breast cancer survivors and revealed 16% of the participants were in depression in 6 to 13 year after the process of treatment. Furthermore, Romito et al.'s (2012) study with 255 breast cancer survivors has shown that after 5 years of treatment, 37% of the participants have depression. Anxiety has found in an association with breast cancer's negative psychological effects and Vahdaninia et al,'s (2010) study with breast cancer survivors indicated that severe level of anxiety is permanent with 38.4% after one year of the treatment.

Vickberg (2003) has explained term of "fear of breast cancer recurrence (FBCR)" with definition of worry and/fear that related to breast cancer coming back in the body. FBCR has found associated with depressive symptoms, low quality of life, hypochondria anxiety (Horlick-Jones, 2011). Ziner et al. (2012) conducted a study with 1128 women breast cancer survivors with three to eight years after diagnosis and found that younger participants have higher level of FBCR and worries than older breast cancer survivors.

Breast cancer survivors might live upon significant physically and psychologically stress. According to the posttraumatic stress disorder criteria in Diagnostic and Statistical Manual of Mental Disorders, having a diagnose of cancer is taking into consideration to be a traumatic event; because of having exposure to threatened or actual death (American Psychiatric Association, 2013).

1.2. Post-Traumatic Stress Disorder Symptoms

Having a negative life event may cause negative outcomes of an individual after a traumatic experience and it is referred as leading to posttraumatic stress disorder (PTSD) symptoms (Perez et al., 2014; Wachen, Patidar, Mulligan, Naik, & Moye, 2014). Post-traumatic stress disorder (PTSD) symptoms may develop when an individual exposed to death, threated death, actual or threatened serious injury, or actual or threatened sexual violence (As cited in APA, 2013, p. 271). According to DSM-5 (American Psychiatry Association, 2013), symptoms' period of should exist more than one month and effect clinically significant distress or impairment in social, occupational, or other important areas of functioning. Moreover, the duration and effects should not be attributed to the substances like medication or alcohol's physiological effects or another medical situation.

While considering different symptoms of PTSD in an individual's life, vivid vision of the stressful event, avoidance from reminders are one of the common concepts that affect the individual's total psychological functioning in lifetime (Barton, Boals, & Knowles, 2013). The study of Rubin, Boals, and Bernsten (2008) has contributed the cognitive process like memories of the traumatic event in the PTSD symptoms occurrence and increase; while the study of Ehlers and Clark (2000) has indicated the continuity of PTSD symptoms with current challenges and threats' perception.The high level of PTSD is associated with interpersonal relationship like physical or sexual assault, childhood abuse, and/or domestic violence (Lancestor, Melka, & Rodriguez, 2000). Moreover, exposing more than one traumatic experience could make risk of PTSD to develop easier (Bernsten et al., 2012). Rubin, Boals, and Bernsten (2008) suggested that individuals with high level of tendency to expose information about traumatic experience would more likely to have a risk for developing PTSD than people who do not exposure native information about traumatic events. Furthermore, Brelau et al. (2000) had indicated that people with diagnose of depression have high level of risk for developing PTSD aftermath a traumatic event.

The individual's type of personality characteristics also has a role of developing posttraumatic stress disorder. Moran and Shakespeare-Finch (2003) was found that amount of PTSD symptoms after following an exposure to the traumatic event is higher in neuroticism and extraversion personality domain and Chung et al.'s (2006) study indicated that higher level of neuroticism will lead higher level of PTSD symptoms. PTSD diagnose is common after repeated traumatic exposure with secondary traumatization, compassion fatigue, and/or burnout (Conrad & Keller-Guenther, 2006). With the study of Becker (1982) and Burgess and Holmstrom (1974), it had been started to investigate similar psychological malfunctioning in women survivors from sexual assault and those women had common characteristics like being avoidant and being on guard, and extreme startling reactions. From neurological perspective, McGaugh and Cahill (1997) had found that emotional arousal's formation of memory in a certain circumstance could be changed

by preventing adrenalin's effect. Sleep disruption (Lamarche & De Koninck, 2007) and sleep disturbance (Spoormaker & Montgomery, 2008) are other significant predictors pf PTSD.

In big amount of research, researcher have found out that posttraumatic stress symptoms have been reported in patients who has been diagnosed as cancer (Perez et al., 2014; Wachen, Patidar, Mulligan, Naik, & Moye, 2014). Kangas et al. (2002) conducted a research with cancer survivors' traumatic symptoms and found PTSD symptoms of them in correlation with low level of life quality. Heiney et al. (1994) had conducted a study with breast cancer survivors and found the existence of PTSD related symptoms like persistent anxiety, unwanted thoughts, and avoidance. Cordova et al. (1995) evaluated symptoms of posttraumatic stress disorder with 55 breast cancer survivor women and found 5-10% of the participants are having PTSD. Moreover, in another study, which was conducted with 64 cancer survivors, it was indicated that 12.5% of participants had high level of posttraumatic stress (Stuber et al., 1996). According to the APA (1994), having diagnosis of cancer is an example of life threatening event which may cause PTSD. Gurevich, Devins, and Rodin (2002) reported that PTSD symptoms establish in approximately 50% of cancer patients. Several studies exhibit that approximately 5-10% of cancer survivors guaranteed a current cancer related diagnose of PTSD; approximately 15-20% of them meet for lifetime cancer related posttraumatic stress symptoms (Jacobsen et al., 1998; Green et al., 1998).

Considerably, PTSD in cancer patients has association between poor life quality, younger age, low socioeconomic status (Andrykowski & Cordova, 1998; Alter et al., 1996). Green et al. (1998), evaluated symptoms of PTSD with 160 women who have diagnosed of early stage breast cancer and they concluded that after having diagnosis of breast cancer, 36% of participants have experienced intrusive thoughts; 8% of them met with adequate criteria of avoidance; and lastly, the ones with hyper-arousal criteria was found 27%.

The current literature has concentrated on mainly the negative aspects and reflections of a traumatic event on the individual's life and self (Norris & Slone, 2007). However, in terms of the diagnosis of breast cancer, several research has indicated that while being aware of difficulties in individual's life, survivors could face positive changes in their life (Tedeschi & Calhoun, 2004). There is a paradoxical consequence that higher level of stressful events could be contributors to both posttraumatic distress and posttraumatic growth (Bernsten & Rubin, 2007; Tedeschi & Calhoun, 1995). After being aware of negative event's positive side in person's life, an individual could able to manage the negative life event's consequences in more constructive way. In the next section, positive change after a traumatic event of an individual will be explained in order to give a clear information.

1.3. Post-Traumatic Growth

While some of the breast cancer survivors indicated negative outcomes of the diagnose (Deimling, Bowman, Sterns, Wagner, & Kahana, 2007), some of them indicated positive outcomes of the diagnose (Helgeson, Reynolds, & Tomich, 2006). Tedeschi and Calhoun (2004) named those positive outcomes of an individual after a traumatic experience after having challenge as "posttraumatic growth" and defined it as "positive psychological change experiences as a result of the struggle with highly challenging life circumstances." (As cited in Tedeschi & Calhoun, 2006, p.1). Breast cancer survivors may face with positive psychological effects of the diagnose, treatment, and after treatment process. Hartl et al.'s (2010) study has shown that breast cancer survivors' general life quality tend to improve by time. Mols et al. (2009) suggested in their study that was conducted with breast cancer survivors and control group, breast cancer survivors' level of life satisfaction is higher than control group; moreover, 79% of breast cancer survivors have started to mention advantages and positive sides from the event.

Posttraumatic growth concept has suggested that emotional load of the traumatic experience has considerable effect of an individual's assumptions that puts into a motion a restructuring of

person's perspective of life (Tedeschi, Park, & Calhoun, 1998). Janoff-Bulman (2004) examined that posttraumatic growth has root in theories of change claiming that after the traumatic event, an individual can experience a re-examination, re-construction and re-formulation about on his/her beliefs about the world; and consequently, as an outcome of that process, a rumination process could begin. Posttraumatic growth refers any kind of positive change in person's former functioning level following an experience that could be traumatic (Tedeschi & Calhoun, 1996).

Posttraumatic growth occurs when person exposed to a traumatic event; Tedeschi and Calhoun (1996) described it as an intensely undesirable event which causes a breakdown in assumptions of person's in life. Posttraumatic growth is "positive psychological change experiences as a consequence of the intensively challenging life events struggle" (As cited in Tedeschi & Calhoun, 2001), which includes traumatic experience that represent obvious difficulties to the adaptive resources of the person. Several research has indicated that traumatic experience and growth can exist at the same time (Dekel, Ein-Dor, & Solomon, 2012). However, several findings have been stirred in regard to whether posttraumatic growth and posttraumatic stress disorder are related and on the same continuum, or distinguished concepts (Shakespeare-Finch & Armstrong, 2010). Having an occurrence of posttraumatic growth is closely related to have a challenge in an individual's life that shatter core beliefs in assumptive world of person (Janoff-Bulman, 1992). Definition of assumptive world is "general set of beliefs and assumptions about the perceived world, which lead some behaviors and actions and support of understanding the reasons for events" (As cited in Tedechi & Calhoun, 2004).
Tedechi & Calhoun (1996) had found that the social environment of an individual very crucial in the posttraumatic growth's development. There is several research revealed that some demographic characteristics play a significant role on the development of posttraumatic growth (Bellizzi & Blank, 2006; Updegraff & Taylor, 2000). Updegraff and Taylor (2000) suggested that demographic status like higher level of employment situation, marital status could be partial preventer for stress and have possibility to predict posttraumatic growth. They suggested that marital status especially is related to high level of posttraumatic growth, which mentioned that being married is considerable factor in developing of posttraumatic growth. Bellizzi and Blank (2006) found that having lower education level is related to higher level of posttraumatic growth in breast cancer survivors.

Morrill et. al (2008) posttraumatic growth has been known as an action of protective mechanism/reaction toward depressive symptoms and posttraumatic stress disorder. Shakespeare-Finch, Gow, and Smith (2005) has indicated that openness and extraversion personality characteristics are positively related with posttraumatic growth; on the other hand, neuroticism is negatively related with posttraumatic growth. However, the relationship between posttraumatic growth and neuroticism has been having contradictory results through several studies which mentioned that neuroticism is unrelated with posttraumatic growth level (Helgeson, Reynolds, & Tomich, 2006).

Additively, type of coping strategies has important role of having and developing posttraumatic growth after a traumatic event. Tedeschi and Calhoun (2004) mentioned that positive coping skills can increase more constructive cognitive process which is related to growth. Franzier et al.'s (2004) study indicated that avoidant coping and denial strategy as a negative coping skill is negatively related with the level of posttraumatic growth.

While, several studies have indicated that younger age is positively correlated with amount of posttraumatic growth than older individuals with possible reason that young people may be more flexible and not closed to change in life (Klauer & Flipp, 1997; Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003); some studies have shown that there is no relationship between age and posttraumatic growth (Cordova et al., 2001; Fromm et al., 1996). Cordova et al. (2001) found that higher level of income is positively related with higher level of posttraumatic growth.

Tedeschi and Calhoun (1996) was found that extraversion as personality characteristic was significantly correlated with posttraumatic growth because of using social connections and resource with support from them more effectively than introverts. According to Tedeschi and Calhoun (1998), social support is one of the most significant contributor in developing posttraumatic growth.

Boyers (2001) mentioned that having high level of active coping, positive repeated framing, receiving emotional support from intimate ones had significantly founded that with higher levels of posttraumatic growth in early stage breast cancer survivors than have low level of coping strategies like those ones. According to several studies, posttraumatic growth is affected by higher stress level which is related to cancer, adaptive coping strategies, sharing the experience of diagnosed of breast cancer with others, social support, and younger age (Barthakur et al.; 2016, Danhauer et al., 2013, Morrill et al., 2008). Cordova et al.'s (2001) study with 70 breast cancer survivors, Bellizzi's (2004) study with 81 breast cancer survivors and Tomich and Helgeson's (2002) study with 328 breast cancer survivors have indicated that posttraumatic growth was positively affected by younger age.

The amount of studies on posttraumatic growth predictors in breast cancer survivors are limited to individual factors (Bellizzi, 2004). For that reason, investigating the comprehensive domain of posttraumatic growth for breast cancer survivors is very crucial for literature, which briefly means a positive change in the individual's previous level of functioning aftermath a traumatic experience. According to study of Cann et al. (2010), higher level of posttraumatic growth has a correlation with the challenge of individuals' core beliefs about the world; additively, that challenge about assumptive world of person's lead to cognitive processing of the traumatic event. In accordance with family systems theory, it is nearly impossible to understand illness or reactions on illness without considering other systems (Rolland, 1990). In the research of Park et al. (2008), they found that the occurrence of meaning in life in an existential approach had been positively correlated with posttraumatic growth in cancer patients.

Having social support as another concept focused on the posttraumatic growth literature is defined to manage posttraumatic growth as supportive others contribute the adequate support for cognitive process of an individual like deliberate rumination (Schroevers, Helgeson, Sanderman, & Ranchor, 2010). And having social support has been found in association with posttraumatic growth (Bozo, Gündoğdu, & Büyükaşık-Çolak, 2009). Within ruminate the traumatic event itself deliberately, cognitive processes are reviewed to include the traumatic event (Shakespeare-Finch & Barrington, 2012). While antecedents of PTSD and PTG, focusing on cognitive concepts are considerable in order to reveal appropriate information related to purpose of expanding knowledge about the topic. For that reason, in the next section, it will be discussed about rumination and its types.

1.4. Rumination

Rumination means exclusively intrusive and negative thinking when undesired thoughts overrun the individual's cognitive world (Lyubumirsky & Nolen-Hoeksema, 1995). Rumination is also carefully reflective, deliberate, and also aimful reconsidering of the specific event (Calhoun, Cann, Tedeschi, & McMillan, 2000). While a person is ruminating about an event, it is more likely for the individual to reflect events while they are tried to understand and seeking for understanding, and trying to find alternative solution to the obstacles in life (Martin & Tesser, 1996). Rumination has been associated with posttraumatic distress; however, rumination has become an important precursor for posttraumatic growth (Nightingale et al., 2010).

To understand the meaning and effects of rumination in a deeper level, it is very important to make distinction between types of rumination in self: intrusive rumination and deliberate

rumination. Intrusive rumination, which is unwanted thinking process which occurs without an individual's conscious or desire and more likely to be distressing to the person who is having the upsetting event (Lindstrom et al., 2013). Manipulation is not made by the individual, manipulation appears as the event that leads the intrusive rumination and it is more likely to has association with several types of posttraumatic distress (Cann, Calhoun, Tedeschi, & Solomon, 2010). Additively, the high level of intrusive thought can suggest the level of deliberate thoughts; however intrusive thoughts are predictor leads to person to seek a greater awareness and understanding of the traumatic experiences (Calhoun et al., 2010). Cann et al. (2010) found that intrusive rumination is associated with behavioral disengagement coping type that includes decreased attempts to handle with the stressful event. Moreover, it was found that intrusive rumination was related to the higher distress level (Cann et al. 2010). There is a literature about how people who have been deal with traumatic event have increased level of intrusive rumination; however, PTG is established to occur for people who move from intrusive rumination and start to ruminate more deliberately as time since the event increases (Tedeschi & Calhoun, 2004). In Micheal, Halligan, Clark, and Ehler's study (2007), which was conducted with people whose exposed of sexual or physical assault, it has found that those whose symptoms met PTSD criteria were more likely to have intrusive rumination that whose did not met with PTSD criteria symptoms. Deliberate rumination refers to possible positive consequences of the highly upsetting and difficult traumatic events and it can include conscious actions to remind self of advantages of traumatic experience as a consequence of being obstacle to see a high level of difficult event (Folkman, 2008). Calhoun et al. (2010) mentioned that deliberate and intrusive rumination acts different roles for effecting and directing consequences following an aftermath a highly upsetting event. There has been found a positive relationship between deliberate rumination and seeking social support (Cann et al., 2010).

Event-related deliberate rumination is more likely to focused on PTG which is not focusing on negative effects of traumatic experience (Cann et al., 2010). It must be greatly and positively related to the concept of posttraumatic growth when intrusive rumination is related with PTSD (Janoff-Bulman, 2004; Affleck & Tennen, 1996). According to several studies, having deliberate rumination has association with high level of self-reported posttraumatic growth (Cann et al., 2011; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2011). The possible explanation of having deliberate rumination in the road of PTG can be finding meaning and thinking about possible reason of having the event in the traumatic event itself. Individuals that interest in meaningful and aimful cognitive processing of the traumatic event might be more likely to seek the aim and significance of the event which can help to restructure the assumptive world (Groleau et al., 2013). Within literature, it has been found that existence of meaning in life is positively correlated with posttraumatic growth in 172 cancer patients (Park, Edmondson, Fenster, & Blank, 2008). Deliberate rumination can be more related to PTG than intrusive rumination, which is typical aftermath high level of stressful event (Calhoun et al., 2000).

Cognitive appraisal of the traumatic event has been found associated with the possibility to experience growth after the traumatic event and active thinking about that event in a form of appraisal was found associated with PTG; active thinking of the traumatic event has associated with PTG (Lazarus & Folkman, 1986). Greater levels of intrusive rumination is associated with higher levels of PTSD symptoms; in sum, it was found that people with symptoms of PTSD were more likely to engage in intrusive rumination that those who did not have the symptoms greater levels of intrusive rumination is associated with higher levels of PTSD symptoms (Michael et al., 2007). Additively, rumination was found one of significant predictors of maintaining depression (Papageorgiour & Wells, 2003). High level of intrusive rumination is related to high level of distress; high level of deliberate rumination is related to positive change (Morris & Shakespeare-Finch, 2011).

In one study with two samples with undergraduate college students and leukemia patients, it was found that higher level of core belief challenge tended to indicate more PTG level (Cann et al., 2010). Just like in PTSD, rumination has been found to be associated with PTG (Calhoun & Tedeschi, 1999). In PTG, the type of rumination which refers to the intentional attempt of thinking on the traumatic event is also known as "deliberate" (Cann et al., 2011). Thinking of a specific event may be referred to more likely to find the content that helps to reconstruct the assumptive world that challenged. Boals and Schuettler's (2011) findings, people who experienced traumatic event generally experience perceived stress, voluntary and involuntary thoughts (ruminations), and the traumatic event is more likely to be an active and open of their life; additively, the traumatic event experience tends to become more central to who they are and they indicate active efforts for coping with their perceived distress.

It is very important to consider personal effect of the traumatic event; however various measures screen for trauma history has been fail for assessing the perceived impact of the trauma (Norris & Hamblen, 2004). For the reason, it is very considerable to examine the perceived meaning of traumatic experience within individual's unique reaction to the trauma. Within those information, putting traumatic experience in the individual's life in a center is very crucial to investigate while it is considering the effect of traumatic experiences. For that reason, event centrality will be further represented in the following section.

1.5. Centrality of Event

Centrality of event concept has become popular after Bernsten and Rubin (2006) conducted a research to attempt a scale about it. The concept is one of the recent ones in psychology literature which is focusing on measure the extension of which stressful event establishes a reference point in individual's identity and for the approach of other life events' meaning after the specific negative experience. Cognitive Growth and Stress (CGAS) model identify association between event centrality and rumination. Boals and Schuettler (2011) found that event centrality is closely ordered with repetitive and ruminative process which are establish on negative sides of the experiences. Moreover, the adaptability of rumination is considered as changeable and depends on the context; for that the extension to which event becomes crucial and fundamental to individual's identity might effect adaptability of rumination (Bonanno, Pat-Horenczyk, & Noll, 2011). CGAS model suggested that event's centrality manages a change from stressful thoughts to deliberate rumination, which could build about positive changes In the perspective of world (Bernsten & Rubin, 2006).

Bernsten and Rubin (2006) explained centrality of event as a personal content of a perceived negative event that related to individual identity of an individual and have close association with maladaptive functioning. It was investigated as individual reactions to the traumatic event; also, extent to that an event is contained into person's self-identity and accordingly becomes central of individual's self-sense. The centrality of the event refers to "a degree to which a person believes a negative event has become a core part of their identity" (As cited in Schuettler & Boals, 2010). It has been suggested that centrality of the event could be reported as "double-edged sword" in which traumatic events that considered as central to individual's identity evoke both maladaptive psychological functioning or could be a contributor to various form of adaptive functioning; because, having a traumatic life event that shaped as an individual's central in building identity could cause maladaptive psychological functioning; however it can also contribute to different types of adaptive functioning (Schuettler & Boals, 2011). According to Bernsten and Rubin (2006), the central event could have seen as "turning point" in an individual's life story and can be viewed as a core component of the personal identity. The centrality of event measures a reexamination and challenge of the identity of self-based on a specific traumatic experience, exhibiting potential to effect growth levels in aftermath of the traumatic event (Bernsten & Rubin, 2006).

Aftermath a traumatic experience, considering the event centrality of traumatic experiences and posttraumatic growth occurrence offers a worthwhile manner for the treatment or psychological process of the negative consequences of the event. For that reason, the relationship between centrality of event and psychological effects of traumatic exposure following trauma exposure will be explained according to several studies. Bernsten and Rubin's (2007) research found that centrality of a negative event is positively correlated with posttraumatic stress disorder symptoms, dissociation, depression. Additive to that, another study has indicated that centrality of negative event had predicted relevant intrusion and symptoms of avoidance (Boals, 2010). In the light of those studies, it is possible to suggest that having and building an identity on traumatic experience may cause some maladaptive functioning psychologically. Centrality of traumatic event has been found to be correlated positively with symptoms of PTSD, depression, and dissociation which was repeated in several studies (Groleau, Calhoun, Cann, & Tedeschi, 2013; Boals & Schuettler, 2011; Bernsten & Rubin, 2006). Therefore, event centrality has been found on of the strongest PTSD predictors even after controlling anxiety, depression, and dissociation (Boals & Schuttler, 2011). PTSD predictor as event centrality has also found in various studies which have been conducted with childhood sexual abuse survivors (Robinaugh & McNally, 2011) and war veterans (Brown, Antonious, Kramer, Root, & Hirst, 2010).

Tedeschi and Calhoun (1996) suggested that to experience growth after a negative life event, first psychological functioning of an individual must be broke down. In the literature, it was found that centrality of negative life event had predicted posttraumatic growth and suggested that negative life events can contribute in promoting growth (Groleau, Calhoun, Cann, & Tedeschi, 2013; Boals & Schuettler, 2011).

Limited research had conducted in order to evaluate the relationship between positive life event sand centrality of event; for example, it had been found that there was no effect of centrality of positive life event on maladaptive psychological functioning in an individual's life (Bernsten, Rubin, & Siegler, 2011). Bernard et al. (2015) discussed that both negative and positive life events' centrality in an individual's life significantly predicted PTG. Negative centrality to event found in association with maladaptive psychological functioning like PTSD symptoms, traumatic cognitions, intrusions and symptoms of avoidance (Bernard et. al, 2015). Furthermore, Bernsten and Rubin, (2007) indicated that people whose symptoms met PTSD criteria reported increased level of centrality of traumatic event than whose symptoms did not meet PTSD criteria.

There is a wide range of studies about types of rumination in the psychology literature; however, it is visible that there is a need to enhance the information of rumination types within identifying their association with psychological effects like post-traumatic stress disorder symptoms, post-traumatic growth and centrality of event.

In the literature, it was suggested that to have higher levels of deliberate rumination has a positive association with higher level of self-reported posttraumatic growth (Cann et al., 2011; Triplett, Tdeschi, Cann, Calhoun, & Reeve, 2011). Moreover, it was found that people with symptoms of PTSD were more likely to engage in intrusive rumination that those who did not have the symptoms greater levels of intrusive rumination is associated with higher levels of PTSD symptoms (Michael et al., 2007). Furthermore, centrality of traumatic event has been found to be correlated positively with symptoms of PTSD (Bernsten & Rubin, 2006; Boals & Schuettler, 2011; Groleau, Calhoun, Cann, & Tedeschi; 2013) Therefore, event centrality has been found on of the strongest PTSD predictors even after controlling anxiety, depression, and dissociation (Boals & Schuttler, 2011). In the literature, it was also found that centrality of negative life event had predicted posttraumatic growth and suggested that negative life events can contribute in promoting growth (Boals & Schuettler, 2011; Groleau, Calhoun, Cann, & Tedeschi, 2013). Boals and Schuettler (2011) found that event centrality is closely ordered with repetitive and ruminative process which are establish on negative sides of the experiences. Moreover, the adaptability of

rumination is considered as changeable and depends on the context; for that the extension to which event becomes crucial and fundamental to individual's identity might affect adaptability of rumination (Bonanno, Pat-Horenczyk, & Noll, 2011). A further examination on the relationship between all rumination, centrality of event and PTSD was established in Lancaster, Rodrigues, and Wetson' (2011) study in which posttraumatic cognitions like rumination and event centrality's important role on continuity of PTSD symptoms was shown.

Therefore, in the light of the literature that was explained above, the aim of the current study is to test two mediation model in order or indicate the mediating role of rumination types (intrusive and deliberate) between centrality of event and the path of posttraumatic growth and posttraumatic stress disorder symptoms among breast cancer survivors. The current study aims to examine the mediating effect of rumination types (deliberate and intrusive) in the relationship between the path of posttraumatic growth and posttraumatic stress disorder within centrality of event among breast cancer survivors in from all around Turkey. Although there has been a growing literature on the relationship between event centrality, PTSD and PTG and also the relationship between types of rumination with PTSD and PTG, and the indirect relationship between types of rumination with centrality of event separately; there is no study in which the relationship between all of these concepts is examined. Centrality of event could have seen as a turning point in an individual's life story and this centrality predicts bot PTSD and PTG (Bernsten & Rubin, 2006). In the present study, clarifying the possible reason of different roads of PTSD and PTG when event's centrality is considering, will be tried to investigate with different rumination types.

Moreover, there is no research that looks centrality of event within paths of posttraumatic growth and posttraumatic stress disorder while considering the effect of different rumination types in breast cancer survivors in Turkey. Therefore, the present study has an importance on expanding the knowledge in the rumination types of breast cancer survivors to detect the possible effects on PTSD and PTG and to make contribution with identifying cognitive concept like rumination type in their possible therapeutic process and improving the quality of the treatment process in the clinical practice.

In accordance to that, following hypotheses are aimed to examined: (1) there will be a significant relationship between all of the rumination types, centrality of event, PTSD and PTG; (2) centrality of event will predict PTG and PTSD; (3) centrality of event will predict deliberate and intrusive rumination; (4) deliberate rumination will mediate the relationship between centrality of event and PTG; (5) intrusive rumination will mediate the relationship between centrality of event and PTSD.

2. Method

2.1. Participants

In total, 78 participants completed the survey. While participants were conducting the survey, there was one inclusion criteria to participate in the current study: (1) Being in a recovery period after a breast cancer. Therefore, participants who mentioned that their doctor and/or physician has not been declared that there is no sign of cancer in their body were extracted from the study. At the end, analyses were conducted with 40 respondents. As demographic characteristics of the sample, the age range was between 29 to 79 (M = 47.33, SD = 9.32). Demographic characteristics of the sample are represented in the Table 1.

Table 1: Demographic Characteristics of the Sample

Marital Status	%
Single	25.0%
Married	75.0%
Education Level	
Below Undergraduate Degree	35.0%
Above Undergraduate Degree	65.0%
Degree of Cancer	
Stage 0	2.5%
Stage 1	29.7%
Stage 2	40.5%
Stage 3	21.6%
Stage 4	5.4%
Duration of Experiencing Breast Cancer	
0 – 6 Months	5.4%
6 Months – 1 Year	35.1%
1 Year – 2 Years	18.9%
More than 2 Years	40.5%
Duration of Being in a Recovery Period	
0 – 1 Year	42.1%
1 – 5 Years	29.8%
5 – 10 Years	18.4%
More than 10 Years	10.5%

2.2. Instruments

2.2.1. Event Related Rumination Inventory (ERRI)

It was developed by Cann et al. (2011). ERRI is a 20-item self-report inventory for assessing repetitive thinking on a traumatic or highly stressful event with 2 dimensions of rumination: deliberate and intrusive. ERRI consists of 10 items that assess purposeful/deliberate thinking about the traumatic or highly stressful event with a sample item "I thought about whether I have learned anything as a result of my experience."; and 10 items that assess unintentional/intrusive thinking with a sample item "I could not keep images or thoughts about the event from entering my mind." The measure items consist of a 4-point scale ranging from 0 ("not at all") to 3 ("often"). The ERRI has good internal reliability for intrusive (α = .94) and deliberate (α = .88) rumination subscales (Cann et al., 2010). ERRI was adapted to Turkish only as a part of Haselden's (2014) study and internal consistency coefficient for intrusive rumination has found α = .96; for deliberate rumination has found α = .91 and total internal reliability coefficient was found .96. Event Related Rumination Inventory was translated to Turkish by the researcher of the current study. "After an experience like the one you reported" wording was transformed to "After being diagnosed breast cancer and received treatment" in order to be representative to the participants. In the current study, the Cronbach's alpha value for deliberate is found .96 and Cronbach's alpha value for intrusive rumination is found .92.

2.2.2. Centrality of Event Scale (CES)

It was developed by Bernsten and Rubin (2006), which has 20-items in order to assess the centrality of an event to for individual and evaluate the importance of a specific life event to the individual's identity. While CES is used by participants, it was asked them to complete the scale within considering their most considerable life event. The scale items consist of 5-point scale ranging from 1 (totally disagree) to 5 (totally agree). Examples of statement like "This event has become a reference point for the way I understand myself and the world" or "This event has colored the way I think and feel about other experiences". CES has excellent reliability (α = .94;

Bernsten & Rubin, 2007). Centrality of Event Scale was adapted into Turkish by Eğeci (in press) and the results of factor analysis conceived a three-factor solution and all factors were found positively correlated with PTSD (*rs* = .39 to .45, $p < .001$) and symptoms of depression (*rs* = .25 to .32 $p < .01$); which indicated that the scale is reliable and valid instrument for Turkish culture. Centrality of Event Scale was translated to Turkish by the researcher of the current study. "Most stressful and traumatic event in your life" wording was transformed to "Being diagnosed breast cancer and received treatment" in order to be representative to the participants. In the current study, the Cronbach's alpha value is found .95.

2.2.3. Post-Traumatic Growth Inventory (PTGI):

It was developed by Tedeschi & Calhoun (1996) for assessing positive consequences after traumatic event(s) experiences. It consists of 21 Likert-type items, which measures the extent to which individuals that experience trauma perceived positive changes as a consequence of that specific experience with 5 domains: New Possibilities (5 items), Relating to Others (7 items), Personal Strength (4 items), Spiritual Change (2 items), and Appreciation of Life (3 items). Each item rated on a 6-point scale from 0 ("I did not experience this change as a result of the event") to 5 ("I experienced this change to a very great degree as a result of the event"). The PTGI has good internal consistency (Cronbach's alpha = .90); test-retest reliability (.71) (Tedeschi & Calhoun, 1996). PTGI was translated to Turkish by the researcher of the current study. "As result of the stressful or traumatic situation you identified" wording was transformed to "As a result of being diagnosed breast cancer and received treatment" in order to be representative to the participants. Turkish adaptation of PTGI was adapted by Dürü (2006) and found that the scale was reliable and valid for Turkish culture with internal consistency as $\alpha = .93$. In the current study, the Cronbach's alpha value for is found .95.

2.2.4. Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5):

It is a self-report measurement, which was developed by Weathers et al. (2013) for evaluating 20 symptoms of PTSD in accordance to DSM-5. PCL-5 includes 5-point Likert scale in order to rate PTSD's symptoms severity in the past one month from 0 ("not at all") to 5 ("extremely"). One of the sample item from checklist is "Suddenly feeling or acting as if the stressful experience were actually happening again.". PCL-5's internal consistency is found (α = .94) and test-retest reliability with r = .82). PCL-5 was translated to Turkish by the researcher of the current study. "A very stressful experience" wording was transformed to "Being diagnosed as breast cancer and received treatment" in order to be representative to the participants. In the current study, the Cronbach's alpha value for is found .87. Boysan et al. (2016) was adapted PCL-5 into Turkish and found reliability coefficient as .76.

2.3. Procedure

A collection of data had started after getting the approval from Ethics Committee Board of Bahçeşehir University. The current study's survey package link was shared in various accounts in social media application Facebook. Closed breast cancer survivors support Facebook group (Meme Kanseri Bilgilendirme Grubu) and specific oncology foundation social media accounts (MetAmazon, Metastatik Meme Kanseri Derneği, Kanser Savaşçıları, and Kanserle Dans Derneği) were used in order to reach adequate participation. Google Form was used in order to collect data from respondents and data was collected online. Each participant was encountered the Informed Consent Form and after accepting to participate in the current study voluntarily, the respondent was continued to fill out forms and inventories.

2.4. Data Analysis

According to the purpose of the study, first the data screening process was conducted. As a second phase, demographic variables of respondents were analyzed in relation to all of the variables: centrality of event, rumination types (intrusive and deliberate), posttraumatic growth, and posttraumatic stress disorder. Third, The Pearson correlation analyses between all of the variables

in the current study were conducted. Finally, two separate bootstrapped multivariate extension of the MEDIATE test of mediation (Preacher & Hayes, 2008) for posttraumatic growth (PTG) and posttraumatic stress disorder (PTSD) as dependent variables, centrality of event as independent variables, and types of rumination (deliberate and intrusive) as mediators were conducted.

The bootstrap estimates that were presented in the current study are based on 10000 bootstrap samples. Moreover, Preacher and Hayes (2008) referred that the confidence intervals are used to determine the indirect effect's significance. If a confidence interval contains zero, there cannot be a maintenance of significant indirect effect. The current study analyzed the data according to that criteria.

3. Findings

The results indicated that intrusive rumination was positively correlated with deliberate rumination ($r = .58$, $p < .01$), centrality of event ($r = .49$, $p < .01$), posttraumatic stress disorder ($r = .40$, $p < .05$). However, there was no significant correlation between intrusive rumination and posttraumatic growth ($p > .05$). Moreover, deliberate rumination was positively correlated with centrality of event ($r = .47$, $p < .01$), posttraumatic growth ($r = .41$, $p < .01$) and posttraumatic stress disorder ($r = .39$, $p < .05$). Furthermore, centrality of event was found positively correlated with posttraumatic growth ($r = .68$, $p < .001$) and posttraumatic stress disorder ($r = .48$, $p < .01$). Finally, the correlation between posttraumatic growth and posttraumatic stress disorder was not found significant ($p > .05$). The correlations amount the main variables in the current study are represented in Table 2.

Table 2: Correlations among Intrusive Rumination, Deliberate Rumination, Centrality of Event, Post-Traumatic Growth, and Post-Traumatic Stress Disorder

	1	2	3	4	5
1. Intrusive Rumination	1				
2. Deliberate Rumination	.58**	1			
3. Centrality of Event	.49**	.48**	1		
4. Post-Traumatic Growth	.28	.41**	.68**	1	
5. Post-Traumatic Stress Disorder	.40*	.39*	.48**	.20	1

*p < .05; **p < .01

As the first step in the mediation analysis, the total effect of centrality of event on posttraumatic growth was found to be significant ($F(3,36) = 12.31$, $p < 001$). The explained variance by centrality of event was found 51%. That means centrality of event predicts posttraumatic growth.

The total effect of centrality of event on posttraumatic growth was found significant ($\beta = .76$, $SE = .13$, $t(39) = 5.69$, $p < .001$). Moreover, the effect of centrality of event on deliberate rumination was found to be significant ($\beta = .46$, $SE = .13$, $t(39) = 3.67$, $p < .001$) and on intrusive rumination was found to be significant ($\beta = .33$, $SE = .09$, $t(39) = 3.46$, $p < .01$). Furthermore, it was found that there were not significant direct effects of deliberate rumination and intrusive rumination on posttraumatic growth ($\beta = .34$, $SE = .19$, $t(39) = 1.77$, $p = .09$; $\beta = -.32$, $SE = .26$, $t(39) = -1.28$, $p = .21$, respectively). It was found that deliberate rumination does not have a mediating effect on the relationship between centrality of event and posttraumatic growth ($\beta = .16$, $SE = .09$, 95% CI [-.04, .42]). Additively, it was found that intrusive rumination does not have a mediating effect on the relationship between centrality of event and posttraumatic growth ($\beta = -.11$, $SE = .09$, 95% CI [-.31, .05]).

It was concluded that there were not a significant and full mediation between centrality of event and posttraumatic growth through deliberate rumination. Moreover, it was found that there were not a significant full mediation between centrality of event and posttraumatic growth through intrusive rumination. However, the results indicated that there were a significant partial mediation on the relationship between centrality of event and posttraumatic growth through deliberate rumination (see Figure 1). Also, it was found that there were a significant and partial mediation between centrality of event and posttraumatic growth through intrusive rumination (see Figure 2).

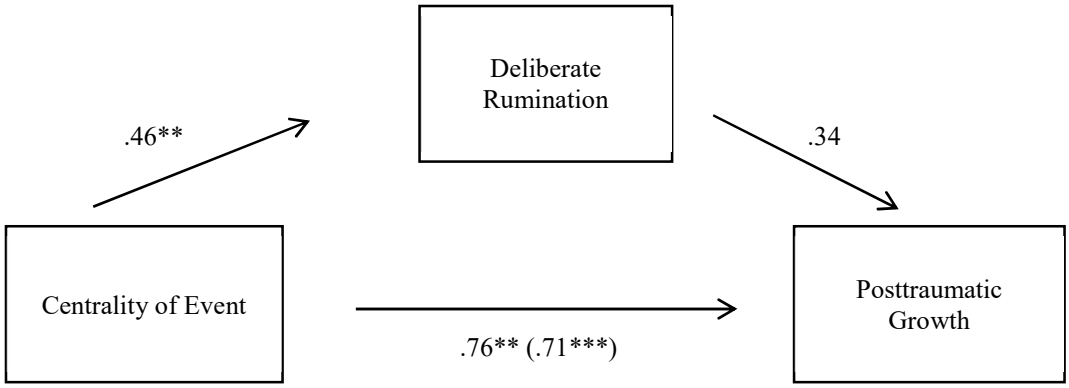

Figure 1. The Test of Relationship between Centrality of Event and PTG with the Mediating Role of Deliberate Rumination
Note: $p < .01$**, $p < .001$***

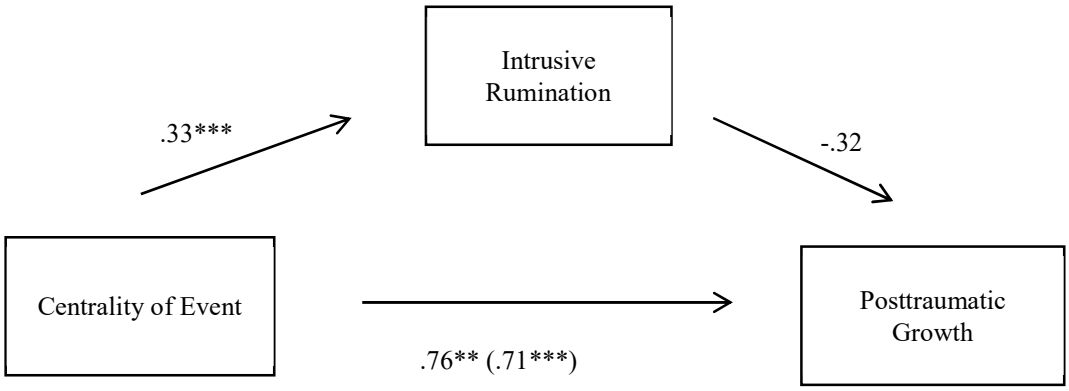

Figure 2. The Test of Relationship between Centrality of Event and PTG with the Mediating Role of Intrusive Rumination
Note: $p < .01$**, $p < .001$***

The relationship of posttraumatic stress disorder and centrality of event with the mediating role of types of rumination was assessed in the current study by using bootstrapped multivariate extension of the MEDIATE test of mediation (Preacher & Hayes, 2008). In this model, centrality of event was taken as the predictor variable, types of rumination (deliberate and intrusive) were taken as the mediator variables, and lastly, posttraumatic stress disorder was taken as the predicted variable.

As the first step in the mediation analysis, the total effect of centrality of event on posttraumatic stress disorder was found to be significant ($F(3,36) = 4.47$, $p < .01$). The explained variance by centrality of event was found 27%. The total effect of centrality of event on posttraumatic stress

disorder was found significant (β = .27, *SE* = .08, $t(39) = 3.41$, $p < .05$). The investigation of the direct effects of deliberate and intrusive rumination on posttraumatic stress disorder was found non significant (β = -.03, *SE* = .12, $t(39) = -.29$, $p = .77$; β = .20, *SE* = .16, $t(39) = 1.3$, $p = .20$, respectively). It was found that deliberate rumination does not have a mediating effect on the relationship between centrality of event and posttraumatic stress disorder (β = -.02, *SE* = .05, 95% CI [-.16, .09]). Additively, it was found that intrusive rumination does not have a mediating effect on the relationship between centrality of event and posttraumatic stress disorder (β = .07, *SE* = .05, 95% CI [-.05, .16]).

It was concluded that there were not a significant and full mediation between centrality of event and posttraumatic stress disorder through deliberate rumination. Moreover, it was found that there were not a significant and full mediation between centrality of event and posttraumatic stress disorder through intrusive rumination. However, the results indicated that there were a significant and partial mediation on the relationship between centrality of event and posttraumatic stress disorder through deliberate rumination (see Figure 3.) Also, it was found that there were a significant and partial mediation between centrality of event and posttraumatic stress disorder through intrusive rumination (see Figure 4)

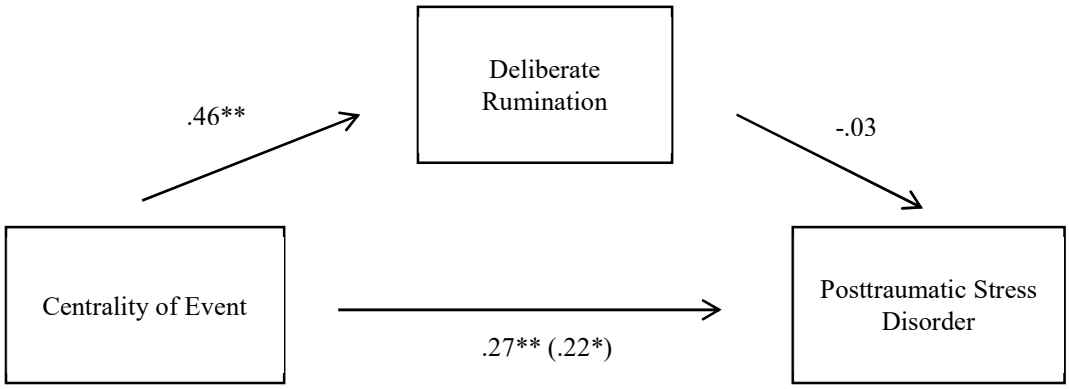

Figure 3. The Test of Relationship between Centrality of Event and PTSD with the Mediating Role of Deliberate Rumination
Note: $p < .05$*, $p < .01$**, $p < .001$***

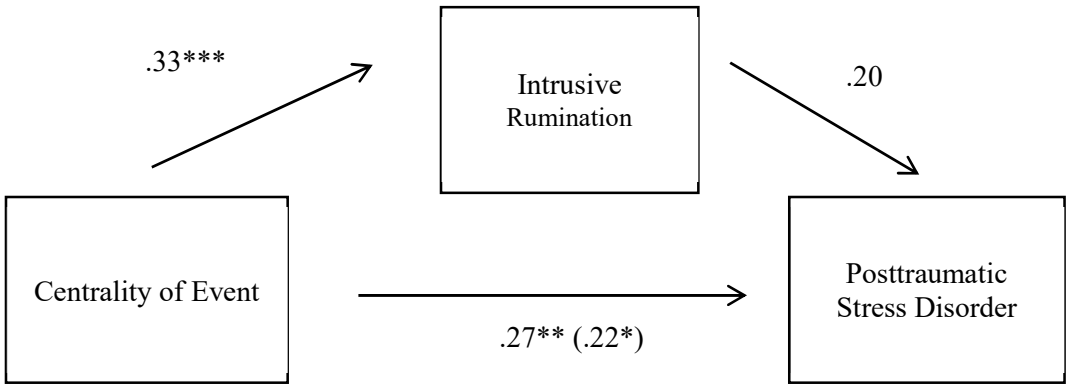

Figure 4. The Test of Relationship between Centrality of Event and PTSD with the Mediating Role of Intrusive Rumination
Note: $p < .05$*, $p < .01$**, $p < .001$***

4. Discussion and Conclusion

The current study has the purpose to examine whether a relationship between posttraumatic stress disorder symptoms, posttraumatic growth, centrality of event, and types of rumination. Furthermore, the most important aim of the present was to examine the mediating effect of rumination types (deliberate and intrusive) in the relationship between the path of posttraumatic growth and posttraumatic stress disorder within centrality of event among breast cancer survivors from all around Turkey. In the next sections, the results of the current study will be discussed within consideration of related literature. Moreover, clinical implications and contributions will be presented. Finally, limitations and possible implications for future studies will discussed.

4.1. Preliminary Findings

The general demographic information as age, marital status, education level, and degree of cancer of the participants were analyzed in accordance with their relationship with posttraumatic growth, posttraumatic stress disorder, centrality of event, deliberate rumination, and intrusive rumination. The investigation between age and the main variables, which were post-traumatic stress disorder symptoms, post-traumatic growth, centrality of event, and types of rumination were analyzed in the current study. The results revealed that the age was significantly and negatively correlated with both deliberate and intrusive deliberation. It means that as participants gets older, it is less likely to experience intrusive and deliberate rumination. These findings were consistent with the findings of Sütterlin et al. (2012) research, which suggested that the older an individual becomes, indicators of low rumination process would presented with possible explanation of decline in physiological functions. Additively, the knowledge which comes from past experiences called "crystallized intelligence" (Horn & Cattell, 1967) could have an effect of decline of rumination with the reason that it contains knowledge and skills which were acquired over a lifetime experiences which may more meaning making from the experience. The current study revealed that age does not differ in terms of posttraumatic growth, which was consistent with the finding of Cordova et al. (2001) and Fromm et al. (2001) suggested that lack of relationship between age and posttraumatic growth. However, there are contradictory results in terms of the relationship between age and posttraumatic growth. Klauer and Flipp (1997) and Powell, Rosner, Butollo, Tedeschi, and Calhoun (2003), revealed that younger age is positively correlated with amount of posttraumatic growth than older individuals. It is a plausible result since young people may be more flexible and not closed to change in life. Moreover, the absence of the relationship between age and posttraumatic stress disorder symptoms was established in the present study. However, the literature generally suggested that posttraumatic stress disorder symptoms are likely to increase with older age (Cook, 2001; Norris, 1992) due to the fact that with old age, the prevalence to experience more "traumatic" events may increase, the occurrence of physical and cognitive impairments may increase and social support may be restricted. In the cancer literature, a contradictory results appears. Andrykowski and Cordova (1998) had indicated that posttraumatic stress disorder symptoms in cancer patient are likely to appear more in younger age. Additively, in several studies on breast cancer survivors, it was found that younger breast cancer survivors have higher level of posttraumatic stress disorder symptoms (Abbey et al., 2015; Ozer et al., 2003). One of possible explanation might because of younger individuals attribution a meaning to life more constructively in the period of their life with questioning through existential approach and being arrear in the continuum of self-actualization phase and possibility to be in a more naive position while considering them. The present study also found that there is no relationship between age and centrality of event although Boals et al. (2011) suggested that older people tend to centralize events more than younger people due to the impaired physical and cognitive impairments. Within inconsistency between the current study and revealed literature, developmental life span perspective application could have a considerable role. Because of developmental life span within age is multidimensional and continuous, the inconsistency about approach of each individual can be more complicated. Another possible explanation for the inconsistency between the present study and the revealed literature could be imbalanced

distribution of respondents' age. It was indicated that the participants' age ranged between 29 to 79 with the sample size of 40, which might affect the results.

The second investigation was conducted to see the relationship between marital status of the respondents and the posttraumatic growth, posttraumatic stress disorder symptoms, types of rumination and centrality of event. The findings of the present study indicated that married participants have higher levels of deliberate rumination process than single participants. On the other hand, in the literature, there is a lack of research that had focused on the relationship between types of rumination and marital status. Although Updegraff and Taylor (2000) suggested that being married could be partial preventer for stress and have possibility to predict posttraumatic growth and Bellizzi and Blank (2006) indicated that being married is associated with high level of posttraumatic growth of breast cancer patients; the present study revealed no relationship between marital status and posttraumatic growth. Moreover, with inconsistent to the current study, the most recent literature suggested that posttraumatic stress disorder observed more in the married individuals than single and divorced individuals (Chang et al., 2017). Finally, the present study revealed no relationship between marital status and centrality of event. The literature has the lack of explanation between marital status and centrality of event, however it was suggested that with the centralization of problems in the romantic relationships leads to increase in posttraumatic stress responses (Boals, 2014). Therefore, it could be expected to single individuals to centralize events more than married individuals due to the fact that romantic relationships are an important part of social support. However, the findings do not allow to make generalized comparisons due to the imbalanced samples sizes of marital status.

Education level was also analyzed in the current study. Bellizzi and Blank (2006) indicated that the higher levels of posttraumatic growth is related to low level of education. Cordova et al. (1995) indicated that, among breast cancer patients, low level of education has association with post-traumatic stress disorder symptoms. Moreover, Jacobsen et al. (1998) revealed in their study that less educated women had less cognitive and emotional resources with dealing with distress and for that, those women more likely to have posttraumatic stress disorder symptoms. Additively, Weiss (2004) has fund that breast cancer survivors who have high level of education exhibited low level of posttraumatic growth. In the current study, the results of education level status were analyzed and indicated that there was no relationship between the below undergraduate degree or above undergraduate degree and post-traumatic stress disorder symptoms, post-traumatic growth, centrality of event, and rumination types. The investigated literature and the outcomes of the present study indicted some inconsistencies of the relationship between education level and its psychological outcomes. However, one possible explanation for that inconsistent result might be the limited participant sample.

The relationship between the degree of cancer and the main variables were also analyzed. Andrykowski and Cordova (1998) indicated that while breast cancer's stage is increased, the posttraumatic stress disorder symptoms also increases; on the other hand, another study was investigated that lower stage of breast cancer is negatively correlated with posttraumatic stress disorder symptoms (Amir & Ramati, 2002). Moreover, Tomich and Helgeson (2004) mentioned that patients who diagnosed with more advanced breast cancer stage perceived more advantages from experience of cancer aftermath diagnosis that women with less advanced breast cancer stage. The current study revealed that there was no significant relationship between the degree of cancer and post-traumatic stress disorder symptoms, post-traumatic growth, centrality of event, and types of rumination. This is an apprehensible finding since the sample in the current study contain more cancer survivors from the stage 2 cancer. Therefore, unfortunately it is impossible to make generalized comparisons.

4.2. The Relationship between the Posttraumatic Stress Disorder, Posttraumatic Growth, Centrality of Event, and Types of Rumination

The literature suggest that more centralization of a traumatic event leads to an increase on posttraumatic stress disorder symptoms (Groleau, Calhoun, Cann, & Tedeschi, 2013; Boals & Schuettler, 2011; Bernsten & Rubin, 2006). Moreover, event centrality has been found on of the strongest posttraumatic stress disorder predictors even after controlling anxiety, depression, and dissociation (Boals & Schuttler, 2011). Consistent with the literature, the present study also found that centralization of event increases the posttraumatic stress disorder symptoms. It is plausible since centralization of event refers significant change and more questioning of the individuals' both self, environment and life. If the individual experience the event as rooted in the self and life, stress level might increase, feelings of helplessness and hopelessness might increase and these two increases might lead decreases the motivation to fight against the cancer experience which all together increase the possibility of posttraumatic stress disorder symptoms severity. Wolfe and Ray (2015) has also suggested that higher level of event centrality negative predictors of resilience of the individual as consistent with the explanation mentioned above. Moreover, in the literature it was found that centrality of negative life event had predicted posttraumatic growth and suggested that negative life events can contribute in promoting growth (Groleau, Calhoun, Cann, & Tedeschi, 2013; Boals & Schuettler, 2011). It has been suggested that centrality of the event could be reported as "double-edged sword" in which traumatic events that considered as central to individual's identity evoke both maladaptive psychological functioning or could be a contributor to various form of adaptive functioning; because, having a traumatic life event that shaped as an individual's central in building identity could cause maladaptive psychological functioning; however it can also contribute to different types of adaptive functioning (Schuettler & Boals, 2011). In the current study, it was indicated that centrality of event was found positively correlated with posttraumatic growth consistent with the literature.

In the literature, it was suggested that deliberate rumination and intrusive rumination has a positive relationship (Wu, Zhou, Wu, & An, 2015; Taku, Cann, Tedeschi, & Calhoun, 2015). In the current study it was found consistent with the literature that deliberate rumination was positively related with intrusive rumination. One possible explanation to this relationship might be the fact that although deliberate rumination and intrusive rumination has different characteristics, they generate a general cognitive process of a repetitive thinking. Boals and Schuettler (2011) also explains that positive relationship by suggesting that the adaptability of rumination is considered as changeable and depends on the context; for that the extension to which event becomes crucial and fundamental to individual's identity might effect adaptability of rumination (Bonanno, Pat-Horenczyk, & Noll, 2011). Moreover, Calhoun et al. (2010) mentioned that deliberate and intrusive rumination acts different roles concurrently or separately for effecting and directing consequences following an aftermath a highly upsetting event. There is a literature about how people who have been deal with traumatic event have increased level of intrusive rumination; however, posttraumatic growth is established to occur for people who move from intrusive rumination and start to ruminate more deliberately as time since the event increases (Tedeschi & Calhoun, 2004). Event-related deliberate rumination is more likely to focused on posttraumatic growth which is not focusing on negative effects of traumatic experience (Cann et al., 2010). It must be greatly and positively related to the concept of posttraumatic growth when intrusive rumination is related with posttraumatic stress disorder (Janoff-Bulman, 2004; Affleck & Tennen, 1996). According to several studies, having deliberate rumination has association with high level of self-reported posttraumatic growth (Cann et al., 2011; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2011). The possible explanation of having deliberate rumination in the road of posttraumatic growth can be finding meaning and thinking about possible reason of having the event in the traumatic event itself. Individuals that interest in meaningful and aimful cognitive processing of the traumatic event might be more likely to seek the aim and significance of the event which can help to restructure the assumptive world (Groleau et al., 2013). The current study was found the consistent results with the literature. However, there was no significant correlation between intrusive rumination and posttraumatic growth which might be explained with the fragile characteristics of sample in the current study. The Cognitive Growth and Stress Model of Brooks

et al. (2017) suggested that centrality of event motivates a change from stressful thought and thinking to deliberate rumination, which bring about positive changes in an individual's perspective of life. Consistent with the literature, deliberate rumination was found to be positively correlated with centrality of event in the current study.

Finally, the correlation between posttraumatic growth and posttraumatic stress disorder was not found significant. Several studies have addressed that association between posttraumatic stress disorder symptoms and posttraumatic growth were not found significant (Cordova et al., 2001) while some research have indicated that there is positive relationship between them (Bluvstein et al., 2013); and some of them have indicated that there is negative manner (Frazier et al., 2001). One of the possible explanation might having restricted sample size and also the definition of traumatic event in the current study as being diagnosed as breast cancer before. Moreover, if an individual does not see that cancer experience as trauma, then having posttraumatic growth or posttraumatic stress disorder symptoms related to the event would not make consistent and sustainable outcomes.

4.3. The Mediating Role of Types of Rumination on the Relationship between Centrality of Event and Posttraumatic Growth

The current study has one of the hypothesis that deliberate rumination would mediate the relationship between centrality of event and posttraumatic growth of the breast cancer survivor. The results of the test of mediation model revealed that deliberate rumination and also intrusive rumination partially mediates the relationship between centrality of event and posttraumatic growth, separately.

As the first step in the analysis, it was revealed that centrality of event predicts posttraumatic growth consistent with the literature. The challenge and centralization of individuals' core beliefs about the world; additively, that challenge about assumptive world of person's lead to cognitive processing of the traumatic event (Cann et al., 2010). The diagnosis of breast cancer increases the awareness of difficulties in individual's life and survivors could face positive changes in their life with this increase in awareness which is a consequence of the centralization of event (Tedeschi & Calhoun, 2004). Consistent with the literature, Mosher, Danoff-Burg, and Brunker (2006) also showed that cancer related traumatic experiences lead personal growth in individual, individuals' spouses and offspring. Therefore, it can be concluded that number of researchers commented that the high level of severity of the traumatic event will lead higher level of disruption in an individual's life and it will lead more advantages for occurrence of growth (Park, 1998; Tedeschi & Calhoun, 1996).

Moreover, the direct effect of centrality of event on deliberate rumination and on intrusive rumination was found to be consistent with the literature. Deliberate rumination refers to possible positive consequences of the highly upsetting and difficult traumatic events and it can include conscious actions to remind self of advantages of traumatic experience as a consequence of challenged by a high level of difficult event (Folkman, 2008). On the other hand, Bernard et al. (2015) suggested that centrality to negative event found in association with maladaptive psychological functioning like traumatic cognitions, intrusions and symptoms of avoidance. Therefore, it can be understood as the more centralized event, the cognitive processes of the individual become more focused on the event. If the event experienced and perceived as a negative event and/or a traumatic event, the compulsory and repetitive intrusive rumination would increase. If the event experienced and perceived from the a more positive point of view and concluded as a reminder of advantages, deliberate rumination would increase.

Furthermore, it was found that there were nonsignificant direct effects of deliberate rumination and intrusive rumination on posttraumatic growth. The literature suggested that deliberate rumination has association with high level of self-reported posttraumatic growth (Cann et al.,

2011; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2011). One possible explanation of deliberate rumination to occur in context of posttraumatic growth can the need to find meaning and to think about hidden, maybe mystical, reason to face the traumatic event. Individuals that interest in meaningful and aimful cognitive processing of the traumatic event might be more likely to seek the aim and significance of the event which can help to restructure the assumptive world (Groleau et al., 2013). The reason behind the inconsistency between the finding and the literature might be due to the fact that in Turkey, cancer can be perceived as a necessarily negative event generally and even after the survival of cancer, individuals cannot maintain a positive point of view toward the experience. Moreover, the individuals may concentrate on the rumination of the event's itself rather than the survival process's advantages. It is also possible for individuals to focus on the opportunity cost of the cancer and the treatment process. Furthermore, to the knowledge, there were no study in the literature focused on the relationship between intrusive rumination and posttraumatic growth. Intrusive rumination was more likely to evaluated in terms of posttraumatic stress disorder. Therefore, it is not a surprising finding of the current study which did not found a direct effect of intrusive rumination on posttraumatic growth.

The results indicated that there were a significant and partial mediation on the relationship between centrality of event and posttraumatic growth through deliberate rumination. The aforementioned partial mediation revealed that breast cancer survivors who centralized the event of experience of cancer into their life tend to experience more posttraumatic growth when they also deliberately ruminate about the experience of diagnosing cancer. Also, it was found that there were a significant and partial mediation between centrality of event and posttraumatic growth through intrusive rumination. Another partial mediation of the current study revealed that breast cancer survivors who centralized the event of experience of cancer into their life tend to experience more posttraumatic growth when they also intrusively ruminate about the experience of diagnosing cancer. The reason that rumination had chosen as mediator in the relationship between centrality of event and posttraumatic growth in a breast cancer survivor was to assume that cognitive concept as rumination types could have a crucial role in the relationship. It was investigated as individual reactions to the traumatic event; also, extent to that an event is contained into person's self-identity and accordingly becomes central of individual's self-sense. Because of having a cancer as trauma in individual's life and its effects on every aspect person's life, focusing cognitive process like rumination will be inadequate to see general framework of the experience. The nature of the cancer is changeable in itself and naturally the psychological effects on it even being in a recovery period would be incalculable. Rumination and its types considered as just a part of that complexity; for that it was found to impossible to explain the process with just focusing on one cognitive concept like rumination.
Since the partial mediator roles of deliberate and intrusive rumination on the relationship between centrality of event and the path of posttraumatic growth and posttraumatic stress disorder symptoms were confirmed, some therapeutic interventions can be applied. It was revealed through the current study's results of not full mediation models, it was gathered that the role of cognitive concept as rumination types had not fully mediates the relationship between event centrality and path of posttraumatic stress disorder symptoms and posttraumatic growth among breast cancer survivors. However, because of cancer as trauma has effects in individual's life in several domains and because of its complex nature, it was impossible to evaluate the process with just cognitive concepts. In several oncology hospitals, the using of art therapy becomes a trend in cancer area. The vulnerable reason of using art therapy techniques among cancer patients could be reason that art therapy not just focusing on cognitive process of the patient but also focusing of the emotional process.

4.4. The Mediating Role of Types of Rumination on the Relationship between Centrality of Event and Posttraumatic Stress Disorder

The relationship of posttraumatic stress disorder and centrality of event with the mediating role of types of rumination was assessed in the current study. A partial mediation by intrusive

rumination and deliberate rumination on the relationship between centrality of event and posttraumatic stress disorder symptoms was found to be significant. It was found that centrality of event enables the breast cancer survivor to develop posttraumatic stress disorder symptoms and deliberate rumination and intrusive rumination stimulates the relationship between them. Furthermore, to the knowledge, there were no study in the literature focused on the significant relationship between deliberate rumination and posttraumatic stress disorder symptoms. Ehlers and Steil's (1995) study with the survivors of both car accident and sexual abuse suggested that a nonsignificant association between deliberate rumination and posttraumatic stress disorder symptoms. The sample group chosen in the aforementioned study contained individuals who needed a hospitalization period (who received an inpatient and/or outpatient treatment), so the consistency between the study's finding and the present study's finding is understandable. Deliberate rumination was more likely to evaluated in terms of posttraumatic growth. Moreover, the present study was failed to find a relationship between intrusive rumination and posttraumatic stress disorder symptoms. However, Cann et al. (2010) suggested that when a person engages in intrusive rumination type, focusing on negative aspects of the traumatic event become clearer and it leads to failure for dealing with issues that are related with traumatic event itself and at the end, the level of posttraumatic stress disorder symptoms increases. Those ruminative thinking processes put an individual to the development of posttraumatic stress disorder symptoms while some of them important for developing posttraumatic growth (Janoff-Bulman, 1992; Linley & Joseph, 2004). One possible explanation of the inconsistency with the literature might be the fact that breast cancer survivors can be conditioned to think positive or to think less. The researcher of the present study observed that most of the cancer foundations generally convey the idea of being an "Amazon" to the breast cancer survivors.

It was found a direct effect of centrality of event on posttraumatic stress disorder was found to be significant, which means that centrality of event predicts posttraumatic stress disorder symptoms. It was found consistent with several studies which mentioned that centrality of traumatic event has been found to be correlated positively with symptoms of posttraumatic stress disorder, depression, and dissociation which was repeated in several studies (Groleau, Calhoun, Cann, & Tedeschi, 2013; Boals & Schuettler, 2011; Bernsten & Rubin, 2006). Having a negative life event may cause negative outcomes of an individual after a traumatic experience and it is referred as leading to posttraumatic stress disorder symptoms (Perez et al., 2014; Wachen, Patidar, Mulligan, Naik, & Moye, 2014). In big amount of research, researcher have found out that posttraumatic stress symptoms have been reported in patients who has been diagnosed as cancer (Perez et al., 2014; Wachen, Patidar, Mulligan, Naik, & Moye, 2014). Negative centrality to event found in association with maladaptive psychological functioning like posttraumatic stress disorder symptoms, traumatic cognitions, intrusions and symptoms of avoidance (Bernard et. al, 2015). Therefore, the direct effect of centrality of event and posttraumatic stress disorder symptoms confirmed by the literature.

It was concluded that there were not a significant and full mediation between centrality of event and posttraumatic stress disorder through deliberate rumination. Moreover, it was found that there were not a significant and full mediation between centrality of event and posttraumatic stress disorder through intrusive rumination. One explanation to that might be the complex nature of the cancer experience. The psychological, developmental, social and cognitive aspects should be considered in a deeper manner. They can operate separately but inter-relations between them cannot be underestimated due to that complexity.

4.5 Limitations and Implications for Further Research

The current study has some limitations that must be considered. First of all, the survey was conducted through social media, and findings of the study can only be generalized to people who are actively using online platforms to seek social support following recovery from cancer.

The current study was prepared and investigated with self-report technique which might allow to respondents to have a possibility to socially desirable answers. For that, in the future studies, it

would be better to contain face-to-face interviews in addition to decrease that limitation. Additively, size of the sample was not adequate to make general conclusions about the breast cancer survivor population in Turkey.. Furthermore, the sample size of age, marital status, education level and degree of cancer of the participants were imbalanced; therefore, the comparison among the descriptive information on the posttraumatic stress disorder symptoms, posttraumatic growth, centrality of event, types of rumination could not be generalized in the current study.

Moreover, the different aspects of cognitive concepts like "fear" of reoccurrence of cancer, occurrence of meaning in life in an existential approach of the individual, coping strategies, resilience, positive repeated framing; and social concepts like sharing the experience of diagnosed of breast cancer with others, relationship satisfaction or received social support of the breast cancer survivor might be considered in the further research. In the related literature, existence of absence of social support is regarded as one of the main predictors of path on posttraumatic stress disorder symptoms and posttraumatic growth. In further studies, taking account of social support will contribute to the related literature.

4.6. Clinical Implications and Contributions of the Present Study

Breast cancer survivors were chosen in the current study since they are one of the major risk groups to develop posttraumatic stress disorder symptoms aftermath an experience of being diagnosed of breast cancer within its treatments' side effects. Breast cancer survivors' centrality of event plays a crucial role on the path of several psychological effects of the experience. It is very important to consider personal effect of the traumatic event; however various measures screen for trauma history has been fail for assessing the perceived impact of the trauma. For the reason, it is very considerable to examine the perceived meaning of traumatic experience within individual's unique reaction to the trauma (Norris & Hamblen, 2004). Within those information, putting traumatic experience in the individual's life in a center is very crucial to investigate while it is considering the effect of traumatic experiences.

Although there has been a growing literature on the relationship between event centrality, posttraumatic stress disorder symptoms and posttraumatic growth and also the relationship between types of rumination and the indirect relationship between types of rumination with centrality of event separately; there is no study in which the relationship between all of these concepts is examined. For this reason, the goal of the current study was to expand the knowledge on breast cancer survivors' experience of posttraumatic growth and posttraumatic stress disorder symptoms by exploring its relationship with centrality of event on the mediating effect of the types of rumination to catch the reason of developing negative or positive outcome after the traumatic experience and prevent posttraumatic stress disorder symptoms with making cognitive interventions in the related process. Because, while a person is ruminating about an event, it is more likely for the individual to reflect events while they are tried to understand and seeking for understanding, and trying to find alternative solution to the obstacles in life (Martin & Tesser, 1996).

McCready (2004) showed that having idea of risk factor of developing breast cancer and being aware of how to decreased the risk factor are very crucial. While treatment procedures and screening are considering, being informative by being aware of early diagnosis of breast cancer decreased the possibility of mortality rates. Procedures of screening for women with breast cancers could be breast awareness-raising education that includes normal and abnormal image of their breast, clinical breast examination, self-controlling/checking, and having mammography in clinics. Therefore, the present study has a contribution on expanding the knowledge in the rumination types of breast cancer survivors to detect the possible effects on posttraumatic stress disorder symptoms and posttraumatic growth and to make contribution with identifying cognitive

concept like rumination type in their possible therapeutic process and improving the quality of the treatment process in the clinical practice.

At the clinical level, the current study highlighted the importance of the seeking different cognitive concepts in the road of negative and positive psychological effect of the centralized traumatic experience for focusing on the therapeutic interventions. It was indicated that there must be still another variables for investigating antecedents of positive and negative effects of the traumatic event itself. For cognitive therapy approach as Cognitive-Behavioral Therapy, focusing on the function of repetitive thinking process is one of the most considerable agenda of the process and understanding and intervening the rumination process with its types might be contribution.

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