

A TURKISH ADAPTATION OF THE REVISED POST-EVENT  
PROCESSING QUESTIONNAIRE

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2019

A TURKISH ADAPTATION OF THE REVISED POST-EVENT PROCESSING  
QUESTIONNAIRE

Thesis submitted to the  
Institute for Graduate Studies in Social Sciences  
in partial fulfillment of the requirements for the degree of

Master of Arts  
in  
Psychology

by  
Can Baycan

Boğaziçi University

2019

## DECLARATION OF ORIGINALITY

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## ABSTRACT

### A Turkish Adaptation of the Revised Post-Event Processing Questionnaire

Post-Event Processing (PEP) is described as repetitive and intrusive thinking on recent anxiety-provoking social interaction or performance situation. Models of social anxiety (e.g. Heimberg, Brozovich, & Rapee, 2014) suggest PEP is an important mechanism in maintenance and vulnerability for social anxiety. Post-Event Processing Questionnaire- Revised (PEPQ-R) was developed by McEvoy and Kingsep (2006) in order to assess this mechanism in individuals. Perfectionism as a transdiagnostic factor have been extensively studied concerning other psychological problems, such as depression and anxiety. Moreover, mediating role of different cognitive processes on the relationship between perfectionism and psychological distress have been examined. This study aims to adapt the PEPQ-R to Turkish and explore mediating role of PEPQ as a cognitive process on the relationship between perfectionism and other disorders. Data collected from 525 university students in Turkey through online survey tool. PEPQ-R with a battery of anxiety, depression, perfectionism and repetitive thinking measures were used in order to assess validity of PEPQ-R. Mediation analyses were conducted if PEPQ mediates the relationship between perfectionism and aspects of social anxiety and depression. Confirmatory factor analysis showed that the adaptation had adequate fit on the model, other analyses supported that PEPQ-R correlated with other measures in line with previous studies. These suggest adapted scale is a reliable and valid tool in assessment of PEP in Turkish individuals. Mediation analyses yield negligible results. Outcome of the analyses were discussed as limitations and future directions.



## ACKNOWLEDGMENTS

First and foremost, I would like to thank to Ayşe Altan-Atalay. Her guidance and support throughout the process is the foundation of this thesis. I believe I cannot redeem myself for the burden she undertook in order to lead me through this. I hope that I will find a way.

I would like to thank to Serra Müderrisoğlu and Nur Soylu Yalçinkaya for they were there in my darkest hours to shed a light upon the twilight. With their presence, guidance and warnings helped me to find meanings where I could not.

I would like to thank to Ezgi Kılıç, my partner, was there for me when I could not stand for myself. She carried the parts that I could not and showed me things when I shunned things deliberately. She taught me to share both the pain and the joy.

I would like to thank to my family since we always had a kind of sarcasm that helped me to laugh at the things I usually stumbled upon and their patience made me calm.

I would like to thank to Özlem Çağın-Tosun, she helped me in understanding things that entangled me for a long while. Disentanglement allowed me to move on, otherwise impossible.

Last, but never the least, I would like to my old flatmates and current colleagues, for their support in the process of writing, understanding and being.

For those who died alone...

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# CHAPTER 1

## INTRODUCTION

Social anxiety is a highly prevalent and persistent disorder (Stein et al., 2017) as it has been suggested as the most prevalent disorder with 13% of the population meeting the diagnostic criteria at some point in their lives (Kessler, 2015). Social anxiety is defined as experiencing intense fear, anxiety, or avoidance regarding social situations where there is possibility of being scrutinized (APA, 2012). Furthermore, its cost on society as well as negative effects on individuals' functioning have been well documented (Stein et al., 2017; Bodden, Dirksen & Bögels, 2008) along with its comorbidity with different psychological disorders such as depression, avoidant personality disorder, and body dysmorphic disorder (Reichenberger, 2019; Koyuncu et al., 2014)

A glance at the literature indicates that certain cognitive factors are influential in both development and progress of SAD, and thus play a crucial role in both understanding and treatment of this disorder (Hofmann, 2007). One of such cognitive factors is Post-event processing (PEP) which is defined as the tendency to entertain ruminative thoughts that are focusing on the specific aspects of an anxiety provoking event (Heimberg, Brozovich & Rapee, 2014). That is, socially anxious individual after distressing or embarrassing event broods over aspects of the event that were considered important and relevant anxious feelings and negative self-perceptions get underlined as it gets repeated in the mind of the socially anxious individual (Clark & Wells, 1995). Because of this, PEP is suggested to be one of the crucial factors that is responsible for both vulnerability to and maintenance of SAD (Clark & Wells, 1995; Rapee & Heimberg 1997, Heimberg et al., 2014).

Due to its negative content and repetitive nature, PEP is considered as a form of repetitive negative thinking (RNT; McEvoy, Mahoney, & Moulds, 2010) and just like the other forms of RNT, it begins as an adaptive processes to help the individual to analyze and understand the social situations and hopefully change the outcome of the future events (Watkins, 2016). However, continuation of PEP episodes are associated with increases in social anxiety (Brozovich & Heimberg, 2008) and avoidance of similar situations since having such cognitions increase the perceived probability of experiencing such events in the future. (Rachman, Grüter-Andrew & Shafran, 2000). Since assessing and treating these processes is a valuable tool in overcoming SAD, development of a tool for this purpose seems important. This study aims to contribute to studies on social anxiety through adaptation of the post-event processing questionnaire- revised (PEPQ-R) (McEvoy & Kinsep, 2006) into Turkish and assess its psychometric qualities. Another aim of the present study is to understand the mechanisms through which PEP influence the relationship between perfectionism and social anxiety.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Social anxiety

Social anxiety is the fear of scrutiny of others with the expectation of humiliation and shame (APA, 2013). Beidel and Turner (1998) suggest that severity of social anxiety disorder can be anywhere between experiencing a feeling of stress in the presence of others to a state of complete dysfunctionality characterized by being unable to participate in daily activities due to an excessive amount of anxiety. Although examination of anxiety experienced in social situations began much earlier, the modern investigation began in the first part twentieth century which was related to its nature and its contrast with other disorders (Stravinsky, 2014). Early twentieth century studies on social anxiety were able to differentiate social anxiety from shyness by attaching it the abnormal response quality (i.e. severity) or dimensions of a response spectrum to social stressors. Later on, the interest recessed until seminal works of Marks and Gelder (1966) and only then the disorder found its place in DSM (Stravinsky, 2014). This back and forth motion regarding its status assumed to occur under its conceptualization (Rapee & Heimberg, 1997).

APA (2013) criteria for the diagnosis of social anxiety includes fear or anxiety regarding the possibility of behaving in a way that will bring shame or rejection by others in social situations. In addition to excessive levels of self-consciousness about the anxiety symptoms, thinking that anxiety symptoms will be negatively evaluated and will lead to further rejection and scrutiny is another criterion. The individual experiences high levels of anxiety in nearly every situations and tries to avoid such occasions whenever possible with the purpose of reducing

distress. In the case of not being able to avoid the situation, the individual goes through the process feeling intense anxiety. Lastly, fear must be out of proportions to the real threat posed in such situations along with the relevant sociocultural context. According to Stravinsky (2007), a socially anxious individual experiences the symptoms of social anxiety on three separate and related domains. The physiological domain includes somatic symptoms of social anxiety such as blushing and sweating and many other reactions which are appraised as visible to others and are assumed to lead to humiliation. The behavioral domain includes in-situation safety behaviors (e.g. rehearsing what to say in mind, engaging with the phone to reduce social contact), which are used to ward off any potential threat through avoidance or through trying to manage the impression the person will make on others. The cognitive aspect of SAD colors the thoughts, memories, and assumptions of the individual negatively to a degree that thinking evolves into a ruminating about past failures and possible embarrassing moments.

Research indicates that a high portion of individuals from the non-clinical populations, such as student populations, experience some level of social anxiety along with functional impairments although the severity of the symptoms does not meet the DSM criteria (Dell’Osso et al., 2014). Such results make it reasonable to approach social anxiety as a spectrum as Dell’Osso et al. (2002) suggest. Though the functional end of SAD spectrum consists of people who consider themselves shy or inhibited, and as we move to the other end of the spectrum, it is hard to draw a line where the pathological reactions to daily stressors begin. This allowed social anxiety individuals with different names such as shyness or introversion and only later it was possible to differentiate between how these concepts were related and differed from SAD.

## 2.2 Model of social anxiety

During the 90's two different groups of researchers suggested CBT models for SAD (Clark & Wells, 1995; Heimberg & Rapee, 1997). Both models explain the generation and maintenance of social anxiety when the individual is exposed to an anxiety-provoking situation. Figure 1 presents the model suggested by Heimberg, Brozovich, and Rapee (2014).

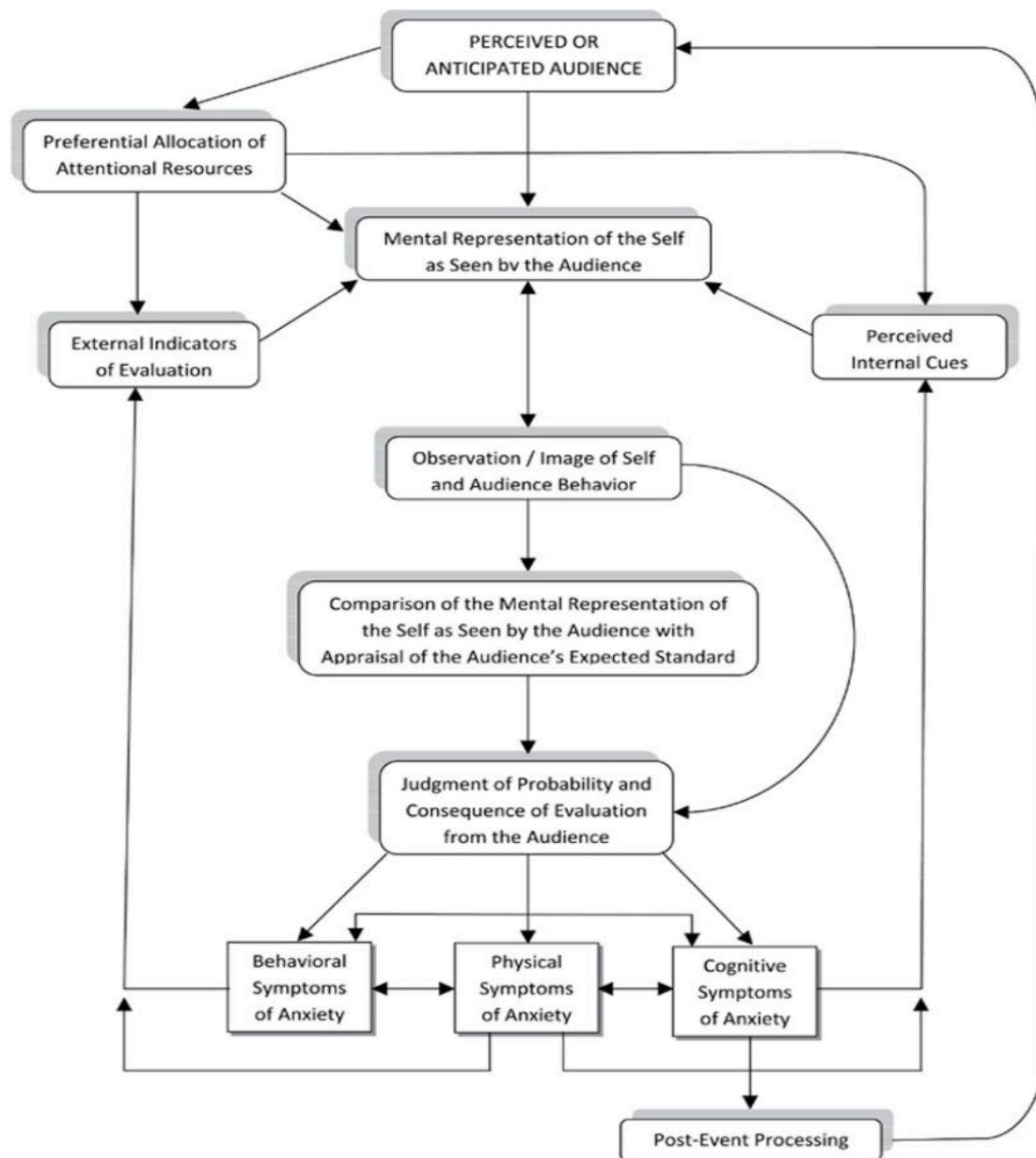


Figure 1. Model of social anxiety

These models have been extensively studied and updated recently (Heimberg et al., 2014). Since both models are informed by each other (Heimberg & Rapee, 1997), for clarity the recent model will be explained.

According to Heimberg, Brozovich, and Rapee (2014), the socially anxious individuals show a tendency to perceive the people in their environment as hypercritical, judgmental and thus experience intense levels of evaluative threat when they think that they are under the scrutiny of others. This gaze leads to preferential allocation of cognitive resources (Bomyea & Amir, 2010; Veljaca & Rapee, 1998; Voncken & Bögels, 2008). That is, the individuals focus on internal anxiety cues that are believed to be negatively evaluated and external cues of evaluation. With changes in their attentional focus, the socially anxious individuals create a mental image of how they are seen by others, mostly from the observers' perspective (Coles, Turk, & Heimberg, 2002; Vassilopoulos, 2005). Socially anxious self turns into a social object within the mind and becomes a subject of evaluation with the expected standards of the audience (Hackmann, Clark, & McManus, 2000; Coles et al., 2001). This mental imagery taxes cognitive resources and assumed to reduce performance as well (Makkar & Grisham, 2011). Moreover, these images have a significant impact on memory and lead to bias that results in a tendency to remember similar negative experiences (Morrison, Amir, & Taylor, 2011).

From another vein, research indicates that socially anxious individuals set high goals for themselves in terms of how they "should" act in social occasions (Coles, Turk, Heimberg, & Fresco, 2001). Specifically, they believe that they have to act flawlessly all the time and leave a good impression on other people on every occasion and situation. Failure to meet these standards are believed to bring negative evaluation and social exclusion (Mansell, & Clark, 1999). Success is also feared as

success believed to increase the standards others set for socially anxious individuals (Alden, Mellings, & Laposa, 2004; Weeks, Heimberg, & Rodebaugh, 2008). To assess their performance in a social situation, the socially anxious individuals compare the mental images of the current self with these expected standards and the audience behavior. Anxiety feeling in these situations increases with this comparison along with the expected standards of the audience. The outcome of these anxiety-provoking situations endures to the extent that it increases anxiety during and after the event.

The mental representation of the individual is modified throughout the event with various internal and external cues, which makes the individual appraise the situation as extremely catastrophic. With the anxious feeling, behavior of the individual (e.g. fidgeting, wiping sweat) as seen by others are exaggerated in the mental representation. This exaggeration is applied also to the visibility of the physical symptoms of anxiety (e.g. sweating, trembling of the hands, stuttering), and to the cognitive symptoms (i.e. negative internal dialogue with situation-specific content) the individuals believe that these behaviors and symptoms are more visible to others than they feel and will be negatively evaluated (Gerlach, Wilhelm, Gruber, & Roth, 2001; Weeks, Heimberg, & Heuer, 2011). External input that affects the mental representation consists of ambiguous feedback of the audience (e.g. checking the time, connecting or disconnecting eye-contact). With their bias towards interpreting ambiguous stimuli as negative, these cues are considered negative and are incorporated to the mental image of the individual as such (Huppert, Pasupuleti, Foa, & Mathews, 2007; Stopa & Clark, 2000).

Studies that examined the model also found that aspects of anticipatory processes are recurrent, related to elevated social anxiety and experienced in

different sensory modalities (Hackman et al., 2000), anticipatory processes maintain social anxiety (Brown & Stopa, 2007; Wong & Moulds, 2011). Other studies found the effects of imagery on heightened anxiety, reduced ratings of performance and physiological arousal (Hirsch, Clark, Mathews, & Williams, 2003; Makkar & Grisham, 2011; Stopa & Jenkins, 2007) and although safety behaviors are used by the socially anxious individuals to reduce anxiety in a social event (Cuming et al., 2009), these behaviors have a negative effect on observers (Hirsch et al., 2004). Furthermore, socially anxious individuals found to overestimate of the visibility of their symptoms (Alden & Wallace, 1995; Gerlach, Wilhelm, Gruber, & Roth, 2001), and symptoms supports the maintenance of social anxiety (Amir & Taylor, 2012).

The recent model of SAD emphasizes the post-event processing as a maintaining factor in social anxiety through increasing social anxiety and negative affect (Brozovich & Heimberg, 2011, Fehm, Schneider, & Hoyer, 2007; Kashdan & Roberts, 2007; Kocovski, Endler, Rector, & Flett, 2005; McEvoy & Kingsep, 2006). While early model suggested post-event processing as a possibility, the current model postulates that individuals with social anxiety brood over past failures and try to prepare for future events with the specifics of social event that happened before, as it provides a link between past and future anxieties. PEP as a post mortem analysis, helps the individuals focus on the pieces of the event dissecting it to understand the outcome, to understand the errors that one has committed, and to interpret the responses of the others. Although this way of thinking is beneficial in the short run through allowing the individual to understand the event, failure to direct attention away from such cognition leads to increases in social anxiety. Moreover, studies suggest that PEP occur in relation to anticipation of a social event as well which is found to be related to elevation in social anxiety related to an upcoming situation

(Brozovich and Heimberg, 2013). Moreover, engaging PEP leads to increase in interpretation biases and distortions of the event and it gets easier to remember the distorted view of the event (Abbott & Rapee, 2004; Dannahy & Stopa, 2007; Vasilopoulos & Watkins, 2009; Wong & Moulds, 2009). Moreover, this process hinders the effectiveness of therapeutic interventions on social anxiety (Abbott & Rapee, 2004; McEvoy, Mahoney, Perini, & Kingsep, 2009). PEP engagement in high socially anxious individuals found to be intrusive, negative and related to avoidance of future social situations (Rachman et al., 2000). With these aspects, PEP is also considered as a mechanism similar to other repetitive negative thinking constructs (McEvoy, Mahoney, & Moulds, 2010).

### 2.3 Repetitive negative thinking

Repetitive Negative Thinking (RNT) is a term used to describe repetitive and excessive thinking about current issues, past concerns or future worries (Ehring, Watkins, 2008). It is considered as a transdiagnostic factor, which means that forms of RNT may be present as it relates to various disorders. For example, depressive rumination is related to depression as individuals dwell on the symptoms of depression, problems, and implication of their mood (Nolen-Hoeksema, 2004). Worry is related to generalized anxiety disorder, can be distinguished by depression rumination according to their temporal focus (McEvoy et al., 2010). That is, the main focus of worry is the catastrophic events that the individual may experience in the future, whereas rumination is more about the negative experiences that the individual has already gone through (Papageorgiou & Wells, 1999). That is, depressive rumination seems to be past-oriented while worry relates to future-oriented. Ehring and Watkins (2008) suggest that these previously differentiated

processes for different disorders have three aspects in common which are: (1) repetitiveness, (2) uncontrollability, and (3) negativeness of the content.

Research supports the idea of RNT as a maintaining factor in psychological disorders such as depression (Nolen-Hoeksema, 2000; Spasojevic & Alloy, 2001), anxiety (Segerstrom et al., 2000) and PTSD (Murray, Ehlers, & Mayou, 2002). Experimental studies in which RNT in form of worry or rumination are induced support this suggestion as they found it increases negative affect and depression (Lyubomirsky & Tkach, 2004; McLaughlin et al., 2007; Wells & Papageorgiou, 1995; Nelson & Harvey, 2002). Moreover, since PEP shares characteristics of RNT constructs, it has been studied in and of itself as well as in relation to other RNT constructs.

#### 2.4 Post-Event processing: A social anxiety specific subtype of RNT

Both Clark and Wells (1995) and Rape and Heimberg (1997) models of social anxiety suggested that individuals conduct post-event processing. That is, individuals ruminate on the specific content (i.e. related to the possibility of negative evaluation) of an anxiety-provoking event to understand the event and its outcome. Like a post-mortem analysis, individual recalls the event and with cognitive biases related to SAD, distorts the memory of the event which turns it into another failure of social interaction (Rachman et al., 2000). PEP as a maintenance and vulnerability factor in social anxiety received empirical support in the literature.

PEP shares the characteristics of RNT as discussed earlier on being uncontrollable, repetitive and negatively valenced (Rachman et al., 2000). With regards to its temporal focus, PEP seems to be similar to depressive rumination compared to worry, as both share a focus on the past. Studies on post-event

processing also suggest that post-event processing might be present even when the social anxiety is not present in individuals (Lundh & Sperling, 2002; Kocovski & Rector, 2008).

While the studies examined PEP concerning various psychological problems as well as other cognitive constructs, results sometimes found conflicting results on different points. For example while fear of negative evaluation was significantly related to post-event processing when the situation was social interaction and not performance (Fehm, Schneider, & Hoyer, 2007), contrary to previous findings some studies found that performance situations elicit more post-event processing as opposed to social interactions (Kashdan and Roberts, 2007; Makkar and Grisham, 2011a, Kiko et al. 2012). Moreover, studies found that social situations, as opposed to non-social phobic situations (e.g. fear of height), elicit more post-event processing, social anxiety was related to elevation in PEP (Kocovski & Rector, 2007; Lundh and Sperling, 2002; Laposa and Rector, 2011; Kocovski et al. 2005; Kocovski and Rector, 2008), PEP increase social withdrawal (Campbell, Bierman, & Molenaar, 2016), and in-situation safety behaviors were related to elevation of PEP (Mitchell and Schmidt, 2014). On the predictors of PEP, studies have found that PEP was predicted by state anxiety (Kiko et al. 2012, McEvoy and Kinsep, 2006) and trait anxiety (Cox and Chen, 2014). Furthermore, reduction in PEP was related to reduction in social anxiety but not depression (McEvoy et al., 2009). Moreover, individuals who engage in more PEP recalled more negative self-related information (Mellings & Alden, 2000), negative appraisal on performance maintained after the event (Abbott and Rapee, 2004).

On the developments regarding the assessment of PEP, the first questionnaire that measures PEP was developed and validated by Rachman et al. (2000) with

university students in a series of studies. Based on the model proposed by Clark and Wells (1995), and the data gathered in the first part of the study from 53 student concerning their thoughts after an anxiety-provoking social event., Post-Event Processing Questionnaire (PEPQ) was composed of 13 items. However, factor analysis suggested a one-factor solution with 10 of the original 13 items which accounted for 42.8% of the variance. PEP, as measured by PEPQ, appeared to have significant associations with social anxiety ( $r = .40$ ) and depression ( $r = .32$ ). The study revealed that people who have elevated levels of social anxiety think more about past unsatisfactory social events, such thoughts have an intrusive quality, interfere with their ability to concentrate and increase negative affect with regards to the social events. Moreover, these thoughts functioned as a source of embarrassment and shame.

McEvoy and Kingsep (2006) conducted another study to cross-validate the study discussed earlier with individuals diagnosed with SAD. The authors' principal factor analysis solution suggested dropping one item which was related to perspective-taking. That is, whether the memories of the event were repeated from the eyes of the observer or the eyes of the individual. McEvoy and Kingsep (2006) supported the robustness of the scale by validating it with a sample of individuals with social phobia. With regards to their change in the item number, the new version of the scale was named as Post-Event Processing Questionnaire-Revised (PEPQ-R). Surprisingly, in their sample, PEPQ did not appear to be related to performance or social interaction anxiety, but with state anxiety, while controlling for depression and anxiety. It is worthy to note that state anxiety was calculated by taking the first item of the scale (i.e. How much anxiety did you experience?), which may account for the error in their analysis. The authors suggested that higher state anxiety may be the

motivational factor for engaging in PEP to resolve socially anxious individuals' feelings regarding the event and the authors noted that the anxiety experienced by the participants in the study were related to social context. Furthermore, the authors suggested that the differences in findings with regards to performance and social interaction anxiety may stem from the use of different measures in the studies.

Since then, the scale had been translated to the German language by Fehm, Hoyer, Schneider, Lindemann, and Klusmann (2008) in a two parts study which the results proved good psychometric qualities, albeit factor loadings of items were different. That is, even though in the first study one-factor solution was still favored, 10 items explained 27.9% of the variance and item 1,5,9,10 and 11 loaded on this factor with low indices. To address these issues and extend the dimensions captured by the scale, the authors discarded these items and added different items considering the model proposed by Clark and Wells (1995). With the addition of new items, results favored four-factor model which were named: (1) cognitive impairment, (2) negative self, (3) past and future and, (4) avoidance. Wong (2015) adapted this new version (E-PEPQ) to English language and results model fit tests suggested a three-factor model over four, dropping the avoidance aspect of the E-PEPQ.

PEP is suggested to be one of the crucial mechanisms that responsible for both vulnerability to and maintenance of SAD (Clark & Wells, 1995; Heimberg et al., 2014). Moreover, research also suggests PEP may be present even without social anxiety and found to be related to depression over social anxiety. All things considered, engagement of PEP can be related to an inclination towards ruminative thinking (Fehm, Schneider, & Hoyer, 2007). Thus, it is valuable to understand how PEP supports the maintenance of different forms of psychological distress. PEPQ-R (McEvoy & Kingsep, 2006), is a practical measure to assess PEP with a low number

of items and addresses some of the issues of PEPQ suggested by Fehm et al. (2007). Moreover, since PEPQ is a situation non-specific measure of PEP, it becomes possible to use in both social situations and performance situations. That is why it seems necessary to translate PEPQ-R into the Turkish language.

## 2.5 Perfectionism

Perfectionism is defined as having excessively high standards of performance (e.g. Hamachek, 1978) with an inclination towards being excessively self-critical if these standards are not met (Frost, Marten, Lahart, & Rosenblate, 1990). Even though in early formulation of perfectionism, Hamachek (1978) suggested that perfectionism can be differentiated in two types as normal or healthy and unhealthy or neurotic, for a long while researchers tended to disregard this perspective and coined perfectionism with unhealthy behavior. Relatively recent research on the topic by Frost et al. (1990), Flett & Hewitt (2002) and others support the Hamachek's initial formulation, that perfectionism can be considered healthy and unhealthy.

Frost, Marten, Lahart, and Rosenblate (1990), conceptualized perfectionism as a multidimensional construct and developed a scale to assess its different aspects. According to Frost et al. (1990), core features of perfectionism consist of critical tendencies, on concern over mistakes (CMD) to a degree that not being able to allow even minor flaws. In other words, failure to conduct a perfect performance meant that it was worthless. Another feature captured the authors' attention was doubt about the quality of performance (DA), as the individual fails to be sure in his or her decisions continuously doubts if the behavior is the correct one or it should be changed.

Drawing upon the contributions of Hamanek (1978) and others, Frost et al. (1990) suggested that another feature of perfectionism that is also related with the etiology of perfectionism is parental expectations and criticism, meaning that the perfectionistic individuals had parents who had high expectations on their children and criticized when they could not live up to those expectations. Thus, these children who have learned to try their best to protect themselves from harsh criticism and loss of the love of others, continue to behave in that way in their adult years. Last two features that the authors underlined was the personal standards or precision and organization. These two aspects were assumed to be related to individuals' daily life in which while they tried to be perfect in expectations of themselves, they did so by keeping high standards for their work apart from the expectation of others and organized themselves and their environment accordingly.

While Frost et al. (1990) suggested a six-factor model in the development of Frost Multidimensional Perfectionism Scale (FMPS), its scale structure has been a subject of criticism and researchers suggested different scale structure. For example, Stöber (1998) suggested a four-factor model combining Concern over Mistakes and Doubts about Actions scales (CMD) as well as Parental Expectations and Parental Criticism (PEC). On the other hand, Personal Standards and Organization subscales stood as separate factors in the analysis. With the consideration of the content of combined factors, CMD and PEC components were named as maladaptive evaluative concerns, while PS and O named as positive strivings by the author. Furthermore, Stöber (1998) was able to find correlations between FMPS with anxiety, depression and worry measures, in line with the study by Frost et al. (1990). Especially CMD had the highest correlation with these measures, which was followed by PEC. Positive strivings components had low correlations with these

measures. In other words, CMD was suggested as the dimension of perfectionism that is associated with the worst mental health outcomes, and thus the core of unhealthy perfectionism. As a result of this, various studies focus on CM, DA or CMD component of perfectionism when assessing maladaptive perfectionism (e.g. Ashbaugh et al., 2007; Cox & Chen, 2014; Altan-Atalay, 2018).

CMD is understood as a negative reaction towards mistakes, equating mistakes with failure and belief that failure will bring a negative evaluation from others (Frost et al., 1995). CMD is an important part of the perfectionistic conceptualization as it allows differentiating perfectionistic people who fear from mistakes and entertain doubts about every action because of a possibility of a potential mistake from competent people who set high standards for themselves, organize their work accordingly and tolerant towards minor flaws. For perfectionists, concerns and doubts about their performance are positively related to depression, compulsivity, procrastination, and hesitation (Frost et al., 1990; Stöber, 1998).

Juster et al. (1996) suggested that perfectionistic beliefs (i.e. excessively high standards for performance, self-critical internal dialogue, expectation that others will evaluate the individual negatively if the individual makes a mistake) are a key characteristics of SAD. In support of this view, the authors found that individuals with social anxiety scored higher on CM, DA, PC and PE subscales of FMPS compared to a community control group. Recent research also supports this relationship between perfectionism and social anxiety, studies conducted on the effects of CBT for social anxiety found that perfectionism scores were higher in the pre-treatment phase (Lundh and Ost, 2001) and reduced after CBT treatment (Rosser, Issakidis, and Peters, 2003; Ashbaugh et al., 2007). Interestingly, CBT affected only CM and DA subscales of FMPS (Ashbaugh et al., 2007).

Studies examined the relationship between perfectionism and other psychological problems with cognitive processes as mediators. In these studies, cognitive processes are considered to be influencing the relationship which relatively correspond to RNT. Self-criticism is a cognitive process, which was also assessed as a facet of depression, have been found to be related with perfectionism and various psychological problems in this regard (Dunkley, Blankstein, Masheb, & Grilo, 2006). In a study examining the relationship between perfectionism and negative affect, it was found that the relationship was partially mediated by RNT measures of worry and rumination (Short & Mazmanian, 2013). In a similar study, self-criticism and rumination as cognitive processes partially mediated the relationship between perfectionism and psychological distress (e.g. stress, anxiety, and depression) (James, Verplanken and Rimes, 2015). Moreover, other studies have found that ruminative response was a mediator on the relationship between perfectionism and depression (Di Schiena, Luminet, Philippot, & Douilliez, 2012), perfectionism and social anxiety (Nepon, Flett, Hewitt, & Molnar, 2011; Weiner and Carton, 2011).

Individuals engage PEP in conjunction with the perfectionistic beliefs and anxieties of past events to make meaning out of a previous event. Since social situations elevate anxiety because of its ambiguity, perfectionistic individuals ruminate over possible or actual mistakes, failures, and negative social evaluation to make meaning out of the experience. This is motivated by the wish to make the situation more predictable and protect the individual from future mistakes and negative evaluation. Recent studies supporting this understanding of overthinking in perfectionist individuals suggest that cognitive perseveration is an aspect of perfectionism (Flett, Nepon and Hewitt, 2016). Several studies examined the relationship between perfectionism and rumination in the context of social anxiety

and found that perfectionism either directly (Brown and Kocovski, 2014) or indirectly through social anxiety (Cox and Chen, 2014) influenced the level of post-event processing following anxiety-provoking event. These studies reached to respective conclusions through experimental manipulations in which anxiety elicited by a speech-task and related constructs was assessed around the task while post-event processing assessed after one day for both and a second time after one week for the first study.

Since studies discussed earlier considered cognitive processes as a mediator between perfectionism and forms of psychological distress, PEP as a cognitive process may work as a mediator in the relationship between perfectionism and social anxiety. That is, for perfectionistic individuals PEP may function as a bridge between past mistakes and future failures concerning anxiety-provoking situations.

## 2.6 Current study

This study aims to adapt the PEPQ-R (McEvoy and Kingsep, 2006) to the Turkish language to provide a tool for the measurement of the post-event processing in Turkish samples. Since higher levels of PEP engagement was related to elevated psychological problems, it is possible to use PEP as a predictor of such problems. One of the hypotheses of this study is related to this point. PEP have been found to be related to social anxiety (Rachman et al., 2000) and depression (McEvoy & Kingsep, 2006). Since RNT constructs have predictive power over these psychological problems, PEP as a mechanism related to social anxiety and as a construct similar to depressive rumination concerning temporal focus, may have predictive value over social anxiety and depression as well.

Research on perfectionism, rumination, and social anxiety used Liebowitz Social Anxiety Scale (e.g. Nepon, Flett, Hewitt, & Molnar, 2011; Brown & Kocovski, 2014) as a measure of social anxiety yet did not examine the relationship of perfectionism and rumination with its subscales. Moreover, previous studies suggest cognitive processes may mediate the relationship between perfectionism and other psychological distress constructs (e.g. anxiety, depression) (James et al., 2015; Dunkley, Blankstein, Masheb, & Grilo, 2006). PEP as an intrusive, past-oriented thinking style suggested to be related to anxiety and depression (Rachman et al., 2000; McEvoy & Kingsep, 2006) as well as perfectionism (Brown & Kocovski, 2014). Moreover, perfectionism have been suggested as a transdiagnostic risk and vulnerability factor for various psychological problems (Egan, Wade, & Shafran, 2011). Even though the relationship between perfectionism and social anxiety is well studied, PEP as a cognitive mechanism of social anxiety is not studied as a mediator on this relationship. Thus, understanding the effect of PEP on the relationship between perfectionism and social anxiety might be a valuable insight in targeting these psychological problems.

PEP is found to be related to avoidance of future similar situations (Rachman et al., 2000). Moreover, it has been found that thought processes may maintain the fear response regarding experiences and avoidance (Joos, Vansteenwegen, & Hermans, 2012). This makes it possible that PEP might mediate the relationship between perfectionism and social anxiety, and perfectionism and social avoidance differently. With the literature on this topic, two hypotheses were suggested which as follows:

- 1- With the consideration of post-event processing as a transdiagnostic process, changes in post-event processing will predict changes in social anxiety and depression
- 2- Post-event processing will mediate the relationship between perfectionism and anxiety and avoidance aspect of the social anxiety as assessed by LSAS

## CHAPTER 3

### METHOD

#### 3.1 Participants

All students who were enrolled introductory psychology courses were eligible for the study and all participants received course credit in return for filling out the questionnaires. Students invited to attend to the study via e-mail with the online survey link provided. Initial data gathering process was conducted via surveymonkey tools in two different times with 4 months in between. First data consists 227 participants and collected in the second data consist 450 participants with 4 months in between two data collection times. The form consisted of consent form, demographic form and the measures and lastly the demographic form (see Appendix A and Appendix B for consent and demographic form). Participants were forced to complete the form in one session. Furthermore, link was available to students for one week in each data collection process. Out of 677 participants, 525 of them completed the form.

#### 3.2 Materials

##### 3.2.1 Post-Event processing questionnaire revised

Post-Event Processing Questionnaire (PEPQ) is originally composed by Rachman et al. (2000) on university students and revised by McEvoy and Kingsep (2006) with the name of Post-Event Processing Scale-Revised (PEPQ-R) by using it on a clinical sample with social phobia (See Appendix C). Scale is used to assess levels of uncontrollable and intrusive negative thoughts that occur related to a recent anxiety-provoking social interaction. Initial scale consisted of 10 items with a visual

analogue scale from 0 to 100, which went down to 9 items after the revision. An example is “6. Did you find it difficult to forget the event?”. Total score range is between 0 and 900. Original scale has a Cronbach alpha value of .85. In the current study, the cronbach’s alpha score was .89.

### 3.2.2 Patient health questionnaire-9

Patient Health Questionnaire 9 (PHQ-9) is a 9-item brief and valid depression screening tool by Kroenke, Spitzer and Williams (2001) (See Appendix D). An example to items is “3. Trouble falling or staying asleep or sleeping too much”. Each item is scored between “0 = not at all” and “3 = nearly every day” for the intensity of the item content for the past week. Cut-off scores for depression severity of mild, moderate, moderately severe and severe are 5, 10, 15, and 20 respectively. In the questionnaire, there is an extra question assessing the effect of symptoms interference with daily life, which is not summed up with the rest of the items. Total score in the scale can be between 0 and 27, higher scores indicates increase in the severity of depression. Original scale has Cronbach alpha value of .89 and test-retest reliability of .84 within 48 hours. Turkish reliability test conducted by Sarı, Kökoğlu, Balcıoğlu and Bilge (2016) showed Cronbach’s alpha value of .84. In order to assess its validity, a mental health professional conducted separate interviews with some of the participants as well as he Medical Outcomes Study Short-Form General Health Survey (SF-20). Both examinations showed strong correlations as the former analysis gave a positive predictive value of 51% by the cutoff score of 15 in major depression. The latter analysis showed significant correlations with all subscales of SF-20, with mental health having highest correlation (.73). In this study, the cronbach’s alpha score was .85.

### 3.2.3 Brief fear of negative evaluation scale

Brief Fear of Negative Evaluation Scale (BFNE) assesses fear of negative evaluation accompanying social anxiety which was developed by Leary (1983). It is composed of 12 Items, rated between “0 = not at all characteristic of me” to “5 = extremely characteristic of me”. An example is “2. It bothers me when people form an unfavorable impression of me.” (See Appendix E). Higher scores in the scale relates to increase in social anxiety. Furthermore, a cutoff score of 25 is established, meaning that having higher than the cutoff score may indicate clinically meaningful social anxiety. Main study has Cronbach alpha score of .90 and test-retest reliability of .75 for a 4-week administration period. BFNE also has significant positive correlations with Social Anxiety and Distress (SAD) scale ( $r = .35, p < .05$  for anxiety subscale;  $r = .19, p < .05$  for avoidance subscale) and Interaction Anxiousness Scale ( $r = .32, p < .05$ ). Turkish translation of straightforward version has Cronbach’s alpha value of .84 and test-retest reliability of .65. Based on the recommendations of Stopa and Brown (2008) and for ease of use and to minimize confusion on participants’ part, straightforward version was used in this study. In the current study, cronbach’s alpha value was .96.

### 3.2.4 Penn-State worry questionnaire

Penn-State Worry Questionnaire (PSWQ) is a widely used measure for assessment of worry, which is composed of 16 items and developed by Meyer, Miller, Metzger and Borkovec (1990). Aim of this scale is to assess pathological levels of worry in clinical setting, a form of repetitive thinking with negative affect consist of uncontrollable thoughts and images that is future oriented. Turkish version of the

scale was translated by Yılmaz, Gençöz and Wells (2008) by using student and non-student samples (See Appendix F). Scale uses a 5-point Likert scale within the range of “0 = Not at all typical of me” and “5 = Very typical of me”. An example for its items can be “7. I am always worrying about something.”. Scores in the scale range between 16 and 80. Cutoff scores for the scale are: 16 to 39 indicates low worry, 40-59 indicates moderate worry and 60 to 80 indicates high worry. Original scale has Cronbach’s alpha score of .94 with test-retest reliability of .92 with 8 to 10 weeks of administration period. Moreover, PSWQ was significantly correlated with BDI ( $r = .46$ ), trait anxiety ( $r = .67$ ), OCD ( $r = .49$ ) and metacognitions ( $r = .58$ ) which supports its convergent validity. The Turkish version’s Cronbach’s alpha score is .91 and test-retest reliability is .88. In the current study, the Cronbach’s alpha score was .95.

### 3.2.5 Perseverative thoughts questionnaire

Perseverative thoughts questionnaire (PTQ) is developed by Ehring et al. (2010) in order to create an RNT scale without disorder-specific content. The scale developed with clinical and non-clinical sample. It has 15 items which are graded within a 5 point-Likert scale and the grades are explained as “0 = never” to “4 = Almost always”. An example would be “4. I think about many problems without solving any of them.”. The scale was translated into Turkish by Altan-Atalay and Saritaş-Atalar (2018) (See Appendix G). CFA of the Turkish version favored three factor model, namely Core Features, Unproductiveness and Mental Capacity Captured. Original scale has Cronbach alpha value of .95 and test-retest reliability of .66 for a 4-week interval. Turkish version of the scale has Cronbach’s alpha coefficient of .95 for total scale, .93 for Core Characteristics, .74 for Unproductiveness and .89 for Capturing

Mental Capacities. Test-retest reliability of the study was .67, .60, .63 and .66, respectively. In the translation study, PTQ significantly correlated with other RNT measures. To give an example, PTQ and PSWQ correlation was  $r = .621$ ,  $p < .001$ . Moreover, PTQ was able to predict levels of anxiety measured by the scales in the study. This reliability scores were in line with the original study. In the current study, the Cronbach's alpha score was .94.

### 3.2.6 Liebowitz social anxiety scale

Liebowitz Social Anxiety Scale (LSAS) is developed by Liebowitz (1987) with separate social interaction and performance subscales. The LSAS assesses a wide range of situations which might elicit social anxiety in 24 items both for degree of fear/anxiety elicited during those situations and frequency of avoidance from those situations. The items are rated separately for fear/anxiety and avoidance columns, ranging between "0 = none" to "3 = severe" with percentage values of 0% to 67-100% respectively. An example for items is "14. Entering a room when others are already seated." Moreover, items can be grouped for 6 subscales which are: (1) Fear of Social Interaction, (2) Fear of Performance, (3) Avoidance of Social Interaction, (4) Avoidance of Performance, (5) Total Fear and (6) Total Avoidance. Overall score is calculated by summing up total fear and total avoidance scores derived from the scale. The scale shows satisfactory internal consistency with cronbach's alpha value ranges from .81 to .92 (Heimberg, et al., 1999). Also, the LSAS shows high degree of convergent validity with Social Interaction Anxiety Scale and Social Phobia Scale. Turkish version used in this study (See Appendix H) was translated by Soykan, Özgüven and Gençöz (2003) with cronbach's alpha value of .98 for the whole scale, .96 for fear or anxiety subscale and .95 for avoidance subscale. The scale had 1-week

test-retest reliability of .97. In the Turkish version, convergent validity which calculated in relation to Beck Anxiety Inventory was .25 for the whole scale, .26 for fear/anxiety and .21 for avoidance. Possible cutoff scores derived from the LSAS for generalized phobia was 26 for fear/anxiety subscale, 19.8 for avoidance subscale and 47.7 for the whole scale. In the current study, the cronbach's alpha score was .96.

### 3.2.7 Frost multidimensional perfectionism scale

Frost multidimensional perfectionism scale (FMPS) is developed by Frost, Marten, Lahart and Rosenblate (1990). The scale is widely used in extending the literature regarding the effects of perfectionism on psychopathology and translated into many languages. The scale has 6 subscales related to conceptualization of the authors with 35 items and subscales named as: (a) Concern over Mistakes (CM), (b) Doubt about Actions (DA), (c) Personal Standards (PS), (d) Parental Expectations (PE), (e) Parental Criticism (PC), and (f) Organization (O).

The scale is rated within 5 point-Likert scale from "1 = Strongly Disagree" to "5 = Strongly Agree". An example item from the scale is "6. It is important to me that I am thoroughly competent in everything I do.". Range of possible outcome for scale score is between 35 and 175, with higher scores mean increase in perfectionistic tendencies. The scale has cronbach's alpha value .90, with subscales range from .77 to .93 (Frost et al., 1990). Stoeber (1998) suggested that the scale is more stable across samples if four factor solution was used instead of six. The author used Horn's parallel analysis in order to assess the scale structure. After the analysis, combining CM and D subscales as well as PE and PC while keeping the PS and O as separate factors. In this study, the authors suggestions are implemented. Turkish translation (See Appendix I) is conducted by Kağan (2011). The Turkish version's

cronbach's alpha value was calculated as .91 for the total scale .85, .64, .79, .84, .72 and .94 respective to listing of subscales above. The Turkish version's 15 days test-retest reliability was .82.

### 3.3 Procedure

#### 3.3.1 Translation process

The author of this study, who is a psychotherapist and fluent in English conducted the translation of the original scale to Turkish. An experienced translator with a major in English Language and Literature conducted the backtranslation.

Translations matched in every word except that the word "event" was backtranslated as "incident". The initial translation was checked by a professor experienced in the field and suggested keeping the translation intact as this change was also related to usage of a synonymous word. Study proceeded after several changes on the sentence formation in order to make the items easier to understand for the reader.

#### 3.3.2 Data collection

Students enrolled in introductory psychology classes are informed regarding the study through e-mail. Those who wished to participate for extra course credit, used the link given in the e-mail and completed the questionnaire form online. Form was created and distributed through an online survey tool. The form began with the briefing and consent form, then participants filled the questionnaires and the demographic form. Participants were forced to complete the form in one session. Furthermore, link was available to students for one week. Average completion time for the form was 23 minutes and 32 seconds.

### 3.3.3 Statistical analyses

Data analysis plan began with data cleaning with mahalanobis distance and frequency calculations on demographic variables. Means, standard deviations, range and bivariate Pearson correlations were calculated for all variables in the SPSS. CFA was conducted in R Studio to examine the goodness of fit of the translated scale. Brown (2006) suggest using indices regarding Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI) in order to assess the model fit. For a good fit, cutoff scores for these items were .95 for CFI and TLI, .08 for SRMR and .06 for RMSEA (Brown, 2006). Moreover, RMSEA up until .1 was deemed acceptable. These are taken into account as the analyses were conducted, and also explained in the result section below. In order to assess the reliability of the scale, Cronbach's alpha score and split half reliability was conducted. For validity measures, hierarchical regression conducted by entering social anxiety and depression measures as the dependent variable and predictive values of different RNT measures were calculated. Lastly, mediation analysis was used to examine the mediating role of PEP on the relationship between perfectionism and social anxiety. For the mediation analyses, PROCESS Macro developed for SPSS (Hayes, 2013) was used.

## CHAPTER 4

### RESULTS

#### 4.1 Data cleaning

A total of 525 participants completed the form. 29 of these participants had missing values higher than 5% (N = 29). Out of the remaining 496 of participants, 488 had no missing values and 8 participants had less than 5% missing values. Missing values of these participants were replaced by using “mice” function in R. Mahalanobis distance was used to spot the outliers. Out of 496 participants 29 had scores higher than cutoff score for mahalanobis distance, which led to removal of their data. Further analyses were conducted with the remaining data from 467 participants.

#### 4.2 Demographic statistics

Some participants did not fill the demographics form fully which led to a sample size difference in this form. Concerning age, gender, relationship status, birthplace and living location, sample size varies between 386 and 467. Concerning participants' age, mean age was 21.37 (SD = 2,36) for 386 participants (82.7%) and varied between 18 and 33. 81 participants (17.3) did not give this information. Gender of the participants was 60.4% female (N = 282), and 36.6% male (N = 171) and, 0.8% (N = 4) did not define themselves in these categories and 2.2% (N = 10) did not gave information. Regarding relationship status, 79.4% were single (N = 371), 17.1% were in a relationship (N = 80), 0.4% were married (N = 2) and 0.9% were in other types of relationship (N = 4), 2.1% (N = 10) did not gave information concerning relationship status.

Current living location is mostly dormitories (N = 200, 42.8%) followed by both parents (N = 107, 22.9%), fathers (N = 85, 18.2%) and mothers (N = 24, 5.1%). Rest of the participants either lived alone (N = 12, 2.6%), with relatives (N = 3, 6%) or in other conditions (N = 27, 5.9%). Some participants (N = 9, 1.9%) did not give information on current living location. With regards to psychiatric diagnosis 78,4% (N = 366) of the participants had no psychiatric diagnosis, 3,2% (N = 15) was diagnosed with depression, 2,4% (N = 11) with OCD, 9,9% (N = 46) with anxiety disorders, and 6,2% (N = 29) with other disorders. Table 1 gives a detailed description of these relations.

#### 4.3 Confirmatory factor analysis

Data of PEPQ-R had skewness score range between -,49 and ,79 and kurtosis score range between -1,44 and -,42, in range of +/- 2 for acceptable normal distribution (Hu et al. 1992). Thus, the analysis proceeded with the confirmatory factor analysis (CFA).

PEPQ model derived from the earlier studies suggested a one-factor solution (Rachman et al., 2000; McEvoy & Kingsep, 2006). In order to test this model, CFA was conducted in R by using Lavaan function. The result of analysis suggested a one factor solution with scores in range of cutoff scores [ $\chi^2(27) = 124.933, p < .001$ , RMSEA = .088, %90 CI = .073-.104, SRMR = .039, CFI = .957, TLI = .942]. Figure 2 shows the plot summary of the analysis.

Table 1. Demographics of Study Sample

	Total Sample	Frequency	%	Cum
<b>Gender</b>				
n	453			
Female		282	60.4	61.7
Male		171	36.6	100
<b>Age</b>				
n	386			
18-19		36	7.9	9.3
20-21		222	47.6	66.8
22+		128	27.4	100
<b>Birthplace</b>				
n	457			
Village		15	3.2	3.3
Small Town		10	2.1	5.5
Town		73	15.6	21.4
City		79	16.9	38.7
Metropolis		280	60	100
<b>Mother's Education</b>				
n	467			
Illiterate		6	1.3	1.3
Literate		10	2.1	3.5
Elementary School		84	18	21.9
Middle School		32	6.9	28.9
High School		128	27.4	56.9
Undergrad		168	36	93.7
Ms.		20	4.3	98
PhD		9	1.9	100
<b>Father's Education</b>				
n	467			
Illiterate		1	.2	.2
Literate		6	1.3	1.5
Elementary School		55	11.8	13.6
Middle School		36	7.7	21.5
High School		106	22.7	44.7
Undergrad		207	44.3	90.1
Ms.		26	5.6	95.8
PhD		19	4.1	100
<b>Psychiatric Diagnosis</b>				
n	467			
None		366	78.4	78.4
Depression		15	3.2	81.6
OCD		11	2.4	83.9
Anxiety		46	9.9	93.8
Other		29	6.2	100

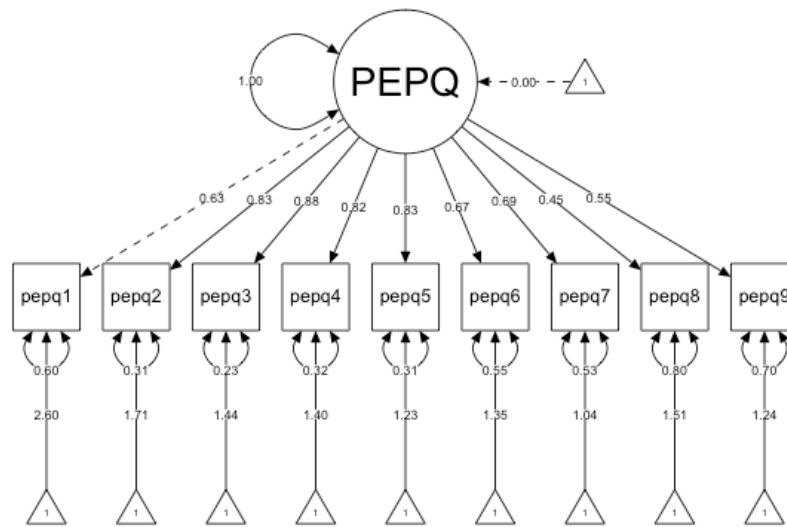


Figure 2. Scale model concerning first CFA analysis

Analysis of modification indices suggested addition of error covariance between items 2 and 6 and items 7 and 9. The content of the 2<sup>nd</sup>, 6<sup>th</sup> and 7<sup>th</sup> items were related to cognitive impairment and 9<sup>th</sup> item was about avoidance (Fehm et al., 2008). Since item 2 and 6 were had similar item content, covariance added for these two items. Modified result showed an increase in overall fitness of the model [ $\chi^2(26) = 100.537, p < .001, RMSEA = .078, \%90\text{ CI} = .063 - .095, SRMR = .036, CFI = .967, TLI = .954$ ]. Figure 3 shows the plot summary of the second model with modification indices.

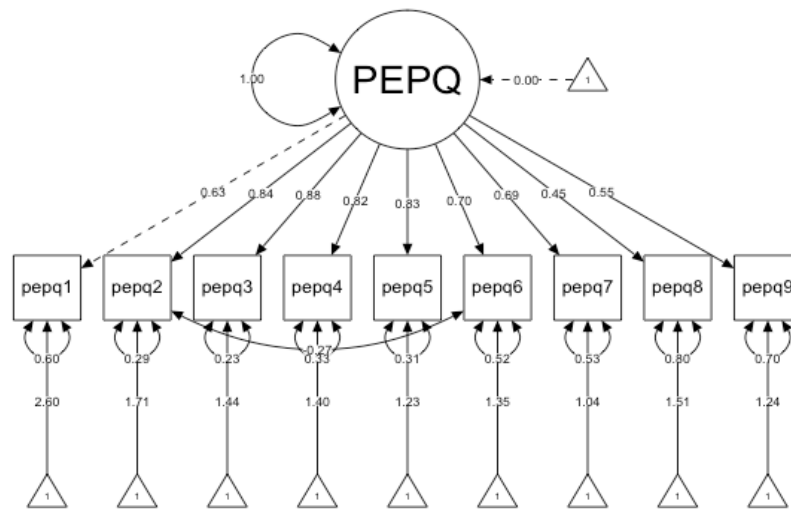


Figure 3. Scale model concerning second CFA analysis with modifications

Chi square difference test used in order to assess if these models were significantly different than each other (Tabachnick & Fidell, 2001). It was found that chi square difference was above cutoff scores suggesting the modified model had improved the fitness significantly [ $\Delta \chi^2 (1) = 24.396, p < .001$ ].

#### 4.4 Reliability analysis

In order to assess internal consistency of PEPQ, series of analyses were conducted in SPSS. Analyses show that for internal consistency, cronbach's alpha score was satisfactory ( $\alpha = .89$ ). Split-half reliability analysis between odd and even numbered items were also found to be satisfactory as well ( $\alpha = .83$ ).

## 4.5 Validity

### 4.5.1 Convergent validity

Pearson's correlation coefficients were significant between PEPQ-R and LSAS scales ( $r = .22, .27, .25$  respectively for anxiety, avoidance subscales and total scale), BFNE ( $r = .24$ ), PSWQ ( $r = .24$ ), PTQ ( $r = .31$ ), PHQ ( $r = .35$ ) and FMPS scales ( $r = .22, .25, .14$  respectively for total scale, CMD and PES subscales), all correlations were  $p < .001$ . Moreover, correlation between PEPQ and PS subscale of FMPS was weak ( $r = .10, p = .028$ ) and organization subscale was not found to be correlated with PEPQ ( $r = -.004, p = .924$ ). As expected, PEPQ-R showed significant positive associations with social anxiety, RNT, depression and perfectionism. Moreover, correlation between PEP and positive components of perfectionism was weaker or non-existent. Table 2 shows these correlations in detail along with means and standard deviations.

Since 101 of the 467 participants had diagnosis which may affect the data correlation analysis was conducted without these participants as well. Even though the correlations among all variables diminished, the change was not significant (See Appendix J for the correlation table for diagnosed individuals). This analysis was done by using Fisher r-to-z transformation, in which a value of z score was calculated for the differences between correlation coefficients.

Table 2. Descriptive Statistics and Intercorrelations Between Variables (N = 467)

Variable	1	2	3	4	5	6	7	8	9	10
1. PEPQ-R	-	-	-	-	-	-	-	-	-	-
2. PHQ-9	.36**	-	-	-	-	-	-	-	-	-
3. BFNE	.24**	.39**	-	-	-	-	-	-	-	-
4. PSWQ	.24**	.51**	.61**	-	-	-	-	-	-	-
5. PTQ	.32**	.58**	.59**	.70**	-	-	-	-	-	-
6. LSAS	.25**	.43**	.55**	.55**	.56**	-	-	-	-	-
7. LSAS-Anx	.22**	.40**	.57**	.56**	.50**	.96**	-	-	-	-
8. LSAS-Av	.27**	.43**	.49**	.50**	.46**	.96**	.85**	-	-	-
9. FMPS	.20**	.31**	.58**	.51**	.46**	.36**	.37**	.33**	-	-
10. Cmd	.25**	.45**	.68**	.63**	.62**	.46**	.46**	.41**	.84**	-
Mean	421.33	21.26	36.62	54.55	47.63	101.77	52.25	49.52	102.3	35
SD	214.15	5.89	12.77	13.69	11.91	26.51	14.19	13.37	21.56	10.53

Note:  $p < .01^{**}$ ;  $p < .05^{*}$ ; PEPQ-R Post Event Processing Questionnaire – Revised, PHQ-9 Patient Health Questionnaire – 9, BFNE Brief Fear of Negative Evaluation Scale, PSWQ Penn State Worry Questionnaire, PTQ Perseverative Thinking Questionnaire, LSAS Liebowitz Social Anxiety Scale, LSAS-Anx Liebowitz Social Anxiety Scale – Fear or Anxiety subscale, LSAS-Av Liebowitz Social Anxiety Scale – Avoidance subscale, FMPS Frost Multidimensional Perfectionism Scale, CMD Concern Over Mistakes and Doubts

#### 4.5.2 Predictive validity

In order to see if PEPQ-R is able to predict changes in social anxiety and depression measures as hypothesized, two hierarchical regression analyses were conducted.

Analyses began with testing the relevant assumptions. Tabachnick and Fidell (2001) suggest a sample size of 96 for an analysis with five independent variables. Thus, the sample size was adequate. Moreover, the assumption of singularity was also met as the independent variables were not combination of other constructs. Assumption of multicollinearity was also met since there was no highly correlated items and relevant statistics in the analysis was in expected range. VIF scores are expected to be below 10 and above 0.2 (Field, 2013). Residual and scatter plot analysis suggested that data supported the assumptions of normality, linearity and homoscedasticity (Hair et al., 1998). Missing data in the analyses was excluded pairwise. In the first analysis, social anxiety measure (i.e. LSAS) was entered as the dependent variable. To predict changes in LSAS scores, age and gender were entered on the first step. This was followed by RNT measures of PSWQ and PTQ on the second step to control their effect on the prediction. On the third step, PEPQ was entered into the regression analysis. Table 3 shows the results of the analysis.

The hierarchical multiple regression revealed that at step one, both gender and age contributed significantly to the regression model,  $F(2,379) = 5.48, p = .004$  and accounted for 2.8% of the variation in social anxiety. Introducing the RNT variables explained an additional 31.8% of variation in social anxiety and this change in  $R^2$  was significant,  $F(2,377) = 91.47, p < .001$ , and gender failed to be significant at this step. Adding PEPQ to the regression model explained an additional 0.7% of the variation in social anxiety and this change in  $R^2$  was significant,  $F(1,376) = 4.24, p = .04$ . When all five independent variables were included in step three of the

regression model, all variables except gender was significant predictors of social anxiety. Together, the independent variables accounted for 35.3% of the variance in social anxiety.

In the second analysis predicting PHQ-9 scores, PHQ-9 was entered as the dependent variable of the analysis. Age and gender were entered in the first step, followed by RNT measures PSWQ and PTQ on the second step. On the third step, PEPQ was entered. Table 4 presents the results of this analysis. The hierarchical multiple regression revealed that at step one, only gender of the participant contributed significantly to the regression model,  $F(2,379) = 4.63, p = .01$  and accounted for 2.4% of the variation in depression. In step 2, addition of RNT variables explained an additional 33.2% of variation in depression and this change in  $R^2$  was significant,  $F(2,377) = 97.05, p < .001$ . Adding PEPQ to the regression model explained an additional 3.2% of the variation in depression and this change in  $R^2$  was significant,  $F(1,376) = 15.74, p < .001$ . When all independent variables were included in the last step of the regression model, all RNT measures were significant predictors of depression while gender and age was not. The independent variables accounted for 38.3% of the variance in depression.

To examine the differences between diagnosed individuals and non-diagnosed individuals, same analyses were conducted for individuals without diagnosis and for those with any kind of diagnosis. The former sample consisted of 366 individuals while the latter had 101.

For the first analysis on the prediction of social anxiety scores, PEPQ significantly predicts social anxiety for diagnosed individuals ( $F(1,76) = 4.44, p = .03$ ), while becomes insignificant for non-diagnosed individuals ( $F(1,294) = 1.08, p = .3$ ). The second analysis in predicting depression scores, PEPQ significantly

predicts depression both for diagnosed individuals ( $F(1,76) = 16.63, p < .001$ ) and non-diagnosed individuals ( $F(1,294) = 6.98, p = .009$ ).

Together, while these results suggest that PEPQ has predictive validity over social anxiety and depression measures, compared to other measures of RNT, PEP has an inferior predictive value concerning social anxiety and depression. Moreover, just for the prediction of social anxiety in non-diagnosed group, PEPQ failed to be a significant predictor.

#### 4.6 Mediation analysis

Two mediation analyses were conducted to examine if PEP mediates the relationship between perfectionism and social anxiety and social avoidance as measured by LSAS subscales. All the mediation analyses were conducted by using Model 4 of PROCESS Macro developed for SPSS (Hayes, 2013). PROCESS macro calculates direct and indirect effect of the proposed models in mediation analyses. Moreover, PROCESS macro calculates bootstrapped confidence intervals concerning the indirect effect. In current analyses, bootstrapping for 5000 samples was used. Before the analyses, the assumptions for mediation was checked. Assumption of multicollinearity was analyzed by using a preliminary regression analysis, in which relevant statistics was in expected range. Residual and scatter plot analysis suggested that data supported the assumptions of normality, linearity and homoscedasticity.

Table 3. Hierarchical Regression Analysis Results Predicting LSAS scores by PEPQ and RNT measures

Variable	LSAS											
	Step 1				Step 2				Step 3			
	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>
Age	-.027	.01	-.11	.025	-.023	.01	-.1	.02	-.024	.01	-.10	.016
Gender	-.135	.06	-.12	.020	.044	.05	.04	.38	.036	.05	.03	.474
PSWQ					.28	.04	.43	.000	.274	.04	.42	.000
PTQ					.13	.04	.19	.002	.115	.04	.17	.008
PEPQ									.002	.001	.09	.024
<i>R</i> <sup>2</sup>			.02				.34				.35	
<i>F</i> for change in <i>R</i> <sup>2</sup>			5.48**				91.48***				4.24*	

Note:  $p = .04$  \*,  $p = .004$  \*\*,  $p < .001$  \*\*\*, PSWQ – Penn State Worry Questionnaire, PTQ – Perseverative Thinking Questionnaire, PEPQ – Post-

Event Processing Questionnaire

Table 4. Hierarchical Regression Analysis Results Predicting PHQ-9 scores by PEPQ and RNT measures

Variable	PHQ-9											
	Step 1				Step 2				Step 3			
	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>p</i>
Age	-.024	.01	-.09	.094	-.018	.01	-.064	.122	-.02	.01	-.07	.078
Gender	-.17	.07	-.13	.014	-.021	.06	-.02	.721	-.04	.06	-.03	.482
PSWQ					.121	.05	.158	.013	.105	.05	.14	.027
PTQ					.380	.05	.461	.000	.340	.05	.41	.000
PEPQ									.005	.001	.19	.000
<i>R</i> <sup>2</sup>			.02				.36				.39	
<i>F</i> for change in <i>R</i> <sup>2</sup>			4.63*				97.05**				19.65**	

Note:  $p = .01$  \*,  $p <$

.001\*\*, PSWQ – Penn State Worry Questionnaire, PTQ – Perseverative Thinking Questionnaire, PEPQ – Post-Event Processing Questionnaire

First mediation analysis was conducted to examine if PEP mediated the relationship between maladaptive perfectionism (as measured by CMD component of FMPS) and social avoidance (Avoidance subscale of LSAS). Since PEP was considered to be related with avoidance of social situations, the effects of perfectionism and its beliefs on social anxiety may be explained by PEP amount. Figure 4 presents the hypothesized relationship.

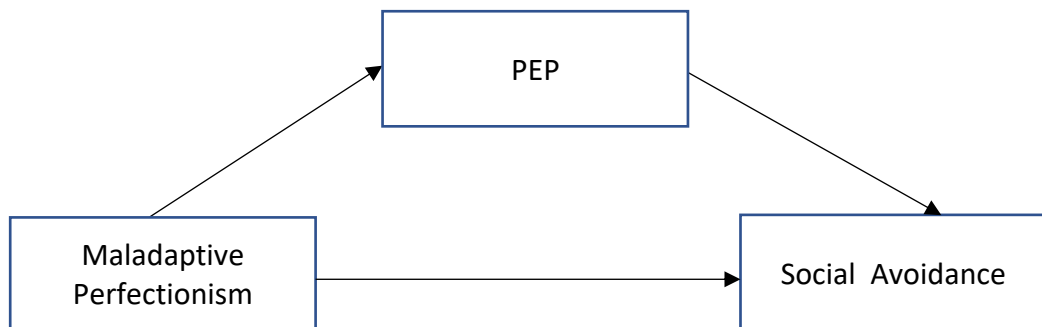


Figure 4. Hypothesized mediator role of PEP on the relationship between maladaptive perfectionism and social avoidance

Considering this relationship, CMD was entered as the independent variable of the mediation, PEPQ was entered as the mediator variable and avoidance subscale of LSAS was entered as the dependent variable. The first analysis showed that there was a small and significant indirect effect of perfectionism on avoidance through PEP,  $b = .03$  BCa CI [.012, .047]. The mediation accounted for  $P_m = .11$ . Since calculated confidence interval does not contain zero, it can be assumed that the mediation occurs in 95% of the samples. That is, PEP partially mediates the relationship between maladaptive perfectionism and social avoidance. Results are also presented in Table 5 and the relation is given in Figure 7.

Another analysis was conducted if PEP mediates the relationship between maladaptive perfectionism and social anxiety as assessed by anxiety subscale of LSAS. Even though the perfectionistic beliefs will be experienced in these situations

in relation to social anxiety, PEP as a mechanism related to avoidance may diminish in explanatory power compared to the previous analysis. Figure 5 presents the hypothesized relationship.

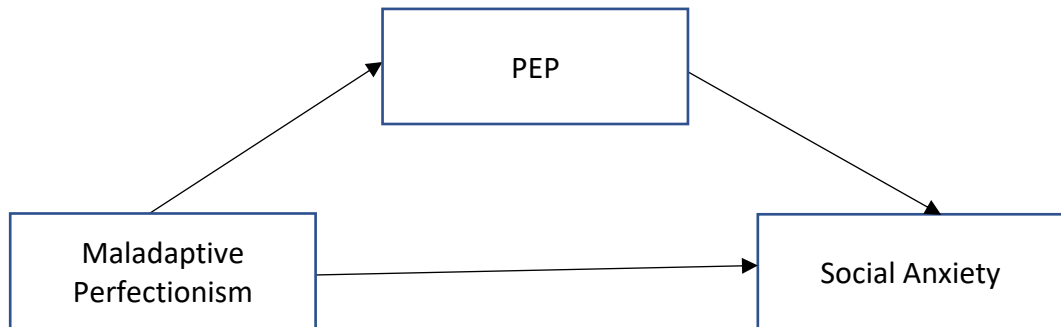


Figure 5. Hypothesized mediator role of PEP on the relationship between maladaptive perfectionism and social anxiety

To test this assumption, CMD was entered as the independent variable, PEPQ was entered as the mediator variable and anxiety subscale of LSAS was entered as the outcome variable. The second analysis showed that again there was a significant indirect effect of perfectionism on anxiety through PEP,  $b = .02$  BCa CI [.006, .038]. The mediation accounted for a small effect size  $P_m = .06$ . PEP partially mediated the relationship between maladaptive perfectionism and social anxiety. Results and related relationship are also presented in Table 5 and Figure 8. Concerning the expectations on these mediation analyses, although results supported the hypothesis in that there was a difference between the indirect effect of perfectionism on different aspects of social anxiety through PEP, the partial mediation and the difference between the outcome of these two analyses were negligible.

A third mediation analysis was conducted as an exploratory analysis that was not related to discussed hypothesis. Fear of negative evaluation is related to cognitive aspect of social anxiety which is also related to perfectionistic beliefs. That is, others are highly critical and have high standards on performance of others in

order to accept them. Since these are cognitive processes, PEP could mediate the relationship between perfectionistic beliefs and fear of negative evaluation. Figure 6 presents the possible relationship.

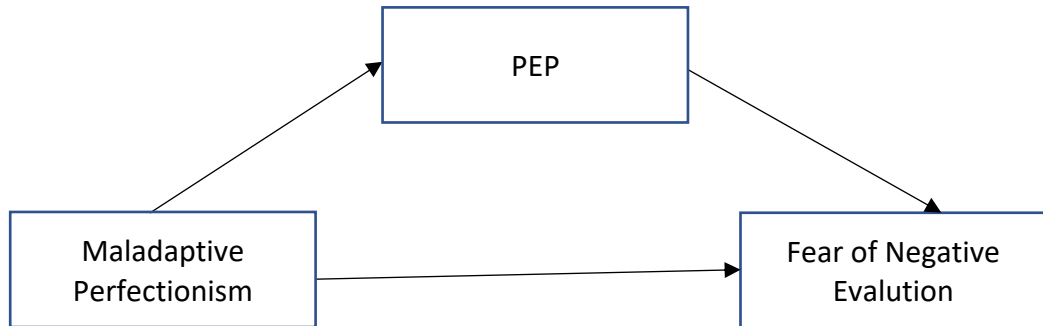


Figure 6. Hypothesized mediator role of PEP on the relationship between maladaptive perfectionism and fear of negative evaluation

To test this assumption, another mediation analysis was conducted in which CMD was entered as the independent variable. PEPQ was entered as the mediator variable and BFNE scale was entered as the dependent variable. Result showed that PEP partially mediated the relationship between perfectionistic concerns and fear of negative evaluation  $b = .02$  BCa CI [.003, .051]. The mediation accounted for a small effect size  $P_m = .02$ . Table 5 gives a summary of the discussed mediation analyses results. Figure 9 shows the mediation relationship of the third analysis.

Table 5. Summary of Mediation Analysis for the Mediator Role of PEP in the Association Between Maladaptive Perfectionism and Social Anxiety, Social Avoidance and Fear of Negative Evaluation

DV	M	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effects (c')	Indirect Effect (c-c')	Total Effect (c)
Avoidance	PEP	.67***	.04***	.23	.03***	.26***
Anxiety	PEP	.67***	.02***	.29	.02**	.31***
BFNE	PEP	.67***	.03*	.80	.02***	.82***

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

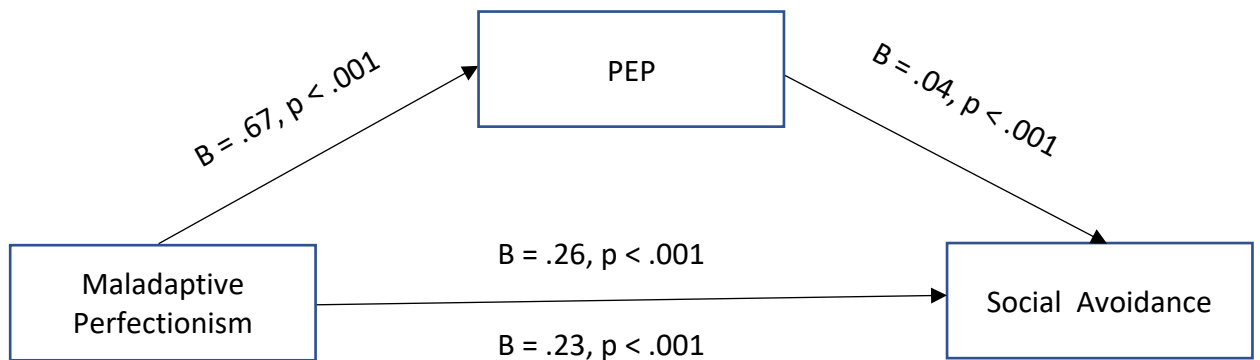


Figure 7. Mediator role of PEP on the association between maladaptive perfectionism and social avoidance

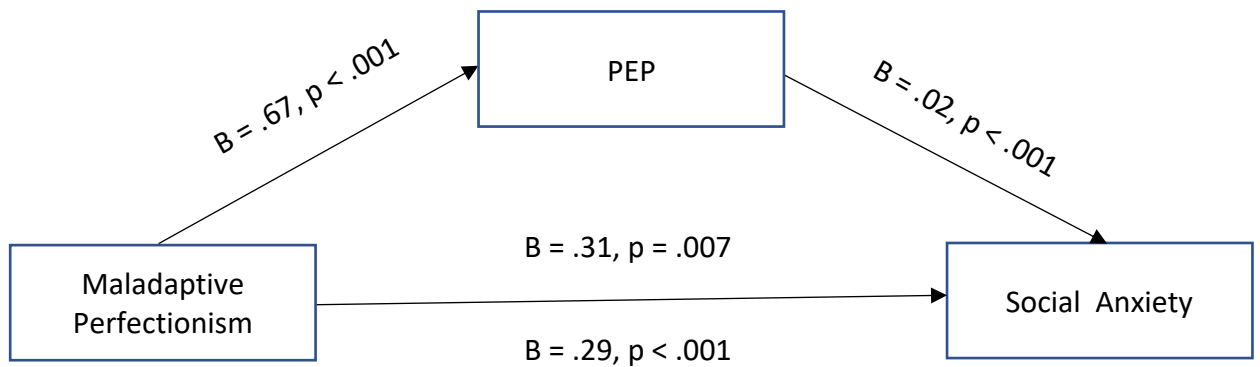


Figure 8. Mediator role of PEP on the association between maladaptive perfectionism and social anxiety

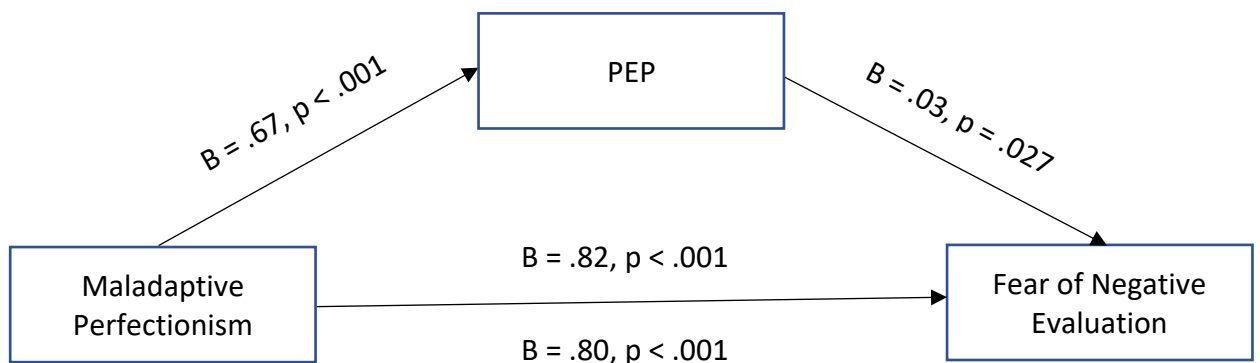


Figure 9. Mediator role of PEP on relationship between maladaptive perfectionism and fear of negative evaluation

## CHAPTER 5

### DISCUSSION

Individuals conduct post-event processing following an upsetting event or experience, which serves to increase the social anxiety and may lead to the avoidance of the same or similar situations in the future by reminding the individual with the negative feelings of the past. If the individual somehow becomes a participant of the event, with great distress in and after the event, it is added into the repertoire of past failures to be remembered in the future, when the anticipation of the new event comes up as cycle goes on. PEP provides a ground for the socially anxious individual to think about the event and distort it in the mind (Heimberg, Brozovich, & Rapee, 2014). Changes allow the individual to strengthen cognitive biases related to memory, elevate anxiety and negative feelings regarding the event, turning the individual to less than optimistic concerning future events. Past embarrassments and humiliations become embedded in the anticipation of a future event. Moreover, PEP is considered as a maintenance and vulnerability factor for social anxiety (Kashdan & Roberts, 2007). Thus, understanding the PEP mechanism and its interaction with psychological problems and cognitive processes seems valuable.

PEPQ-R is a short questionnaire for the assessment of PEP. Being content non-specific allows for the assessment of PEP in individuals concerning both social and performance situations. Considering these, one of the aims of this study was to adapt the revised version of Post-Event Processing Questionnaire to Turkish by evaluating its reliability and validity. A second aim of the study was the analysis of PEP as a mediator between perfectionism and social anxiety, and between perfectionism and social avoidance. Since cognitive processes have been suggested

as a mediator in the relationship of perfectionism with other psychological problems, PEP could be affecting these relationships, especially concerning social anxiety.

### 5.1 Summary of the findings

Confirmatory factor analysis and reliability analysis suggest that the Turkish adaptation of PEPQ-R is a valid and reliable tool that can be used in the assessment of PEP in Turkish speaking individuals with all the index scores suggested by Brown (2006) was in the acceptable range. Positive correlations of PEP with other RNT measures (i.e. PSWQ and PTQ) supports the convergent validity of the scale. Correlations of PEP and social anxiety and depression is also in line with previous studies, supporting the validity of the adapted version. Interestingly and contrary to findings of McEvoy and Kingsep (2006) PEPQ-R was positively and significantly correlated with a social anxiety measure that does not assess somatic symptoms of anxiety (e.g. blushing, sweating). It is possible to explain this difference with regards to the measures used.

Even though LSAS does not contain items that assess somatic symptoms similar to the measure used by previous authors, it measures the anxiety experienced in social situations. Moreover, the authors suggest that the measure they used emphasizes worry regarding the visibility of anxiety symptoms but not the experience of these symptoms which is suggested as a possible difference considering the study of Rachman et al. (2000). In this study, although the social anxiety measure does not assess somatic symptoms, it focuses on the anxiety felt in those situations. Since state anxiety considered to be an important predictor of PEP (McEvoy & Kingsep, 2006), and LSAS assesses this aspect of social anxiety, this might be a possible explanation on the different findings between studies. That is, the

difference might stem from the emphasis of measures on components of anxiety. Furthermore, since there are few studies on the effect of affective, cognitive, behavioral and somatic components of anxiety on PEP, it might be valuable to understand how these components predict PEP in future studies.

To test the first hypothesis, a series of regression analyses were conducted. In line with the hypothesis, PEP was found to be a predictor of social anxiety and depression while controlling for the effects of other RNT measures. On the other hand, considering the significant predictive quality was small compared to other RNT measures, PEP as a cognitive construct might be working as a separate construct that affects the psychological disorders. Currently, the understanding of PEP suggests that the mechanism provides a ground for consolidation of past anxieties and a bridge for past anxieties to carry over to future experiences (Heimberg et al., 2014). On the other hand, how PEP relates to depression is not clear except the fact that it is similar to depressive rumination in temporal focus. Content of PEP might be a factor in these relations as individuals with different disorders may engage PEP with regards to personal concerns on social or performance situations. Surely, further research is needed on this point as well. Moreover, there might be an explanation for this point in line with the findings of the results.

As mentioned earlier, analyses were conducted focusing on two different participant populations, with and without a diagnosis. Even though the difference between the results of the analyses was not significant except for the regression analysis predicting social anxiety, the relation of PEP with other constructs was improved for the diagnosed individual. Moreover, since data were collected in two different times, analyses were conducted to see if groups differed with regards to

measures. In the second group, PEP and depression scores were significantly lower compared to the first group. Interestingly, the reduction in PEP did not yield similar results concerning social anxiety. This information should be regarded with consideration of the nature of PEP.

PEP functions as a mechanism to understand and make meaning out of a social or performance experience. As a cognitive process in and of itself, PEP can be benign for healthy individuals (Brozovich & Heimberg, 2008). For unhealthy individuals, PEP might work as a mechanism related to RNT and increase negative affect, depression anxiety symptoms (Mor & Winquist, 2002). From this perspective, the value of PEP and its relation to psychological problems becomes more meaningful. Individuals who tend to ruminate and experience these ruminative thoughts as intrusive may experience these thought processes as detrimental for their well-being. On the other hand, healthy individuals may engage in PEP for a short period of time and for the sake of understanding the experience, which may not harm their well-being. As PEP and depression were reduced for the second group of participants, it is possible to think that in this sample, individuals experienced PEP concerning their depression, as a mechanism similar to depression. As mentioned earlier, it will be valuable to explore these relationships in the Turkish sample.

Another aim of the study was to understand the mediating role of PEP between different aspects of social anxiety and perfectionism. In line with the hypothesis, the mediating role of PEP on the relationship between maladaptive perfectionism and aspects of social anxiety was different, though the differences and the mediation effects were quite small. Thus, it might be preferable to consider these constructs under a different light.

Maladaptive perfectionism leads to having doubts about their actions and excessive concern over mistakes that the individual may commit with the fear that these mistakes equal to failure and with fear of being unable to live up to the standards of others. Perfectionistic rumination content focuses on trying to be perfect, hiding one's imperfections and concern and doubts about the correctness of one's actions and being fixated on the mistakes that have been done in the past (Flett, Madorsky, Hewitt & Heisel, 2002).

Maladaptive perfectionism is highly related to social anxiety (Juster et al., 1996) as social anxiety contains perfectionistic beliefs concerning self and others. A perfectionistic individual with social anxiety will try to be perfect in behavior to feel accepted and validated by others. As discussed earlier in the social anxiety model, various other processes work in tandem with these beliefs to elevate the social anxiety, the wish to hide this anxiety and the fear of negative evaluation. Current literature suggests that the outcome is always feared, whether the situations results in a negative or a positive evaluation (Heimberg et al., 2014).

After an event in which individuals fails to be perfect, they may try to understand how this failure occurred and how it could have been done better. Individuals believe PEP helps them in understanding the experience (Fisak & Hammond, 2013), the process that starts with good intentions and with the hope of finding a solution to the problems turns into a chain of thoughts that have negative content and beliefs while occurring uncontrollably. As feelings worsened regarding the event, it becomes hard for the individual to try again to do it better. PEP over anxiety-provoking situations will change the memory of the event in which negative experiences (e.g. failures, moments of doubts, others humiliating eyes and behaviors) and beliefs (e.g. one has to be perfect, failure is unaccepted by the audience) are

underlined and experience reduced into a caricature of failure after repeated attempts on making sense out of it.

Joos et al. (2012) suggested that repetitive thoughts about an aversive experience, such as an anxiety-provoking event where the individual thinks failure occurred, keep the negative quality of the experience intact which leads to sustaining of the similar behavior in the future. As the individuals repeat the experience in the mind through engaging PEP, with effects of perfectionistic beliefs and anxiety-related thoughts and sensations, connections between actions, beliefs, and outcome solidify. That is, even though PEP does not add meaning to the relationship between perfectionism and social anxiety, it stays meaningful in continuation of these psychological problems.

## 5.2 Clinical implications

Rumination on experiences and possibilities is an adaptive strategy towards the unknown and unwanted. Individuals use their cognitive capacities to overcome problems and this stems from the fact that most of us wish to increase well-being in our daily lives. Even though most of us engage PEP to reassess the experience and to find alternative ways to make acceptance in social interactions possible, what PEP does for some individuals is that through focusing on the threatening information and perfectionistic beliefs, it distorts the sequence of the events between behavior and rejection. This occurs in relation to other disorders.

Perfectionistic individuals who think uncontrollably and repetitively over past failures and future possible distress experience elevated anxiety and cope with this elevation in the form of avoiding the situation entirely or by focusing on irrelevant stimuli in the environment as a form of avoidance when threat is experienced

(Weiner & Carton, 2011). This can be considered as a stalemate since even though the individual participates in the event, only threat-related stimuli are processed others are left out. Furthermore, with the anticipation of the new event PEP increases negative affect concerning the previous event and also elicit avoidant behavior. This eventually leads to a failure to disconfirm one's beliefs on negative evaluation and self-perception. As these beliefs, distorted experiences and event sequences are consolidated through the repeated engagement of PEP by these individuals, targeting post-event processing in therapeutic interventions might diminish the relationship among actions, beliefs, and outcome.

PEP contains the uncontrollable, negative and excessive aspects of RNT. Constant repetition in the mind has been showed to elevate disorder severity and allows for the maintenance of the disorder as well. Being intrusive and negatively valenced, along with disorder-specific cognitive biases tend to change the perception of the individual according to these biases. These changes seem to include both the self and the situation. Thus, reducing or eliminating this way of thinking might help individuals as they may allow different experiences to emerge.

An approach to address this issue is rumination focused CBT (Watkins et al., 2007). Ruminative thinking is an unhelpful solution to problems due to its characteristics concerning RNT (e.g. abstract, evaluative, intrusive). On the other hand, research suggests that functional thinking is characterized by concrete, process-focused and specific thinking (Watkins & Moulds, 2005). Thus, by focusing on reducing maladaptive rumination and finding new strategies on promoting helpful thinking style, rumination focused CBT emphasizes on modification of the process of thinking. As discussed earlier and concerning this study, assessing the amount of PEP in individuals and addressing the unhealthy aspects of this process with a

validated approach would be beneficial in reducing the relevant psychological problems in individuals and also provide an area for these individuals to be less avoidant on new social situations.

As another possible way of addressing this issue, awareness, non-judging, and non-reactivity of mindfulness have been suggested as a way to diminish maladaptive perfectionism (Short & Mazmanian, 2013), as well as PEP (Cassin & Rector, 2011). Maestas and Neff (2007) posit that the critical and judgmental nature of repetitive thinking affects the valence of thought content negatively. Practicing mindfulness can be used as a tool to reduce the effect of these qualities of RNT. This, in turn, may provide a reduction of anxiety before or after social interactions. Since mindfulness may also help with the cognitive symptoms that are experienced in the situation, changes in the mind may allow for disconfirmation of negative beliefs about one's self (Goldin & Gross, 2010). It seems through reducing the negative quality of thought content, mindfulness can be a useful tool in helping the individual reduce the symptoms of SAD, maladaptive perfectionism and RNT.

Lastly, there was an interesting and unintentional finding with regards to the depression rate found in this sample in comparison to the study conducted by Bayram and Bilgel (2008). In this sample, nearly twice as much of the participants compared to the previous study had depression with moderate or higher severity. Even though this difference might be related to sampling (i.e. participants are from different universities, in different times and with different majors) or measurement tools (e.g. DASS-42 and PHQ-9), it seems to be worth noting.

### 5.3 Strengths and limitations

A feat to consider in this adaptation study was that it had been completed with an appropriate number of participants. This allows for a dependable establishment for the validity and the reliability of a new measure that will be used. Another feat of this study was assessing aspects of social anxiety separately in relevant analyses, allowing for understanding discriminatory power between the importance of the respective aspect. Previous studies seem to have not considered the effects of different aspects of social anxiety with regards to PEP even though same questionnaires were used.

In this study in which data gathered through an online survey tool, a visual analogous scale was used by the participants to rate the PEPQ scale. Moreover, the participants were asked to give a brief statement regarding the anxiety-provoking event they remembered. There are two issues needs to be addressed regarding these points.

Even though recent studies on PEPQ used 10-point Likert scale in their measurement (e.g. Fehm et al., 2008; Wong, 2014), the visual analogous scale between 0-100 was employed in this study to adapt the original version of PEPQ-R. While this measurement provides precision, it might also confuse the participants with regards to its unfamiliarity. This might have created issues regarding participant input, and it might have been beneficial to use a 10-point Likert scale. A brief statement regarding the anxiety-provoking event was a one-sentence long description of the recalled event. Some of the sentences were not about social anxiety. It is possible that the participants did not understand what the description was asking for with regards to anxiety-provoking experience. Thus, improving the description quality may help to reduce this effect. Moreover, by focusing participants to social

anxiety-related events, the existence of PEP can be examined with participants in subclinical groups.

It is possible that since the data collected online, participants were unable to ask questions which negated the possibility of clearing out any confusion occurring because of these points. Although research suggests conflicting results on the quality of online survey tools data compared to more conventional methods of pen and paper (e.g. Krantz and Dalal, 2000; Hardre, Crowson, Xie, and Ly, 2007), it might be valuable to replicate the analyses with changes discussed earlier. Moreover, since the quality of the environment when the participants filled the questionnaire cannot be standardized, it might have affected engagement with the form.

Since all data was gathered through self-report measures, it is logical to expect the effect of social desirability and self-report bias in the data. This would be especially meaningful if the participants did not want themselves to be seen perfectionist or ruminating. On the other hand, using an online survey tool may have reduced that as the design provides anonymity more so than the conventional methods.

Cross-sectional nature and correlational design of the study restrains the possibility of providing causal inferences. Thus, while the correlational nature of the study provides insight with the relation between different constructs, a different approach on this subject is needed. The total number of items (i.e. all the scales and demographics) was over 150. These may have led to missing data in the study, and possibly for some participants to rush the answers. Another point worth to mention is that in this study, some of the scales used in the previous study that adapted or assessed the PEP questionnaires were not used. Using similar questionnaires would

be beneficial to assess the PEPQ-R validity as early studies suggest an expected relation between scales.

Analysis of the diagnosed group also have some limitations. While some of the participants informed that they received their respective diagnoses from psychiatric institutes or psychologist, others did not inform from whom they received the diagnosis. Several of these individuals also could not remember the exact diagnosis. Thus, the validity of the information seems questionable. Another point concerning this is the differences in diagnosis numbers which jeopardize the homogeneity of the diagnosed sample.

#### 5.4 Future directions

Future research which will employ PEPQ as a measure may use a 10-point Likert scoring as used by Wong (2015). The visual analogous scale used in the scale may be new for the participants and relative distance in the scoring might be confusing. Thus, analyzing PEPQ with this new scoring system might be valuable as well. Studies with experimental design may explore the effects of different aspects of social anxiety concerning perfectionism and PEP, possibly by manipulating PEP and examining anxiety and avoidance experienced after an event. Another line of thought on this might come from the effects of diminishing PEP in individuals with SAD and how this relates to perfectionism and avoidance behavior.

Future studies may also examine the correlation between different RNT scales and PEP, which is relatively weaker compared to other studies conducted on this area. It might be valuable to understand the reasons behind it. This may be related to confounding variables, such as time of the year or some of the participants' characteristics that are not evaluated. Moreover, studies which derive data from

individuals with different diagnosis (e.g. depression, perfectionism) may help us in expanding our understanding concerning PEP interaction with psychological problems.

### 5.5 Conclusion

This study by providing data for the validity and reliability of the Turkish version of PEPQ supports future studies on social anxiety and related disorders. An essential aspect for the maintenance of social anxiety, PEP may be measured in Turkish samples. With this, it is possible to extend our understanding of processes of social anxiety and related cognitive processes.

APPENDIX A  
CONSENT FORM

Supporting Institution: Boğaziçi University

Research Name: Post Event Processing Questionnaire Adaptation Study

Advisor: Falih Köksal

E-mail address/phone number:

Researcher: Can Baycan

E-mail address/phone number:

Research topic: Studies on social anxiety suggest that after anxiety-provoking events individuals engage in cognitive processes. This study aims to adapt a questionnaire related to the assessment of one of these processes. This adaptation will help to expand our understanding on the subject. This study has been approved by Boğaziçi University Ethics Committee.

Consent: You are invited to attend to psychological research on the post-event processing. If you accept, you will fill several forms through an online survey tool.

Whole process takes approximately 20 minutes. Participation is voluntary and participants get 0.5 extra credit on courses they attend. You can withdraw from the study at any point without any sanctions. Any data belonging to you within the scope of the study will be kept completely confidential and will not be used for any purpose other than this study. There is no more psychological risk than daily life in participating to this study. If you have any questions or worries about the study, you can contact the researcher. You can contact ethics committee concerning your rights in the study

I understand what is written above

I agree

I disagree

APPENDIX B  
DEMOGRAPHIC FORM

Student Number: \_\_\_\_\_

Course Number: \_\_\_\_\_

Age: \_\_\_\_\_

Gender:  Female  Male  Other

Relationship Status:  Single  In a relationship  Married  Divorced  Other

Whom do you live with:  Both parents  Mother only  Father only  With friends  Alone  In dormitory  Relatives  Other

Birth Order: \_\_\_\_\_

Number of sisters: \_\_\_\_\_

Number of brothers: \_\_\_\_\_

Birthplace:  Village  Small Town  Town  City  Metropolis

Place you lived the most:  Village  Small Town  Town  City  Metropolis

Your education status: \_\_\_\_\_

Mother's education status:  Illiterate  Literate  Elementary School  Middle School  High School  Undergrad  Ms.  Ph.D

Father's education status:  Illiterate  Literate  Elementary School  Middle School  High School  Undergrad  Ms.  Ph.D

Did you ever received any psychiatric diagnosis? If the answer is yes, please define:  
\_\_\_\_\_

If you ever received any psychiatric diagnosis, did you receive any help/medical assistance: \_\_\_\_\_

APPENDIX C

POST EVENT PROCESSING QUESTIONNAIRE

In the last two (2) weeks, have you experienced **significant** anxiety in a social situation (such as at a social event, public speaking, eating in public, etc)? If not, please do not complete this questionnaire. If so, please describe this event in a short sentence:

---

\_\_\_\_\_ Could you please keep this described event in mind and answer the questions below, by drawing a vertical line somewhere between 0 – 100 on each scale.

1. How much anxiety did you experience?

0-----100

2. After the event was over, did you find yourself thinking about it a lot?

0-----100

3. Did your memories and thoughts about the event keep coming into your head even when you did not wish to think about it again?

0-----100

4. Did the thoughts about the event ever interfere with your concentration?

0-----100

5. Did you find it difficult to forget about the event?

0-----100

6. Did you try to resist thinking about the event?

0-----100

7. If you did think about the event, over and over again, did your feelings about the event get worse and worse?

0-----100

8. Did you ever wish that you could turn the clock back and do it again, but do it better?

0-----100

9. As a result of the event , do you now avoid similar events and did this event reinforce a decision to avoid similar situations?

0-----100

APPENDIX D

PATIENT HEALTH QUESTIONNAIRE – 9

Over the last two weeks, how often have you been bothered by any of the following problems?	
Little interest or pleasure in doing things?	(0)(1)(2)(3)
Feeling down, depressed, or hopeless?	(0)(1)(2)(3)
Trouble falling or staying asleep, or sleeping too much?	(0)(1)(2)(3)
Feeling tired or having little energy?	(0)(1)(2)(3)
Poor appetite or overeating?	(0)(1)(2)(3)
Feeling bad about yourself - or that you are a failure or have let yourself or your family down?	(0)(1)(2)(3)
Trouble concentrating on things, such as reading the newspaper or watching television?	(0)(1)(2)(3)
Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?	(0)(1)(2)(3)
Thoughts that you would be better off dead, or of hurting yourself in some way?	(0)(1)(2)(3)

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all      Somewhat difficult      Very difficult      Extremely difficult  
 ( )                                      ( )                                      ( )                                      ( )

APPENDIX E

BRIEF FEAR OF NEGATIVE EVALUATION SCALE

Read each of the following statements carefully and indicate how characteristic it is of you according to the following scale

	Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
--	---------------------------------------	-------------------------------------	-------------------------------------	---------------------------------	-------------------------------------

1. I worry about

what other

people will think

of me even when

1

2

3

4

5

I know it doesn't

make any

difference.

2. I am frequently

afraid of other

people noticing

1

2

3

4

5

my

shortcomings.

3. I am afraid that

others will not

1

2

3

4

5

approve of me.

4. I am afraid that

1

2

3

4

5

other people will  
find fault with  
me.

5. When I am  
talking to  
someone, I  
worry about 1 2 3 4 5  
what they may  
be thinking about  
me.

6. I I am usually  
worried about  
what kind of 1 2 3 4 5  
impression I  
make.

7. Sometimes I think  
I am too  
concerned with 1 2 3 4 5  
what other  
people think of  
me.

8. I often worry that  
I will say or do 1 2 3 4 5  
wrong things.

APPENDIX F

PENN STATE WORRY QUESTIONNAIRE

Instructions: Rate each of the following statements on a scale of 1 (“not at all typical of me”) to 5 (“very typical of me”). Please do not leave any items blank.

	Not at all typical typical of me me				Very of me
1. If I do not have enough time to do everything, I do not worry about it.	1	2	3	4	5
2. My worries overwhelm me.	1	2	3	4	5
3. I do not tend to worry about things.	1	2	3	4	5
4. Many situations make me worry.	1	2	3	4	5
5. I know I should not worry about things, but I just cannot help it.	1	2	3	4	5
6. When I am under pressure I worry a lot.	1	2	3	4	5
7. I am always worrying about something.	1	2	3	4	5
8. I find it easy to dismiss worrisome thoughts.	1	2	3	4	5
9. As soon as I finish one task, I start to worry about everything else I have to do.	1	2	3	4	5

10. I never worry about anything.	1	2	3	4	5
11. When there is nothing more I can do about a concern, I do not worry about it any more.	1	2	3	4	5
12. I have been a worrier all my life.	1	2	3	4	5
13. I notice that I have been worrying about things.	1	2	3	4	5
14. Once I start worrying, I cannot stop.	1	2	3	4	5
15. I worry all the time.	1	2	3	4	5
16. I worry about projects until they are all done.	1	2	3	4	5

## APPENDIX G

### PERSEVERATIVE THINKING QUESTIONNAIRE

Instruction: In this questionnaire, you will be asked to describe how you typically think about negative experiences or problems. Please read the following statements and rate the extent to which they apply to you when you think about negative experiences or problems.

	<b>never</b>	<b>rarely</b>	<b>sometimes</b>	<b>often</b>	<b>almost always</b>
1. The same thoughts keep going through my mind again and again.	0	1	2	3	4
2. Thoughts intrude into my mind.	0	1	2	3	4
3. I can't stop dwelling on them.	0	1	2	3	4
4. I think about many problems without solving any of them.	0	1	2	3	4
5. I can't do anything else while thinking about my problems.	0	1	2	3	4
6. My thoughts repeat themselves.	0	1	2	3	4

	<b>never</b>	<b>rarely</b>	<b>sometimes</b>	<b>often</b>	<b>almost always</b>
7. Thoughts come to my mind without me wanting them to.	0	1	2	3	4
8. I get stuck on certain issues and can't move on.	0	1	2	3	4
9. I keep asking myself questions without finding an answer.	0	1	2	3	4
10. My thoughts prevent me from focusing on other things.	0	1	2	3	4
11. I keep thinking about the same issue all the time.	0	1	2	3	4
12. Thoughts just pop into my mind.	0	1	2	3	4
13. I feel driven to continue dwelling on the same issue.	0	1	2	3	4
14. My thoughts are not much help to me.	0	1	2	3	4
15. My thoughts take up all my attention.	0	1	2	3	4

APPENDIX H

LIEBOWITZ SOCIAL ANXIETY SCALE

This measure assesses the way that social phobia plays a role in your life across a variety of situations. Read each situation carefully and answer two questions about that situation. The first question asks how anxious or fearful you feel in the situation. The second question asks how often you avoid the situation. If you come across a situation that you ordinarily do not experience, imagine “what if you were faced with that situation,” and then, rate the degree to which you would fear this hypothetical situation and how often you would tend to avoid it. Please base your ratings on the way that the situations have affected you in the last week. Fill out the following scale with the most suitable answer provided below.

	Fear				Avoidance			
	None	Mild	Moderate	Severe	Never (0%)	Occasionally (1-33%)	Often (34-66%)	Usually (67-100%)
1. Telephoning in public.								
2. Participating in small groups.								
3. Eating in public places.								
4. Drinking with others in public places.								

5. Talking to people in authority.								
6. Acting, performing or giving a talk in front of an audience.								
7. Going to a party.								
8. Working while being observed.								
9. Writing while being observed.								
10. Calling someone you don't know very well.								
11. Talking with people you don't know very well.								
12. Meeting strangers.								
13. Urinating in a public bathroom.								
14. Entering a room when others are already seated.								
15. Being the center of attention.								

16. Speaking up at a meeting.								
17. Taking a test.								
18. Expressing a disagreement or disapproval to people you don't know very well.								
19. Looking at people you don't know very well in the eyes.								
20. Giving a report to a group.								
21. Trying to pick up someone.								
22. Returning goods to a store.								
23. Giving a party.								
24. Resisting a high pressure salesperson.								

APPENDIX I

FROST MULTIDIMENSIONAL PERFECTIONISM SCALE

Please answer the following questions in relation to how much they apply to you. Do not spend too much time on any one question.

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	My parents set very high standards for me.	1	2	3	4	5
2	Organization is very important to me.	1	2	3	4	5
3	As a child, I was punished for doing things less than perfectly.	1	2	3	4	5
4	If I do not set the highest standards for myself, I am likely to end up a second-rate person.	1	2	3	4	5
5	My parents never tried to understand my mistakes.	1	2	3	4	5
6	It is important to me that I be thoroughly competent in what I do.	1	2	3	4	5
7	I am a neat person.	1	2	3	4	5
8	I try to be an organized person.	1	2	3	4	5
9	If I fail at work/school, I am a failure as a person.	1	2	3	4	5
10	I should be upset if I make a mistake.	1	2	3	4	5

11	My parents wanted me to be the best at everything.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
12	I set higher goals than most people.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
13	If someone does a task at work/school better than I do, then I feel as if I failed the whole task.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
14	If I fail partly, it is as bad as being a complete failure.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
15	Only outstanding performance is good enough in my family.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
16	I am very good at focusing my efforts on attaining a goal.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
17	Even when I do something very carefully, I often feel that it is not quite right.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
18	I hate being less than the best at things.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
19	I have extremely high goals.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
20	My parents expect excellence from me.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

21	People will probably think less of me if I make a mistake.	1	2	3	4	5
22	I never feel that I can meet my parents' expectations.	1	2	3	4	5
23	If I do not do as well as other people, it means I am an inferior being.	1	2	3	4	5
24	Other people seem to accept lower standards from themselves than I do.	1	2	3	4	5
25	If I do not do well all the time, people will not respect me.	1	2	3	4	5
26	My parents have always had higher expectations for my future than I have.	1	2	3	4	5
27	I try to be a neat person.	1	2	3	4	5
28	I usually have doubts about the simple everyday things that I do.	1	2	3	4	5
29	Neatness is very important to me.	1	2	3	4	5
30	I expect higher performance in my daily tasks than most people.	1	2	3	4	5
31	I am an organized person.	1	2	3	4	5

32	I tend to get behind in my work because I repeat things over and over.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
33	It takes me a long time to do something "right".	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
34	The fewer mistakes I make, the more people will like me.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
35	I never feel that I can meet my parents' standards.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

APPENDIX J

CORRELATION TABLE FOR DIAGNOSED INDIVIDUALS

Variable	1	2	3	4	5	6	7	8	9	10
1. PEPQ-R	-	-	-	-	-	-	-	-	-	-
2. PHQ-9	.47**	-	-	-	-	-	-	-	-	-
3. BFNE	.42**	.30**	-	-	-	-	-	-	-	-
4. PSWQ	.21*	.41**	.61**	-	-	-	-	-	-	-
5. PTQ	.24*	.56**	.43**	.68**	-	-	-	-	-	-
6. LSAS	.32**	.41**	.58**	.45**	.42**	-	-	-	-	-
7. LSAS-Anx	.30**	.40**	.58**	.44**	.43**	.98**	-	-	-	-
8. LSAS-Av	.32**	.40**	.55**	.44**	.40**	.98**	.91**	-	-	-
9. FMPS	.20*	.25*	.58**	.53**	.39**	.27**	.25*	.27**	-	-
10. Cmd	.30**	.40**	.71**	.66**	.56**	.39**	.38**	.38**	.85**	-
Mean	492.27	24.15	41.47	61.35	54.01	111.39	57.07	54.31	110.23	39.78
SD	200.97	6.44	13.11	11.78	10.86	28.67	14.80	14.54	24.38	11.21

Note:  $p < .01^{**}$ ;  $p < .05^*$ ;  $N = 101$ ; PEPQ-R Post Event Processing Questionnaire – Revised, PHQ-9 Patient Health Questionnaire – 9, BFNE Brief Fear of Negative Evaluation Scale, PSWQ Penn State Worry Questionnaire, PTQ Perseverative Thinking Questionnaire, LSAS Liebowitz Social Anxiety Scale, LSAS-Anx Liebowitz Social Anxiety Scale – Fear or Anxiety subscale, LSAS-Av Liebowitz Social Anxiety Scale – Avoidance subscale, FMPS Frost Multidimensional Perfectionism Scale, CMD Concern Over Mistakes and Doubts

APPENDIX K  
ETHICS COMMITTEE APPROVAL

T.C.  
**BOĞAZIÇI ÜNİVERSİTESİ**  
Sosyal ve Beşeri Bilimler Yüksek Lisans ve Doktora Tezleri Etik İnceleme Komisyonu

Sayı: 2018-55

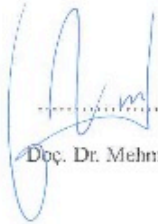
20 Aralık 2018


Can Baycan  
Psikoloji


Sayın Araştırmacı,

"Olay Sonrası İşleme Ölçeği Türkçe Adaptasyon Çalışması" başlıklı projeniz ile ilgili olarak yaptığımız SBP-EAK 2018/46 sayılı başvurunuzun revizyonu komisyonumuz tarafından 20 Aralık 2018 tarihli toplantıda incelenmiş ve uygun bulunmuştur.

  
Prof. Dr. Feyza Çorapçı

  
Doç. Dr. Mehmet Yiğit Gürdal

  
Doç. Dr. Ebru Kaya

  
Doç. Dr. Gül Sosay

  
Dr. Öğr. Üyesi Şehnem Yalçın

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