PERFECT PATIENTS, PERFECT RESULTS? EVALUATING NEGATIVE EFFECT OF

TRAIT PERFECTIONISM IN PSYCHOTHERAPY

by

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Abstract

Evidence has suggested that components of perfectionism are associated with poor treatment outcome in individual therapy for depression. (e.g., Blatt et al., 1995; Jacobs et al., 2009). However, most studies conceptualized and measured perfectionism as attitudes; few studies have examined the mechanism through which perfectionism contributed to poor treatment outcome, and no study examined potential gender differences in the perfectionism and treatment literature. Hewitt and Colleagues developed and extended the Perfectionism Social Disconnection Model (PSDM; 2006, 2017) to the treatment context. According to the model, perfectionism can lead to both subjective and objective social disconnections, which can impede therapeutic alliance and therapy processes, resulting in poor treatment outcome. There is also evidence that quality of social relationships outside therapy can have an impact on therapy outcome (Miller et al., 1997). Hence, the purpose of this paper was to examine: (1) whether trait perfectionism, captured with a broad conceptualization and multidimensional measure, is associated with poor treatment outcome; (2) whether quality of extratherapeutic relationships mediate the association between perfectionism traits and poor treatment outcome; (3) whether men and women react to disruption in social relationships differently in leading to poor treatment outcome. The current study measured perfectionism traits, quality of life, depression, and anxiety among 263 community adults who participated in a 10-week group CBT treatment program for residual depressive symptoms. The study found that other oriented perfectionism and socially prescribed perfectionism were associated with poor treatment outcome. The overall quality of social relationships and quality of friendship mediated the relationships between perfectionism traits and poor treatment outcome. Finally, perfectionistic men reacted to disruption in relative relationships more than perfectionistic women did in leading to poor treatment outcome.

Together, the current findings support the notion that certain perfectionism traits can impede

treatment by hindering social relationships outside of therapy. Implications of the present

findings for understanding the link between perfectionism and treatment outcome are discussed.

Lay Summary

Evidence has suggested that perfectionism attitudes are associated with poor treatment outcome in individual therapy for depression. The current study expanded on the previous studies and tested associations between trait perfectionism and group treatment outcome by measuring perfectionism traits, quality of life, depression, and anxiety among 263 community adults who participated in a 10-week group treatment program for depression. The study found that other oriented perfectionism, the requirement of others to be perfect, and socially prescribed perfectionism, the perception that others require perfection of the self, were associated with poor treatment outcome. Furthermore, perfectionism traits contributed to poor quality of social relationships, which in turn led to poor treatment outcome. Finally, perfectionistic men reacted to disruption in relationships with relatives more than perfectionistic women did in leading to poor treatment outcome. Together, the current findings support the notion that perfectionism is a vulnerability factor and a clinically important variable.

Preface

The thesis project titled "Perfect Patients, Perfect Results? Evaluating Negative Effect of Trait Perfectionism in Psychotherapy" has been approved by the UBC Behavioural Research Ethics Board. The ethics certificate number is B95-0504.The data in this examined thesis was originally collected for projects headed by Dr. Paul L. Hewitt. This thesis project was supported by the Joseph-Armand Bombardier CGS Master's Scholarship awarded to Xiaolei Deng.

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To my beloved father

1   Introduction

In the past thirty years, perfectionism has been established as an important and clinically relevant variable. Numerous studies have supported the idea that perfectionistic behavior is associated with psychological disorders as well as physical health, relationship, and achievement problems (for reviews, see Egan, Wade, & Shafran, 2010; Flett & Hewitt, 2002; Hewitt, Flett, & Mikail, 2017; Shafran & Mansell, 2001). Much of the work suggests that components of perfectionistic behavior can act as a vulnerability factor or concomitants in numerous disorders such as depression (Dunkley, Sanislow, Grilo, & McGlashan, 2006; Enns & Cox, 1999; Hewitt, Flett, & Ediger, 1996), anorexia nervosa (Bardone-Cone, et al., 2007; Cockell et al., 2002; Hewitt, Flett, & Ediger, 1995), anxiety (Antony, Purdon, Huta, & Swinson, 1998; Wheeler, Blankstein, Antony, McCabe, & Bieling, 2011) and suicidal behavior (Flett, Hewitt, & Heisel, 2014; O'Connor, 2007). Perfectionism could influence disorders by creating and amplifying stressors in life, hindering effective coping effort, and contributing to alienation (DiBartolo, Li, Frost, & 2007; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Hewitt & Flett, 2002; Hewitt et al., 2017).

In addition to the above-mentioned importance of perfectionism in influencing disorders, there have been indications that perfectionism can negatively influence treatment of psychological disorders and problems (Horney, 1950; Salzman, 1980). Recently, several researchers have echoed the importance of perfectionism in treatment context (Egan et al., 2010; Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008, Hewitt, Flett, Mikail, Kealy, & Zhang, 2017). For example, Egan and colleagues (2010) argued that perfectionism could hinder psychotherapy outcome by maintaining disorders during treatment. Furthermore, Hewitt and colleagues (2008, 2017) argued that perfectionism could negatively influence working alliance

and therapeutic processes, two important aspects of psychotherapy crucial to treatment outcome. In this paper, we wish to examine whether certain components of perfectionism are associated with negative treatment outcome in a group treatment format.

1.1 Perfectionism and Negative Treatment Outcomes

The empirical evidence supporting the link between perfectionism and treatment outcome has been accumulating. For example, Blatt, Quinlan, Pilkonis, and Shea (1995) provided the first empirical demonstration that pre-treatment perfectionism had a negative impact on treatment outcome using data from the National Institute of Mental Health (NIMH) Treatment of Depression Collaborative Research Program (TDCRP; Elkin, et al., 1989). The TDCRP was a multisite investigation of the comparative efficacy of cognitive behavior therapy, interpersonal psychotherapy, and pharmacotherapy in the treatment of nonbipolar, nonpsychotic depressed outpatients. Blatt and colleagues (1995) found that pre-treatment perfectionism attitudes, as measured by Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978), predicted worse treatment outcomes, such as depression symptoms, general clinical functioning, and social adjustment across all four experimental conditions.

In the subsequent analyses of the TDCRP data, Blatt, Zuroff, Bondi, Sanislow, and Pilkonis (1998) found that the negative impact of perfectionism on treatment was most evident during the latter half of the treatment: patients with moderate to high levels of perfectionism at pre-treatment made no significant therapeutic gain after the eighth treatment session in the 16-week treatment program. Finally, Hawley, Ho, Zuroff, and Blatt (2006) reanalyzed the TDCRP data using depression and perfectionism scores at five different time points throughout treatment. Hawley and colleagues found levels of perfectionism negatively predicted subsequent rate of change in depression symptoms over the course of treatment.

Finally in a follow up analyses on the TDCRP data, Blatt and colleagues (1998) analyzed therapists ratings and found therapists rated patients with elevated pre-treatment DAS perfectionism scores as having less degree of clinical change, less satisfied with treatment, and require further treatment. The ratings of therapists were echoed by patients as higher levels of perfectionism at pre-treatment was associated with less degree of therapeutic change reported by patients at the end of the treatment. Similar results were obtained in a different study, patients with elevated socially prescribed perfectionism, a trait dimension measures the perception that others require the self to be perfect, as captured by Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991), and who have sought professional help also reported less benefit from the treatment (Hewitt et al., 2016).

The converging findings of the TDCRP data suggest that perfectionism attitudes at pre-treatment actively impede treatment outcome for depression across treatment modalities. There is also other evidence in the literature supporting the link between components of perfectionism and negative treatment outcome for depression. For example, Rector, Bagby, Segal, Joffe, and Levitt (2000) compared 12-week pharmacotherapy with 20-week individual cognitive therapy in a naturalistic outcome study and found that self-criticism, an attitude component of perfectionism measured by Depressive Experience Questionnaire (DEQ-SC; Bagby et al., 1992; Blatt et al., 1976), predicted reduced treatment effect for depressive symptoms in cognitive therapy but not in pharmacotherapy. To address the potential confounding of patient characteristics with treatment modalities, Marshall, Zuroff, McBride, and Bagby (2008) conducted a randomized treatment study for major depressive disorders and found that DEQ self-criticism at pre-treatment predicted worse treatment outcome for depression in interpersonal therapy but not in pharmacotherapy or cognitive behaviour therapy. Finally, Enns, Cox, and

Pidlubny, (2002) found that DEQ self-criticism predicted worse treatment outcome for residual depression following a 12 week group CBT treatment program.

The negative impact of perfectionism on adult patients during treatment is also evident among children. Similar to the TDCRP study, the National Institute of Mental Health (NIMH) Treatment for Adolescents with Depression Study (TADS) is a multisite coordinated study investigating the effectiveness of cognitive behavior therapy, pharmacotherapy, and a combination of CBT and pharmacotherapy in the treatment of non-bipolar depressed adolescents in an outpatient setting (March et al., 2004). At the end of the 12 weeks treatment, only combination therapy, but not CBT or pharmacotherapy alone compared with pill placebo, was effective in reducing depression symptoms and suicidality. In addressing whether perfectionism attitudes have an impact on treatment outcome, Jacobs and colleagues (2009) reanalyzed the data of the TADS and found that DAS perfectionism at pre-treatment predicted reduced treatment effect for depressive symptoms and suicidality across all three treatment modalities. Furthermore, DEQ self-criticism and self-oriented perfectionism, the requirement of the self to be perfect measured by the MPS, predicted worse treatment outcome for depression and hopelessness in a naturalistic inpatient treatment program for suicide ideation and attempts among adolescents (Enns, Cox, & Inayatulla, 2003). Finally, Nobel, Manassis, and Wilansky-traynor (2012) found that self-oriented, but not socially prescribed perfectionism, captured by Child- Adolescents Perfectionism Scale (CAPS; Flett, Hewitt, Boucher, Davidson, & Munro, 2000), predicted worse treatment outcome for depressive symptoms in a 12-week CBT group treatment program for children in Grades 3 to 6.

The relationship between perfectionism and treatment outcome of other disorders is less consistent. For example, evidence suggests that pre-treatment perfectionism impedes treatment of obsessive-compulsive disorder (Chik, Whittal, & O'Neil, 2008; Pinto, Liebowitz, Foa, &

Simpson, 2011). However, the evidence of the impact of perfectionism on treatment of eating disorder is inconclusive. While one study found components of perfectionism had an impact on the treatment outcome (Steele, Bergin, and Wade, 2010; Sutandar-Pinnock, Woodside, Carter, Olmsted, & Kaplan, 2003), one study showed this influence to be inconsistent (Mussell, Mitchell, Crosby, Fulkerson, Hoberman, and Romano, 2000). Similarly, the evidence of the impact of perfectionism on the treatment of anxiety disorders is inconclusive. Some studies showed that components of perfectionism predicted worse treatment outcome for various anxiety disorders (Lundh & Öst, 2001; Mitchell, Newall, Broeren, & Hudson, 2013), but these effects were not replicated in other studies (Ashbaugh, Antony, Liss, Summerfeldt, McCabe, & Swinson, 2006; Cox, Walker, Enns, & Karpinski, 2002; Nishikawa, Lapsa, Regev, & Rector, 2017; Nobel et al., 2012; Rosser, Issakids, & Peter, 2003). Finally, perfectionism predicted worse treatment outcome for chronical pain (Kempke, Luyten, Wambeke, Coppens, & Morlion, 2014), but had no effect on the treatment of hoarding disorder (Muroff, Steketee, Frost, & Tolin, 2014).

As reviewed above, one way to quantify the impact of perfectionism on treatment outcome is to study the association between pre-treatment perfectionism and change in symptoms. Another way to capture the influence of perfectionism is to examine whether change in perfectionism leads to change in symptoms. For example, in a psychodynamic and interpersonal treatment study targeting perfectionism, Hewitt and colleagues (2015) found that reduction in self-oriented perfectionism and socially prescribed perfectionism (MPS) separately led to reduction in depressive symptoms and interpersonal problems respectively. Similarly, in a CBT group treatment targeting residual depressive symptoms, reduction in socially prescribed perfectionism led to reduction in depressive symptoms (Enns et al., 2002).

The empirical effort to examine the impact of perfectionism on treatment outcomes is relatively new. Although there is some inconsistency in the literature, converging evidence

suggests that perfectionism attitudes have a negative effect on treatment outcome in individual

therapy for depression.

1.2   Limitations in the Literature

Although the perfectionism and treatment literature is important, there are several

limitations in the literature. The first limitation in the literature is the conceptualization and

measurement of the perfectionism construct. Most studies in the literature conceptualized

perfectionism based solely on one element of the broad perfectionism construct, namely

perfectionism attitudes. The perfectionism construct, as indicated above, is much more complex

than simply attitudes (Cox, Enns, & Clara, 2002; Frost, Marten, Lahart, & Rosenblate, 1990;

Hewitt & Flett, 1991; Hewitt et al., 2003; Hewitt, Flett, & Mikail, 2017; Slaney, Rice, Mobley,

Trippi, & Ashby, 2001). Furthermore, the measurement tools used to capture perfectionism in

the treatment literature, such as DAS, DEQ, and EDI, were not designed to capture perfectionism

per se and they are not widely used and studied in the perfectionism literature. Moreover, Sherry,

Hewitt, Flett, and Harvey suggested that measuring perfectionism simply in terms of attitudes

"obscures important information by overlooking the distinction between the self-related and

socially based features of perfectionism" (2003). Therefore, a use of multidimensional

conceptualization and measurements specifically designed to capture perfectionism with rich

theoretical background may shed further light on the relationship between perfectionism and

treatment outcomes.

1.2.1   Conceptualizations of perfectionism

There is general consensus that perfectionism is a multidimensional construct and several

models have been developed (Flett, Hewitt, Blankstein, & Gray, 1998; Frost et al., 1990; Hewitt

et al, in press; Hewitt & Flett, 1991; Hewitt et al., 2003). For example, Frost and his colleagues

conceptualized perfectionism as having excessively high personal standards and tendencies to

critically evaluate oneself. As a result, Frost and his colleagues constructed a measurement tool to capture perfectionism in six dimensions: concern over mistake, doubts about action, parental expectations, parental criticism, excessively high personal standards, and organization.

Hewitt and colleagues developed the Comprehensive Model of Perfectionistic Behaviour (Hewitt et al., 2017) that comprises trait components (Hewitt & Flett, 1991), interpersonal expression components, namely perfectionistic self-presentational styles (Hewitt et al., 2003), and intrapersonal or self-relational components reflected in self-referent automatic cognitions and self-recriminations (Flett et al., 1998; Hewitt & Genest, 1990; Hewitt et al., 2017). Accumulated evidence has shown that all components of perfectionism are independently and differentially associated with all manners of disorders and dysfunctions (For a review, see Hewitt et al., 2003; Hewitt et al., 2017). Since perfectionism traits are described as the drivers of perfectionistic behaviors (Hewitt et al., 2017), the current study focused on the trait component of perfectionism measured by the Multidimensional Perfectionism Scale (MPS, Hewitt & Flett, 1991), the most commonly used trait conceptualization available (Cox et al., 2002).

Perfectionism traits reflect the deeply ingrained preoccupation with the requirement to be perfect and consist of self-oriented perfectionism, other-oriented perfectionism, and socially prescribed perfectionism. These traits capture inflexible desire to achieve perfection via different means. Self-oriented perfectionism involves the requirement for the self to be perfect and self-oriented perfectionists possess relentless concern for perfection and avoid imperfection at all costs. Failing to obtain perfection, they become hostile and attack themselves harshly by blaming and criticising the self (Hewitt & Flett, 1991). Other-oriented perfectionism involves the requirement for others to be perfect. Similar with self-oriented perfectionists, other-oriented perfectionists are also relentlessly concerned with perfection but their focus and hostility turn towards others. Lastly, socially prescribed perfectionism involves the perception or belief that

others require the self to be perfect. Socially prescribed perfectionists strive to gain acceptance by pleasing others and protect their sense of self by presenting a perfect image in front of others (Hewitt et al., 2017).

Therefore, self-oriented perfectionism, other oriented perfectionism, and socially prescribed perfectionism capture three different aspect of perfectionism construct. As a result, the first goal of the project was to examine whether different dimensions of trait perfectionism has a negative impact on treatment outcome.

The second limitation in the literature is most studies on perfectionism and treatment of depression used an individual treatment format with the exception of two studies (Enns et al., 2002; Nobel et al., 2012). Another common modality for treatment of depression is group psychotherapy and there is evidence that it is an effective approach to treat depression (McDermut, Miller, & Brown, 2001). While perfectionism hinders treatment outcome in individual therapy, the impact of perfectionism might be particularly relevant in group therapies. Group therapies require patients to establish working relationship with other group members and this could be particularly challenging for perfectionists since their off-putting behaviours can make working relationship challenging (Hewitt, Flett, Sherry, & Caelian, 2006; Hewitt et al., 2017). In addition, perfectionists possess heightened sensitivity of shame and rejection (Flett, Besser, & Hewitt, 2014; Hewitt et al., 2017) and this sensitivity could be amplified in group treatment, resulting in difficulties disclosing one's weakness, an essential part of psychotherapy. Therefore, the current study used a group treatment format to examine the impact of perfectionism on treatment outcome.

1.2.2 Perfectionism and interpersonal relationships

The third limitation in the literature is that there are few studies attempted to address how perfectionism hinders treatment outcome. Evidence has suggested that perfectionism negatively affected relationships, which in turn influenced treatment outcome. For example, there is evidence that perfectionism is associated with difficulties in establishing therapeutic alliance, which in turn contributed to poor treatment outcome (Van der Kaap-Deeder, Smets, & Boone, 2016; Zuroff, Blatt, Sotsky, Krupnick, Martin, Sanislow, & Simmens, 2000). In addition, perfectionism can also impede both therapeutic alliance and social relationships, which in turn contributed to poor outcome (Shahar, Blatt, Zuroff, Krupnick, & Sotsky, 2004). Specifically, Shahar and colleagues (2004) found patients with elevated DAS perfectionism had less satisfying social relationships and spent less time engaging in those satisfying social relationships. Although these findings suggest perfectionism can negatively affect relationship both inside and outside therapy, it is unclear how such effect takes place.

There has been recently attention on how perfectionism influences social relationships. Hewitt and colleagues (2006) first developed the Perfectionism Social Disconnection Model (PSDM) to explain the mechanisms through which socially prescribed perfectionism can lead to both objective and subjective social disconnections, and ultimately suicide behaviours. The model was later extended to incorporate perfectionism traits, self-presentational facets, and automatic perfectionistic thoughts (Hewitt et al., 2017). The model attempts to capture the interpersonal nature of perfectionism and explain its development, purpose, and consequence in a relational context.

According to the PSDM, perfectionism is driven by powerful needs to be accepted, to avoid rejection, and to repair the self. Based on attachment theory, people develop internal working models of the self and others based on early relational experience (Bowlby, 1988). If the

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need of a child is not met during his or her development, the child will feel that he or she is not worthy enough to matter, and view him or her as flawed, and others as unavailable, judging and sources of rejection. Perfectionism is thought to develop in response to the flawed sense of the self and feeling of aloneness by providing a sense of safety and connectedness in the world. In essence, perfectionists learn that acceptance and fitting in are possible if they are or appear to be perfect (Hewitt et al., 2017).

However, this defensive strategy ultimately leads to negative consequences. The genuine self, associated with intolerable and painful feelings of aloneness and irrelevance, has to be replaced with actual or an image of perfection. Without the genuine self, perfectionists can only experience others' approval of their well-managed behaviours but not others' acceptance of the self, since the self is thoroughly hidden from others. This gives rise to feelings of aloneness and being fundamentally flawed. Thus, in an effort to fix the self and connect to others, perfectionists paradoxically end up disconnecting the self from other people (Hewitt et al., 2017).

The PSDM suggests that perfectionism can lead to both subjective and objective social disconnection (Hewitt et al., 2006; 2017). Subjective social disconnection reflects the perception that others are not interested to connect and is characterized by heightened rejection sensitivity, perception of others as judgemental, and perception of self as not important to others (Cha, 2016; Chen, Hewitt, & Flett, 2015; Flett et al., 2014; Flett, Hewitt, & De Rosa, 1996). Objective social disconnection reflects the objective reality that others often avoid and reject perfectionists due to their off-putting interpersonal behaviors such as hostility, coldness, passive-aggressiveness, self-concealment, and excessive reassurance seeking (Haring, Hewitt, & Flett, 2003; Hewitt et al., 2003; Kawamura & Frost, 2004). Both subjective social disconnection and objective social disconnection contribute to intense feelings of shame; this rejection, whether real or simply perceived, painfully reminds the perfectionistic individual of their sense of a defective self.

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Empirical evidence for the PSDM has been accumulating. The subjective social disconnection pathway and the objective social disconnection pathway were often tested separately using mediational analyses. There is support for the subjective social disconnection pathway. For example, socially prescribed perfectionism is associated with perceived lack of social support, which in turn contributed to psychological distresses (Dunkley et al., 2000; Sherry, Law, Hewitt, Flett, & Besser, 2008). Similarly, socially prescribed perfectionism, and all three facets of perfectionistic self-presentation indirectly led to suicide risk through social hopelessness in a sample of children and adolescents (Roxborough et al., 2012). In addition, perfectionism attitudes indirectly led to depressive symptoms through perceived social deprivation and hazardous drinking (Sherry et al., 2012). Finally, socially prescribed perfectionism and self-presentational facets indirectly led to depressive symptoms through perceived lack of mattering to others (Cha, 2016; Flett, Galfi-Pechenkov, Molnar, Hewitt, & Goldstein, 2012). This suggests that perfectionism can contribute to various forms of subjective social disconnections.

There has also been support for the objective social disconnection pathway. For example, perfectionistic self-presentation indirectly led to depressive symptoms through high levels of validation seeking (Flett et al., 2014). Similarly, perfectionistic self-presentation indirectly led to suicide risk though a marker of objective social disconnection, namely experiences of being bullied (Roxborough et al., 2012). Finally, perfectionistic concerns indirectly led to depression symptoms through a marker of objective social disconnection, namely dyadic conflict between partners (Mackinnon et al., 2012).

The supporting literature of the PSDM utilized a variety of markers for subjective and objective social disconnection and diversified participants from different demographic background. The quantity and quality of empirical evidence support the association between

perfectionism, social disconnection, and resulting psychological distress. Although the model was developed for interpersonal relationships in general, it has been extended to psychotherapy specifically to explain how perfectionism can negatively affect treatment outcome.

1.2.3 The PSDM in psychotherapy

Recently Hewitt and colleagues (2017) extended the PSDM to explain how perfectionism can hinder psychotherapy. One application of the PSDM is that social disconnection generated by perfectionism can interfere with clients' abilities to form and maintain a therapeutic alliance (Hewitt et al., 2017). In psychotherapy, the subjective social disconnection can take form in transference, a psychological phenomenon in which a client projects emotions and relational expectations onto a therapist. Perfectionists who are afraid and expect rejection often worry that their therapists would reject them in a similar way. This perceived threat of rejection, if not addressed by the therapist, would make perfectionists unable to trust the therapist enough and disclose personal weaknesses, an essential part of psychotherapy (Hewitt et al., 2017).

Similar with subjective social disconnection, objective social disconnection can also interfere with therapeutic alliance. Perfectionism is associated with hostility and dominant behaviours (Habke & Flynn, 2002; Hill, Zrull, & Turlington, 1997), and such behaviours can have a negative impact on therapeutic alliance (Gurtman, 1996; Muran, Segal, Samstag, & Crawford, 1994). Accordingly to the PSDM, such processes take form in counter-transference, a psychological phenomenon in which a therapist reacts to the off-putting behaviour of a perfectionistic patient (Hewitt et al., 2017). If such reactions are not addressed by the therapist, the treatment could be compromised when the therapist react often unconsciously and either withdraw or act out towards the patient (Hayes, Gelso, & Hummel, 2011; Ligiero & Gelso, 2002).

A body of empirical research has supported the link between perfectionism and poor therapeutic alliance. Zuroff and colleagues (2000) found that perfectionism at pre-treatment indirectly led to poor therapeutic alliance in the second half of treatment, which in turn led to poor treatment outcome. In addition, Hewitt and colleagues found that clinicians, who were trained to have sympathy towards patients, rated perfectionistic patients as less likeable and rated themselves as having less desire to see them as patients in future treatment (2008). Similarly, Blatt and colleagues (1998) found that at $p = .06$, that therapists did not like the treatment involving patients with elevated levels of perfectionism. Finally, self-oriented and socially prescribed perfectionists were less liked by group members and therapists in the course of treatment (Flynn, Hewitt, Ko, Mikail, & Flett, 2016). Therefore, perfectionism appears to generate various forms of social disconnection, which indirectly impedes therapy outcome though hindered therapeutic alliance. Moreover, perfectionism and social disconnections can also influence psychotherapy indirectly through extratherapeutic factors outside of psychotherapy.

1.2.4   The PSDM and extratherapeutic factors

Extratherapeutic factors are defined as those involving the patient's environment that may affect the occurrence of change (Sprenkle & Blow, 2004). Patients' support systems, family environment, and chance events are a few examples of possible extratherapeutic factors. Extratherapeutic factors were first proposed by Lambert (1992) based upon his review of empirical evidence of treatment outcome research. Lambert proposed a four-factor model of change consisting of extratherapeutic change factors, common factors among different therapy approaches, therapy technique factors, and clients' expectancy factors. The model was then expanded by Miller, Duncan, and Hubble (1997) to include estimated percentages of variance in treatment outcome explained by each factor, and patient extra-therapeutic factors are estimated to account for 40% variance in treatment effect. Researchers and theorists have argues that those

extratherapeutic social relationships maybe the most important factor affecting treatment outcomes (Feinstein, Heiman, & Yager, 2015; Lambert, 1992; Miller et al., 1997; Sprenkle & Blow, 2004; Zlotnick, Shea, Pilkonis, Elkin, & Ryan 1996). For example, Research demonstrated that family conflict and a lack of social relationship were associated with poor treatment outcome for both psychotherapy and drug therapy. (Moos, 1990; Vallejo, Gasto, Catalan, Bulbena, & Menchon, 1991).

According to the PSDM, perfectionism can negatively influence extratherapeutic factors by creating subjective and objective social disconnections, such as a lack of perceived social support, increased interpersonal stress, and confrontations in close relationships (Hewitt et al., 2006; 2017), which can lead to poor treatment outcome. Indeed, there is evidence that pre-treatment levels of perfectionism attitudes (DAS) led to poor social networks, which in turn led to poor treatment outcome (Shahar et al., 2004). In the Shahar study, social network is conceptualized and measured by numbers of satisfying relationships and time spent in these relationships. We aim to extend this conceptualization of social relationships in two ways. First, we tested which specific type of social relationship was associated with perfectionism and treatment outcome. Secondly, we measured quality of social relationships taking consideration of how important a social relationship is and how much satisfaction is derived from that relationship. Given the importance of extratherapeutic factors in treatment context and interpersonal consequences of perfectionism, the second goal of this study was to examine whether trait perfectionism leads to poor treatment outcome through specific social relationships such as romantic love, friendship and relation with relatives.

Finally, most perfectionism treatment research did not examine potential gender differences. The limited evidence in the treatment literature suggests that in terms of individual therapy for depression, men benefited more in interpretive therapy than in supportive therapy and

women benefited more in supportive therapy than in interpretive therapy (Ogrodniczuk, Piper, Joyce, & McCallum, 2001). In terms of group therapy for depression, women are more committed in the group and perceived to be more compatible with other group members. The increased commitment and compatibility in turn led women to benefit more from both supportive group therapy and interpretive group therapy than men (Ogrodniczuk, Piper, & Joyce, 2004). While Ogrodniczuk and colleagues addressed how gender influences group treatment within therapy sessions, whether gender can influence treatment outcome through extratherapeutic relationships remains unexamined.

There is reason to believe that extratherapeutic social disconnections generated by perfectionism can affect men and women differently. For example, Gilligan (1982) argued that women tend to derive satisfaction from social connections and men tend to derive satisfaction from achievement of goals and autonomy. According to gender-specific models of depression, when relational needs are thwarted, women are more likely than man to experience a failure of the self and depression (Miller, 1991). Empirical evidence suggests that confidant relationships provide protection from severe stressors for women but not for men (Cohen & Wills, 1985). This buffering hypothesis was further tested among opposite-sex twin pairs, and supportive social relationships were found to be more protective against major depression for women than for men (Kendler, Myers, & Prescott, 2005). Given the importance of social relationship in the treatment context, there is reason to believe that social disconnections generated by perfectionism might influence women more than men. Therefore, the third goal of the study was to examine whether social disconnections created by perfectionism traits had a more negative impact on treatment outcomes for women than for men.

1.3 Summary and the present study

The current study aims to build upon the existing body of research regarding perfectionism and psychotherapy by addressing several questions arising from the literature. The first goal of the current study was to examine whether perfectionism traits assessed at pre-treatment have a detrimental effect on treatment outcomes. We hypothesized that elevated levels of perfectionism traits at pre-treatment predict poor treatment outcome for depression, anxiety and life quality. The second goal was to examine the mechanism through which perfectionism traits contribute to poor treatment outcome. We hypothesized that increased levels of perfectionism traits at pre-treatment lead to reduced quality of relationships at post-treatment, which in turn would contribute to poor treatment outcome. The third goal was to examine whether gender differences existed in the mediational relationship between perfectionism and poor treatment outcome. We hypothesized that gender interacts with quality of social relationships in mediating relationship between perfectionism traits and poor treatment outcome. More specifically, we expect women to have worse treatment outcome in reaction to their disrupted social relationships than men.

2   Methods

2.1   Participants

A total of 263 participants (93 men and 170 women) completed the pre-treatment assessment. Following the 10-week treatment program, 161 participants completed the post-treatment assessment. The age of the participants ranged from 19 to 78 ($M = 40.56$, $SD = 11.41$), and the years of education ranged from eight years to 22 years ($M = 14.28$, $SD = 2.36$).The ethnic composition of the sample included 229 who identified as whites (87.1%), 30 who identified as Asian (11.3%), and four (1.6%) who identified as others. A total of 120 (45.7%) participants were single; 81 (30.8%) were married or living in common law relationship, and 62 (23.5%) were separated or divorced. In terms of occupation status at intake, 53 (20.2%) participants had full-time or part-time work and 210 (79.8%) were unemployed due to various reasons. Participants ranged from 10 to 80 ($M = 47.30$, $SD = 12.58$) on Global Assessment of Functioning from SCID-I assessment interview. At initial assessment, 225 participants (85.6%) received diagnoses of Major Depressive Disorders, 24 participants (9.1%) received diagnoses of Bipolar Disorders, 14 participants (5.3%) received diagnose of other disorders.

2.2   Measures

Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders-IV (SCID-I, First, Spitzer, Gibbon, & Williams, 1997). The SCID-I is a semi-structured interview that assesses the presence of Axis I mental disorders. SCID-I is considered to be the gold standard instrument for clinical disorders and its inter-rater reliability and test-retest reliability is well established (Lobbestael, Leurgans, & Arntz, 2011; Zanarini et al., 2000).

Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991b). The MPS is a 45-item instrument that contains three subscales that measure self-oriented perfectionism, other-

oriented perfectionism, and socially prescribed perfectionism. The self-oriented perfectionism

(SOP) measures the requirement of perfection of the self (e. g., "one of my goals is to be perfect

in everything I do"). The other-oriented perfectionism (OOP) measures the requirement of

perfection of others (e.g., "If I ask someone to do something, I expect it to be done flawlessly").

Lastly, the socially prescribed perfectionism (SPP) measures the perception that others require

perfection of the self (e.g., "the people around me expect me to succeed at everything I do.").

Each subscale contains 15 items, which are scored on a 7-point Likert-like scale ranging from 1

"strongly disagree" to 7 "strongly agree". The scores of individual subscale range from 15 to 105

and high scores indicate elevated levels of perfectionism. The three-month test-retest reliability

was .69, .66, and .60 for SOP, OOP, and SPP in a psychiatric sample (Hewitt, Flett, Turnbull-

Donovan, & Mikail, 1991). Internal consistency of MPS subscales typically range from .70 to

.95 (Hewitt & Flett, 1991b). The validity and multidimensionality of the MPS have been

demonstrated in both clinical and non-clinical samples (Cox et al., 2002; Hewitt & Flett, 2004).

  Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988). The BDI is a 21-item

instrument that assesses depression severity by inquiring about affective, cognitive, behavioural,

and somatic symptoms over the past week. Participants rate each item on a four-point Likert-like

scale ranging from 0, no depressive symptomatology, to 3, high depressive symptomatology. The

scores of BDI range from 0 to 63, and high scores indicate elevated levels of depression. Internal

consistency for the BDI ranges from .80 to .95 (Beck et al., 1998). This well-known instrument

has demonstrated strong incremental, concurrent, and discriminant validity in psychiatric patients

(Beck et al., 1988; Brown, Schulberg, & Madonia 1995).

  Beck Anxiety Inventory (BAI; Beck, Epstein, Brown & Steer, 1988). The BAI is a 21-

item instrument that assesses a variety of anxiety symptoms including subjective,

neurophysiological, autonomic, and panic symptoms over the past week. Participants rate each

item on a four-point Likert-like scale ranging from 0, no anxiety symptomatology, to 3, high anxiety symptomatology. The scores of BAI range from 0 to 63, and high scores indicate elevated levels of anxiety symptoms. Internal consistency of the BAI ranges from .83 to .95 (De Ayala, 2005). BAI has demonstrated strong concurrent and discriminant validity (Beck et al., 1988; Beck & Steer, 1991).

Quality of Life Inventory (QOLI; Frisch, 1994). The QOLI is a 32-item inventory assesses positive mental health, well-being, and happiness in 16 different domains of life (e.g., health, work, love etc.). Participants rate the importance of each domain using a three-point Likert-like scale, ranging from 0, not important, to 2, extremely important. Participants also rate the satisfaction of each domain using a six-point Likert-like scale, ranging from -3, very dissatisfied to 3, very satisfied. The weighted score for each domain is calculated by multiplying the importance score with the satisfaction score. The final quality of life score is obtained by taking average of all weighted scores. The normative data of the scale are based on 798 nonclinical and ethnically diverse adults sampled across the United States. The QOLI significantly correlated with seven related measures of well-being; test-retest reliability of the QOLI ranged from .80 to .91, and the internal consistency ranged from .77 to .89 (Frisch, Cornell, Villanueva, & Retzlaff, 1992). In the current study, total quality of life score and the weighted scores for romantic love, friendship, and relatives were used.

2.3 Treatment protocol

The treatment was a psychoeducational and CBT group treatment protocol designed to reduce residual symptoms of depression and prevent symptom relapse. The treatment ran for ten weeks with one session per week. Normally, the group sessions were chaired with one therapist, sometimes with another co-therapist. Typical group sizes ranged from eight clients to 15 clients per group. The psychoeducational component provided clients with basic information on

depression and healthy lifestyles. The CBT component of the protocol provided clients with instruction in a variety of problem-solving skills. Strategies for lifestyle management included identifying and transforming problems into goals, breaking goals down into manageable steps, an introduction to assertiveness skills, identifying self-defeating thoughts, and learning to think in a realistic manner, et cetera (Paterson, Alden, & Koch, 2008). The group sessions consisted of therapist-led group instructions and discussions. Homework was discussed with each client during group sessions and assigned at the end of these sessions.

2.4 Procedure

An archival data set collected at UBC Hospital was used for this study. The study has been approved by the UBC Behavioural Research Ethics Board. Patients were referred to the group therapy program immediately prior to completing their treatment at UBC hospital for psychological difficulties. All participants completed consent forms and received SCID based diagnostic interviews administered by registered clinical psychologists or senior clinical graduate students. Participants also completed an assessment battery including demographic information, MPS, BDI, BAI, and QoLI prior to the start of group treatment. Each treatment group started once enough participants were available and ran for 10 consecutive weeks. At the end of the treatment program, participants completed the post-treatment questionnaires consisted of BDI, BAI, and QoLI. This group treatment program, known as the Core Program was offered on an ongoing basis, spanning over four years and 10 months.

2.5 Power analysis

A priori power analyses were conducted prior to data analyses to explore whether various statistical models had sufficient power. Effect size estimates for power analyses were obtained from similar studies (Hewitt et al., 2015). Power analyses for regression models were conducted by using Gpower (Faul, Erdfelder, Buchner, & Lang, 2009). For a small to medium effect size at

$f^2=.10$, with α=.05, power =.80, and four predictors (i.e., age, education, pre-treatment

depression, and one perfectionism dimension), a two-tail significance test for regression

coefficients would require a minimum of 81 participants. Power analyses for mediational

analyses were conducted by using MedPower (Kenny, 2017). For a medium effect, partial r = .3,

with α=.05 and power =.80, a two-tail significance test for indirect effect would require a

minimum of 105 participants. Given 161 participants remained in the study at post-treatment, all

analyses should have sufficient power to reject null hypotheses.

2.6 Data analysis strategies

A one-group longitudinal design was used to assess change in distress over the pre-

treatment and post-treatment. Linear regression models were used to test whether perfectionism

was associated with poor therapeutic gains after the group treatment, along with associated

mechanisms. Temporal precedency was established by choosing dependent variables, such as

depression severity, anxiety severity, and quality of life at post-treatment and independent

variables, the self-oriented perfectionism, other-oriented perfectionism, and socially prescribed

perfectionism, at pre-treatment. Depression severity, anxiety severity, and quality of life at pre-

treatment were entered in the regression equation to assess change in symptoms from pre-

treatment to post-treatment. In addition, age and years of education were entered as covariates

since they correlated with dimensions of perfectionism and outcome measures. Variance

inflation factor was calculated for each model to discover potential multicollinearity issues. A

total of nine models were tested, including all possible combinations of three independent

variables and three dependent variables.

To examine the indirect effects, we followed the path analysis procedures outlined in

Preacher, Rucker, and Hayes (2007). This method was chosen in an attempt to estimate effect

size of mediational relationship beyond qualitative description (Rucker, Preacher, Tormala, &

Petty, 2011). As illustrated by Figure 1, quality of romantic love, friendship, and relationships with relatives at post-treatment were used as independent mediators in parallel. One single dimension of perfectionism traits at pre-treatment was entered as independent variable, and one outcome measure at post-treatment was entered as the dependent variable. We used pre-treatment independent variable to predict post-treatment mediators to establish temporal precedency. Pre-treatment levels of depression and anxiety scores were entered as covariate in the b path to assess change in symptoms from pre-treatment to post-treatment. Pre-treatment quality of social relationships was not entered in the b path since we aimed to assess whether perfectionism contributed to poor social relationships at post-treatment, instead of whether perfectionism contributed to change in social relationships. A total of six models were tested, including all possible combinations of three independent variables and two dependent variables.

Figure 1

Graphical and Mathematical Representations of Multiple Mediation Models with Parallel Mediators.
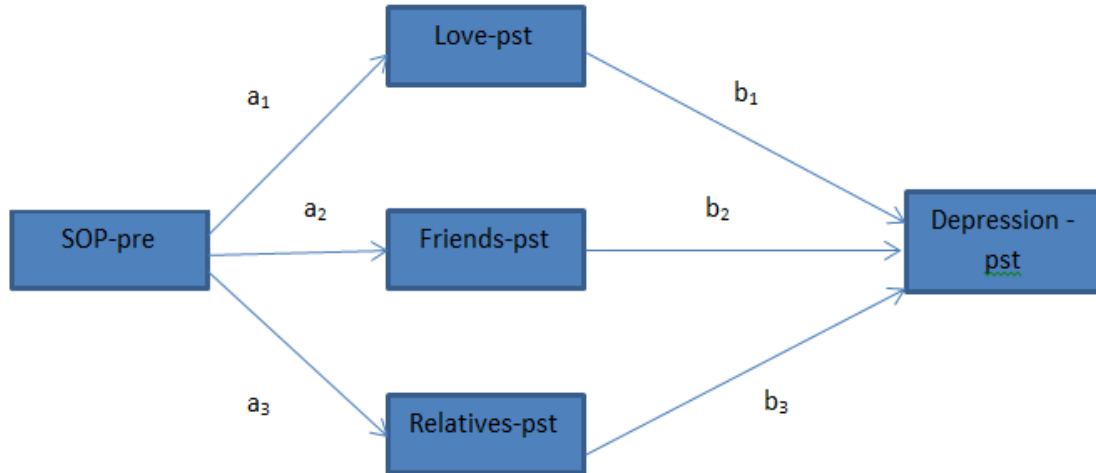
Love-pst = $b_{00}+b_{01}$*SOP-pre+b_{02}*Age+b_{03}*Education, $a_1=b_{01}$

Friends-pst = $b_{10}+b_{11}$*SOP-pre+b_{12}*Age+b_{13}*Education, $a_2=b_{11}$

Relatives-pst = $b_{20}+b_{21}$*SOP-pre+b_{22}*Age+b_{23}*Education, $a_3=b_{21}$

Depression-pst = $b_{30}+ b_{31}$*SOP-pre+ b_{32}*Love-pst+ b_{33}*Friends-pst+
$\qquad b_{34}$*Relative-pst+b_{35}*Age+ b_{36}*Education+b_{37}*Depression-pre

$b_1= b_{32}$, $b_2= b_{33}$, $b_3= b_{34}$

Indirect effect $c_1 = a_1$*b_1

Total Indirect effect $f = c_1+c_2+c_3=a_1$*b_1+a_2*b_2+a_3*b_3

Note. SOP=Self-oriented Perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends subscale; Relatives=Quality of Life, relatives subscale; pre = pre-treatment; pst = post-treatment.

the point estimate of each indirect effect was calculated by multiplying coefficients of path *a*, the regression coefficient from a predictor variable to a mediator variable, and path *b*, the regression coefficient from a mediator variable to the dependent variable while controlling for the independent variable, dependent variable at pre-treatment, and all other mediators. The overall mediation effect of the model was computed based on mediation effect of each individual mediator. The confidence intervals of these estimates were constructed with the bootstrapping procedure. The procedure resamples the original data with replacement to create 10000 bootstrap samples; the indirect effects were computed for each bootstrap sample and an empirical confidence interval was constructed based on all available resamples with accelerated bias correction method (Cheung, 2009).

To examine potential gender difference, we expanded our mediational model above by adding an interaction term between quality of social relationship at post-treatment and gender (Figure 2). Within each model, the interaction term was tested against zero first. Then gender specific indirect effects from perfectionism traits to treatment outcomes were computed by setting gender as either men or women. Lastly, significant test was used to examine whether certain indirect effect differ between men and women. A total of six models were tested, consisting pathways from three perfectionism traits to two treatment outcomes.

Figure 2

Graphical and Mathematical Representations of Moderated Mediation Models with Parallel Mediators.
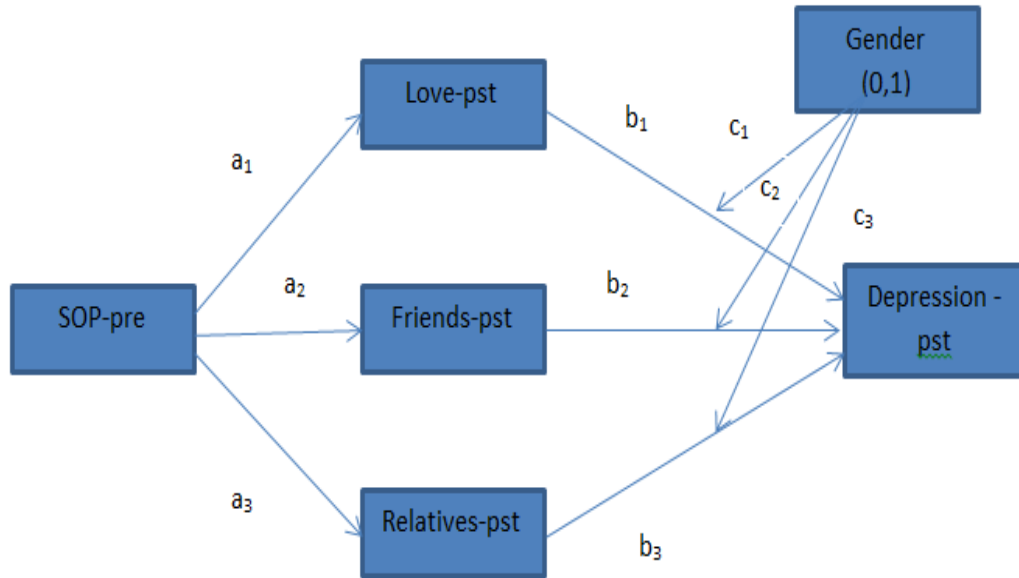
$$Love\text{-}pst = b_{00} + b_{01}*SOP\text{-}pre + b_{02}*Age + b_{03}*Education, \quad a_1 = b_{01}$$
$$Friends\text{-}pst = b_{10} + b_{11}*SOP\text{-}pre + b_{12}*Age + b_{13}*Education, \quad a_2 = b_{11}$$
$$Relatives\text{-}pst = b_{20} + b_{21}*SOP\text{-}pre + b_{22}*Age + b_{23}*Education, \quad a_3 = b_{21}$$
$$Depression\text{-}pst = b_{30} + b_{31}*SOP\text{-}pre + b_{32}*Love\text{-}pst + b_{33}*Friends\text{-}pst + b_{34}*Relatives\text{-}pst +$$
$$b_{35}*Age + b_{36}*Education + c_1*Love\text{-}pst*Gender + c_2*Friends\text{-}pst*Gender +$$
$$c_3*Relatives\text{-}pst*Gender + b_{37}*Depression\text{-}pre$$

$$b_1 = b_{32}, \quad b_2 = b_{33}, \quad b_3 = b_{34}$$
$$\text{Indirect effect } c_1 = a_1*(b_1 + c_1*Gender)$$
$$\text{Total Indirect effect } f = c_1 + c_2 + c_3 = a_1*(b_1 + c_1*Gender) + a_2*(b_2 + c_2*Gender) + a_3*(b_3 + c_3*Gender)$$

Note. SOP=Self-oriented Perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends subscale; Relatives=Quality of Life, relatives subscale; pre= pre-treatment; pst=post-treatment.

3 Results

3.1 Descriptive statistics and zero order correlations

Means and standard deviations of measures at pre-treatment and post-treatment are presented in Table 1[1]. Data closely followed univariate normal distribution. Means and standard deviations of pre-treatment variables were comparable to those from past studies that utilized psychiatric populations. According to the normative data, participants reported very low quality of life and moderate depression and anxiety severity (Beck et al., 1988; Frisch 1994). We investigated whether attrition was related to any variables at pre-treatment. Independent sample t-test revealed that there was no difference between participants who dropped out and participants who did not.

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[1] Alphas were not available since the archival dataset did not contain item level scores. Past studies have demonstrated that all measures have good internal consistencies and there is no expectation that measures in the current study had less internal consistencies.

Table 1

Means and standard deviations for measures of perfectionism traits, depression, anxiety, and quality of life

Variables	Mean	Standard Deviation	Sample Size
SOP-pre	69.42	18.67	254
OOP-pre	54.00	13.08	253
SPP-pre	60.24	14.46	253
BDI-pre	26.15	12.20	256
BDI-pst	17.18	12.33	159
BAI-pre	20.00	12.20	256
BAI-pst	14.09	12.08	159
QoL-pre	-.60	1.71	252
QoL-pst	.42	1.99	154
Lov-pre	-1.25	4.21	252
Lov-pst	-.32	4.11	154
Fri-pre	.35	3.70	252
Fri-pst	1.56	3.42	154
Rel-pre	.74	3.28	252
Rel-pst	.84	2.98	153

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; BDI=Beck Depression Inventory; BAI=Beck Anxiety Inventory; QoL = Quality of Life Inventory; Lov=Quality of Life love subscale; Fri=Quality of life friendship subscale; Rel=Quality of Love relatives subscale; pre =pre-treatment; pst = post-treatment. *p<.05, **p<.01.

Correlational analyses were used to test whether demographic variables (e.g., age, years of education, number of children) were associated with perfectionism, psychological distress, and quality of life. Zero-order correlation revealed that Age correlated with self-oriented perfectionism, $r = -.20$, $p < .01$, quality of life, $r = .16$, $p < .05$, depression severity, $r = -.15$, $p < .05$ at pre-treatment. Older participants tended to report lower levels of self-oriented perfectionism, depression severity, and higher levels of quality of life. In addition, years of education correlated with other-oriented perfectionism, $r = .17$, $p < .01$, depression severity $r = -.13$, $p < .05$, anxiety severity, $r = -.13$, $p < .05$ at pre-treatment, and other-oriented perfectionism at post-treatment, $r = .25$, $p < .01$. Participants with more education tended to have higher levels of other-oriented perfectionism, but lower levels of depression and anxiety severity. As a result, age and years of education were statistically controlled due to their associations with perfectionism, distress, and quality of life.

Zero-order correlation coefficients are presented in Table 2. At pre-treatment, self-oriented perfectionism was associated with increased depression, anxiety and decreased quality of life. Other-oriented perfectionism was only associated with increased depression, but not anxiety or quality of life. Socially prescribed perfectionism was associated with increased depression, anxiety, and decreased quality of life. In addition, self-oriented perfectionism at pre-treatment was associated with increased depression, anxiety, and decreased quality of life at post-treatment. Other-oriented perfectionism at pre-treatment was associated with increased depression, anxiety, and decreased quality of life at post-treatment. Finally, socially prescribed perfectionism at pre-treatment was associated with increased depression, anxiety, and decreased quality of life at post-treatment.

Table 2

Zero-order correlations for measures of perfectionism traits, depression, anxiety, and quality of life

Variables	BDI-pre	BAI-pre	QoL-pre	Lov-pre	Fri-pre	Rel-pre
SOP-pre	.31**	.28**	-.18**	-.05	-.14*	-.17**
OOP-pre	.18**	.10	-.09	.03	-.13*	-.14*
SPP-pre	.37**	.29**	-.27**	-.11	-.18**	-.17**
	BDI-pst	BAI-pst	QoL-pst	Lov-pst	Fri-pst	Rel-pst
SOP-pre	.29**	.23**	-.19**	-.10	-.18*	-.19*
OOP-pre	.35**	.25**	-.21**	.002	-.22**	-.20*
SPP-pre	.41**	.33**	-.30**	-.12	-.20*	-.27**

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; BDI=Beck Depression Inventory; BAI=Beck Anxiety Inventory; QoL = Quality of Life Inventory; Lov=Quality of Life love subscale; Fri=Quality of life friendship subscale; Rel=Quality of Love relatives subscale; pre =pre-treatment; pst = post-treatment.*p<.05, **p<.01.

3.2 Perfectionism and treatment outcomes

The first set of analyses examined whether perfectionism had an impact on treatment outcomes. Self-oriented perfectionism at pre-treatment did not predict any change in BDI, BAI and life satisfaction at the completion of the treatment. Consistent with our hypotheses, other-oriented perfectionism at pre-treatment predicted elevated depression severity and decreased quality of life at the post-treatment, (see Table 3). That is, for one standard deviation increase in other oriented perfectionism at pre-treatment, depression severity would increase by 0.19 standard deviation, and quality of life would decrease by 0.18 standard deviation at post-treatment while controlling for depression severity and quality of life respectively at pre-treatment. In addition, consistent with expectations, socially prescribed perfectionism at pre-treatment predicted elevated depression severity and decreased quality of life at the post-treatment (Table 3), respectively. That is, for one standard deviation increase in social prescribed perfectionism at pre-treatment, depression severity would increase by 0.21 standard deviation, and quality of life would decrease by 0.17 standard deviation at post-treatment while controlling for depression severity and quality of life respectively at pre-treatment.

Table 3

Regression analyses for the impact of pre-treatment perfectionism on treatment outcome, controlling for pre-treatment symptoms, age and years of education.

Independent Variable	Dependent Variable	β	t(df)	VIF	Adjusted R^2
SOP-pre	BDI-pst	.10	1.46(146)	1.17	.38
OOP-pre	BDI-pst	.19	2.84(146)**	1.13	.40
SPP-pre	BDI-pst	.21	3.15 (146)**	1.15	.41
SOP-pre	BAI-pst	-.04	-.68(147)	1.21	.51
OOP-pre	BAI-pst	.09	1.55(147)	1.10	.52
SPP-pre	BAI-pst	.09	1.46(147)	1.13	.52
SOP-pre	QoLI-pst	-.11	-1.52(144)	1.07	.25
OOP-pre	QoLI-pst	-.18	-2.55(144)*	1.05	.27
SPP-pre	QoLI-pst	-.17	-2.24(144)*	1.08	.26

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; BDI=Beck Depression Inventory; BAI=Beck Anxiety Inventory; QoL = Quality of Life Inventory; pre =pre-treatment; pst = post-treatment.*$p<.05$, **$p<.01$.

3.3 The PSDM and treatment outcomes

The second set of analyses examined whether quality of romantic love, friendship, and relationships with relatives at post-treatment mediated the relationship between pre-treatment perfectionism and change in symptoms. The overall mediation effect from pre-treatment self-oriented perfectionism to depression outcome through all three post-treatment social relationships did not reach statistical significance (see Table 4). Similarly, the overall mediation effect from other-oriented perfectionism to depression outcome through all three social relationships did not reach statistical significance. However, consistent with our hypothesis, the overall mediation effect from socially prescribed perfectionism to depression outcome did reach statistical significance. We then examined individual pathways and found that all dimensions of perfectionism at pre-treatment indirectly led to poor depression outcome through poor quality of friendship at post-treatment while controlling for quality of romantic love and quality of relationships with relatives.

Table 4

Mediation Analyses with satisfaction with social relations as mediators of the link between perfectionism and worsened treatment outcome for depression, N = 148.

Independent Variable	Mediator	a path	b path	Indirect Effect	.95 CI
SOP-pre	overall-pst	N/A	N/A	.03	[-.01, .07]
	Love-pst	-.02	-.48*	.01	[-.01, .04]
	Friends-pst	-.03	-.47*	.01*	[.01, .04]*
	Relative-pst	-.03*	-.22	.01	[-.01, .03]
OOP-pre	overall-pst	N/A	N/A	.03	[-.01, .07]
	Love-pst	.01	-.50**	-.001	[-.03, .03]
	Friends-pst	-.06**	-.41	.02*	[.01, .07]*
	Relative-pst	-.04*	-.17	.01	[-.01, .04]
SPP-pre	overall-pst	N/A	N/A	.04*	[.01, .09]*
	Love-pst	-.03	-.47*	.01	[-.01, .05]
	Friends-pst	-.05*	-.43*	.02*	[.01, .06]*
	Relative-pst	-.05*	-.13	.01	[-.02, .04]

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends subscale; Relatives=Quality of Life, relatives subscale; pre =pre-treatment; pst = post-treatment.*p<.05, **p<.01.

Furthermore, the overall mediation effect from pre-treatment self-oriented perfectionism to anxiety outcome through all three post-treatment social relationships reached statistical significance (see Table 5). In addition, the overall mediation effect from other-oriented perfectionism to anxiety outcome through all three social relationships did not reach statistical significance. Finally, the overall mediation effect from socially prescribed perfectionism to anxiety outcome reached statistical significance. We then examined individual pathways and found that no individual quality of social relationship mediated relationships between dimensions of perfectionism and treatment outcome for anxiety (Table 5). Both a paths and b paths in above models tested were negative. As a result, their product term, the indirect effects, were all positive. This suggested that as levels of perfectionism increased, quality of social relationships suffered, which in turn led to poor treatment outcome for depression.

Table 5

*Mediation Analyses with satisfaction with social relations as mediators of the link between
perfectionism and worsened treatment outcome for anxiety, N = 149.*

Independent Variable	Mediator	a path	b path	Indirect Effect	.95 CI
SOP-pre	Overall-pst	N/A	N/A	.02*	[.001, .06]*
	Love-pst	-.02	-.31	.01	[-.003, .03]
	Friends-pst	-.02	-.27	.01	[-.001, .03]
	Relative-pst	-.03*	-.35	.01	[-.001, .03]
OOP-pre	overall-pst	N/A	N/A	.02	[-.01, .07]
	Love-pst	-.0002	-.32	.0001	[-.02, .02]
	Friends-pst	-.06**	-.19	.01	[-.01, .04]
	Relative-pst	-.04*	-.27	.01	[-.01, .05]
SPP-pre	overall-pst	N/A	N/A	.03*	[.003, .08]*
	Love-pst	-.03	-.30	.01	[-.002, .04]
	Friends-pst	-.05*	-.22	.01	[-.004, .04]
	Relative-pst	-.05*	-.28	.01	[-.01, .05]

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially
prescribed perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends
subscale; Relatives=Quality of Life, relatives subscale; pre =pre-treatment; pst = post-
treatment.*p<.05, **p<.01.

3.4 Gender differences

The third set of analyses examined potential gender differences in the mediation relationship between perfectionism traits and treatment outcome. The pattern of gender differences was consistent across all six models (see Table 6, Table 7). Quality of romantic love and quality of friendship at post-treatment did not interact with gender in predicting treatment outcomes. Quality of relationships with relatives at post-treatment interacted with gender in predicting treatment outcomes. Contrary to our hypothesis, quality of relationships with relatives mediated the pathway from each perfectionism traits to each treatment outcome for men but not for women. The differences between these gender specific indirect effects reached statistical significance across all six models (see Table 6, Table 7).

Table 6

Gender Differences in Mediation Analyses, with satisfaction with social relations as mediators of the link between trait perfectionism and worsened treatment outcome for depression, N = 148.

Outcome Variable	Mediator	Gender	Gender Interaction	Indirect Effect	.95 CI	Indirect Effect Differences	.95 CI
SOP-pre	Love-pst	Male	Non-significant	.01	[-.01, .05]	-.002	[-.04, .01]
		Female		.01	[-.01, .04]		
	Friends-pst	Male	Non-significant	.01	[-.01, .04]	.01	[-.01, .06]
		Female		.02*	[.001, .05]*		
	Relatives-pst	Male	P <.05	.04*	[.003, .11]*	-.05*	[-.12, -.004]*
		Female		-.004	[-.03, .01]		
OOP-pre	Love-pst	Male	Non-significant	-.001	[-.04, .03]	.0002	[-.02, .02]
		Female		-.001	[-.03, .02]		
	Friends-pst	Male	Non-significant	.004	[-.04, .05]	.03	[-.01, .11]
		Female		.03*	[.002, .09]*		
	Relatives-pst	Male	P <.05	.06*	[.01, .16]*	-.07*	[-.18, -.01]*
		Female		-.01	[-.04, .02]		
SPP-pre	Love-pst	Male	Non-significant	.02	[-.004, .06]	-.003	[-.05, .02]
		Female		.01	[-.004, .05]		
	Friends-pst	Male	Non-significant	.01	[-.02, .05]	.02	[-.02, .08]
		Female		.03*	[.002, .07]*		
	Relatives-pst	Male	P <.05	.08*	[.02, .18]*	-.09*	[-.19, -.02]*
		Female		-.01	[-.05, .02]		

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends subscale; Relatives=Quality of Life, relatives subscale; pre =pre-treatment; pst = post-treatment.*p<.05, **p<.01

Table 7

Gender Differences in Mediation Analyses, with satisfaction with social relations as mediators of the link between trait perfectionism and worsened treatment outcome for anxiety, N = 149.

Outcome Variable	Mediator	Gender	Gender Interaction	Indirect Effect	.95 CI	Indirect Effect Differences	.95 CI
SOP-pre	Love-pst	Male	Non-significant	.01	[-.004, .05]	-.05	[-.05, .01]
		Female		.004	[-.003, .03]		
	Friends-pst	Male	Non-significant	-.004	[-.04, .01]	.02	[-.003, .07]
		Female		.01*	[.0001, .04]*		
	Relatives-pst	Male	P <.05	.05*	[.01, .13]*	-.04*	[-.12, -.002]*
		Female		.001	[-.01, .02]		
OOP-pre	Love-pst	Male	Non-significant	-.002	[-.04, .02]	-.0001	[-.03, .02]
		Female		-.001	[-.02, .01]		
	Friends-pst	Male	Non-significant	-.02	[-.09, .01]	.04	[-.001, .13]
		Female		.02	[-.002, .06]		
	Relatives-pst	Male	P <.05	.07*	[.01, .18]*	-.06*	[-.18, -.01]*
		Female		-.003	[-.03, .02]		
SPP-pre	Love-pst	Male	Non-significant	.01	[-.003, .07]	-.01	[-.06, .01]
		Female		.01	[-.004, .03]		
	Friends-pst	Male	Non-significant	-.01	[-.07, .02]	.03	[-.002, .10]
		Female		.02*	[.001, .05]*		
	Relatives-pst	Male	P <.05	.09*	[.02, .20]*	-.08*	[-.20, -.01]*
		Female		-.002	[-.03, .03]		

Note. SOP=self-oriented perfectionism; OOP=other-oriented perfectionism; SPP=socially prescribed perfectionism; Love=Quality of Life, love subscale; Friends=Quality of Life, friends subscale; Relatives=Quality of Life, relatives subscale; pre =pre-treatment; pst = post-treatment.*p<.05, **p<.01

4   Discussion

The goals of the current project were to examine: (1) whether perfectionism traits had a negative impact on treatment outcome; (2) whether perfectionism traits led to poor treatment outcome through quality of life outside of therapy; and at last (3) whether there were gender differences in the mediational relationship between perfectionism and treatment outcome. The overall findings showed that trait perfectionism had a negative impact on treatment outcomes for patients. Perfectionism was associated with reduced quality of social relationships, which in turn was associated with poor treatment outcomes. Finally, there were gender differences in how disruptions in social relationships contributed to poor treatment outcomes.

4.1   Trait perfectionism and treatment outcomes

In the past perfectionism has been mostly assessed with unidimensional cognitive measures and in the current study, we captured perfectionism with a broad conceptualization and a multidimensional measure, and examined how each trait dimension influenced treatment outcome. Overall, it was found that two of the traits, other-oriented and socially prescribed perfectionism were independently associated with poor outcome. To our best knowledge, this is the first empirical study demonstrating that other-oriented perfectionism and socially prescribed perfectionism can have negative impact on treatment outcome.

The current findings are consistent with earlier reports suggesting that perfectionism plays an important role in treatment (e.g., Blatt et al., 1995; Jocob et al., 2009; Hewitt et al., in press). This suggests that perfectionistic behavior can be disruptive in the clinical process and prevent patients from reaping the benefit from treatment. One important contribution of the current study is to conceptualize perfectionism as intrapersonal and interpersonal traits in the literature. In most of perfectionism treatment research (e.g., Blatt et al., 1995; Jacob et al., 2009;

Rector et al., 2000), perfectionism has been conceptualized as self-related attitudes consisting of themes of self-blame and fear of negative evaluation. The findings suggest that interpersonal perfectionism traits, such as other-oriented perfectionism and socially prescribed perfectionism also have a negative impact on therapy. Psychotherapy, by definition, is an interpersonal event, and perfectionism can disrupt interpersonal relationships (Hewitt et al., 2006; 2017). Therefore, the interpersonal nature of perfectionism should be examined in depth to facilitate a better understanding of what influences psychotherapy treatment. The findings also suggest that clinicians need to be aware of the negative consequences of perfectionism in therapy, and be willing to assess and address potential issues arise from perfectionism.

Besides hindering psychotherapy outcome, perfectionism can also impede other aspects of treatment such as treatment seeking behaviours (Hewitt et al., 2016) and premature termination in various treatment programs (Hewitt et al., 2016; McCown & Carlson, 2004; Sutandar-Pinnock et al., 2003). Therefore, perfectionism is not only a vulnerability factor influencing various psychopathologies (Egan et al., 2010; Hewitt et al., 2017), but also appears to interfere with various stages of treatment.

We did not find that self-oriented perfectionism was associated with treatment outcome. This suggests that self-oriented perfectionism might not be relevant in the prediction of therapy outcome. This is inconsistent with the PSDM described by Hewitt and colleagues (Hewitt et al., 2006; 2017). A possible explanation maybe that self-oriented perfectionism might require moderating variables to show its effect. Past research suggests that self-oriented perfectionism functions as a vulnerability and leads to depression at high levels of achievement stress (Hewitt & Flett, 1993; Hewitt et al., 1996). In addition, Sherry and colleagues (2016) expanded the PSDM by suggesting that perfectionistic concerns and strivings can interact with environmental factors, such as family environment, friendship, and personal factors, such as genetic risk factors,

in leading to psychopathology. Therefore, self-oriented perfectionism might only influence psychotherapy negatively when self-oriented perfectionists face achievement stress or relationship failures. Future research could examine the effect of self-oriented perfectionism by including potential moderators in the model.

The finding that self-oriented perfectionism was not associated with treatment outcome is also not entirely consistent with existing research. For example, self-oriented perfectionism predicted poor treatment outcome of for children following 12 weeks group CBT treatment for depression (Nobel, et al., 2012). In addition, change in self-oriented perfectionism was associated with change in depression severity, suggesting self-oriented perfectionism has an impact on treatment outcome (Hewitt et al., 2015). One similarity between these two studies is that participants in both studies had mild depression symptoms at pre-treatment ($\bar{X} = 17.39$). In contrast, participants in the current study were just discharged from in-patient treatment and still had moderate levels of depression symptoms at pre-treatment ($\bar{X} = 26.15$). This suggests that self-oriented perfectionism influences treatment for mild symptoms but not moderate symptoms. One explanation is that self-oriented perfectionism is associated with conscientiousness (Stoeber, Otto, & Dalbert, 2009), and conscientiousness is more likely to motivate patients with moderate symptoms than patients with mild symptoms to change, thereby reducing the negative impact of self-oriented perfectionism. Researchers can test this explanation by examining whether self-oriented perfectionism is associated with poor outcome while statistically controlling levels of conscientiousness in subsequent studies. In the current study, self-oriented perfectionism indirectly contributed to poor treatment outcome through poor social relationships. This indicates that self-oriented perfectionism plays a role in the treatment context, perhaps not as directly as originally thought.

Other-oriented perfectionism negatively influenced therapy outcomes for both depression severity and quality of life. One possibility for this may be that other-oriented perfectionism has been associated with various problems such as narcissistic patterns, anti-social patterns (Hewitt & Flett, 1991), sexual dissatisfaction in married couples (Habke, Hewitt, & Flett, 1999), and poor dyadic adjustment (Hewitt, Flett, & Mikail, 1995). The current finding suggests that negative influence of other-oriented perfectionism also extends to the treatment context. Other-oriented perfectionism is rarely studied in the treatment literature partly because most conceptualization and measurement of perfectionism used in the literature does not capture other-oriented perfectionism. In addition, the Child-Adolescent Perfectionism Scale, a multidimensional measure of perfectionism for children and adolescents, does not contain other-oriented perfectionism (Flett et al., 2000). Finally, some studies also excluded other-oriented perfectionism because of the weak relationship between other-oriented perfectionism and symptoms of interest (Enns et al., 2002). The current findings demonstrated that although other-oriented perfectionism does not predict depression symptoms as well as other dimensions of perfectionism, other-oriented perfectionism could still negatively influence group therapy outcome for depression. This suggests that other-oriented perfectionism is a clinical relevant variable and should be studied more extensively in the treatment literature.

The current study found that socially prescribed perfectionism negatively influenced therapy outcomes for depression severity and quality of life in an adult population. Socially prescribed perfectionism has been associated with various psychological distresses such as somatic complaints (Saboonchi & Lundh, 2003), social phobia (Antony et al., 1998), depression (Hewitt & Flett, 1991, 1993), and suicidality (O'Connor, 2007), and the current finding suggests that socially prescribed perfectionism can also impede the treatment of these distresses. One possible explanation is that while trying to be the perfect patient in treatment, socially prescribed

perfectionists maybe experienced by others as arrogant and distant (Hill et al., 1997). This can create difficulties in establishing therapeutic alliance (Muran et al., 1994), which leads to poor treatment outcome. Another possible explanation is socially prescribed perfectionism can create social disconnection outside of therapy, which in turn has a negative impact on treatment outcome. This explanation is evaluated in the later part of the discussion section.

Contrary to this finding, socially prescribed perfectionism did not influence treatment of depression in a child population (Nobel et al., 2012). Other studies also found that socially prescribed perfectionism did not influence treatment for depression in both adults and adolescents (Cox et al., 2002; Cox et al., 2003), but these results have to be interpreted with caution because of their specific data analyses strategy. For example, self-criticism, need for approval, self-oriented perfectionism and socially prescribed perfectionism were entered in the regression simultaneously and this method could not provide information on whether each individual dimension of perfectionism independently predicts treatment outcome.

The limited literature suggests that the impact of self-oriented perfectionism and socially prescribed perfectionism on treatment outcome seems to depend on population studied. That is, self-oriented perfectionism hinders treatment for children aged between nine to twelve years old but did not influence treatment for adults. Conversely, socially prescribed perfectionism hinders treatment for adults but did not influence treatment for children. One possible explanation of this pattern is the full development of socially prescribed perfectionism might happen after the age of twelve. Researchers have argued that children adopt perfectionism either to receive approval from parents for their achievement (and) or to reduce being exposed to shame and abusive behaviours when they do not meet parents' unrealistic expectations (Flett, Hewitt, Oliver, & Macdonald, 2002; Rasmussen &Troilo, 2016). Indeed, evidence suggests that perceived parental expectations predicted an increase in socially prescribed perfectionism among adolescents aged

15- 19 years (Damian, Stoeber, Negru, & Băban, 2013). This increase suggests that socially prescribed perfectionism is malleable in adolescents years during which unrealistic expectations become harder to meet. Therefore, it is likely that socially prescribed perfectionism has not reached fully developed state in children younger than twelve years old, and therefore has no influence on treatment outcomes. However, a longitudinal study over the developmental span of children and adolescents could shed light on the development and influence of perfectionism in children.

4.2   The PSDM and treatment outcomes

Consistent with our second hypothesis, Self-oriented perfectionism indirectly contributed to poor treatment outcome for anxiety, and socially prescribed perfectionism indirectly contributed to poor outcomes for both depression and anxiety. These findings are consistent with the PSDM demonstrating that perfectionism ironically contributes to social disconnections that perfectionists try to avoid (Chen et al., 2015; Haring et al., 2003; Hewitt et al., 2017; Kawamura & Frost, 2004; Shahar, 2001). According to the PSDM, perfectionism social disconnections can lead to negative consequences such as psychological distress (Dunkley et al., 2000), depression (Cha, 2016; Flett et al., 2012; Flett et al., 2014; Mackinnon et al., 2012; Sherry et al., 2008), and suicide risk (Roxborough et al., 2012). The findings extended the PSDM and demonstrated that besides contributing to psychological distresses, the social disconnection generated by perfectionism can also impede therapy. Therefore, perfectionism can be considered as a vulnerability factor that stays relevant throughout the development and treatment of psychopathologies.

The findings are consistent with the literature demonstrating that the impaired social relationships generated by perfectionism can contribute to poor therapy outcome (Shahar et al., 2004). By definition, perfectionistic social disconnections can be considered as extratherapeutic

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factors, defined as the patient's environment that may affect the occurrence of change (Sprenkle & Blow, 2004). Strong argument has been made that the environment of patients can greatly influence therapy outcome (Lambert, 1992; Miller et al., 1997). Therefore, perfectionism could be particularly relevant in treatment research since it not only is an important patient characteristic, but can also contribute to impaired extratherapeutic relationships that lead to poor treatment outcomes (Moos, 1990; Vallejo et al., 1991).

The overall quality of social relationships mediated the relationship between self-oriented perfectionism and treatment outcome for anxiety. Self-oriented perfectionism was not associated with treatment outcome for anxiety directly, but its affected outcome for anxiety indirectly through social relationship. In other words, the total effect of perfectionism on outcome was not significant, but the indirect effect was. Upon examining the model, the direct effect from self-oriented perfectionism to anxiety outcome while controlling for social relationships was of the opposite direction of the indirect effect. Since total effect is the sum of the direct effect and the indirect effect, the total effect of self-oriented perfectionism might be supressed by the opposite direction of direct and indirect effect. Another explanation of this apparent discrepancy was that the test of total effect tends have less power than the test of indirect effect (Kenny & Judd, 2014). This explanation is probable given that in the current data set, estimated regression weights in both a paths, from self-oriented perfectionism to social relationships, and b paths, from social relationships to outcomes, are larger than the total effect of self-oriented perfectionism on outcomes.

The overall quality of social relationships did not mediate the relationship between other-oriented perfectionism and treatment outcome. It seems that other-oriented perfectionism has a negative impact on the treatment, but the impact was not exerted through interpersonal relationships outside therapy. One possible explanation is the influence of other-oriented

perfectionism might be most felt during therapy sessions. Indeed, other-oriented perfectionism is characterized by narcissistic and anti-social patterns including excessive blaming of others, taking charge, and demanding others to adhere to rigid expectations (Hewitt & Flett, 1991; Hewitt et al., 2017), and these interpersonal patterns could hinder therapeutic alliance during treatment (Gurtman, 1996; Muran et al., 1994). Therefore, it could be fruitful to test whether other-oriented perfectionism indirectly led to poor treatment outcome through hindered therapeutic alliance.

Lastly, the mediation effects from perfectionism to treatment outcome depend on specific types of social relationships. Quality of friendship mediated the relationship between all dimensions of trait perfectionism and treatment outcome for depression whereas quality of romantic love and relationships with relatives did not. Upon examining the mediation models, dimensions of trait perfectionism had similar effects on social relationships, but quality of friendship has a bigger impact on outcome than quality of romantic love and relationships with relatives. In other words, perfectionism disrupted various interpersonal relationships to a similar extent, but the disruption of friendship is particularly relevant in leading to poor treatment outcome. This is consistent with the finding that poor friendship quality predicted poor group CBT treatment outcome for anxiety disorder in children (Baker & Hudson, 2013). Indeed, a quality friendship might provide a safe environment to practice CBT skills and engage in more positive social information processing (Baker & Hudson, 2013). The finding suggests that disruptions in various types of interpersonal relationships might have different consequences in relation to the development and treatment of psychopathologies.

4.3 Gender differences

Gender interacted with quality of relationships with relatives in predicting treatment outcome. Contrary to our hypothesis, quality of relationships with relatives mediated the relationship between perfectionism and treatment outcome for men but not for women. This gender difference was found in all six models tested and suggests that in terms of treatment outcomes, perfectionistic men are more vulnerable to disruption in their relationships with relatives than perfectionistic women are. One explanation is that men tend to have constricted kin resources (Booth, 1997) and a disruption in this limited resource could lead to poor treatment outcome for perfectionistic men. To our best knowledge, this study is the first to indicate that perfectionistic men and women react to disruption in social relationships differently. The finding highlights the individual differences among perfectionists and suggests that gender needs to be explored in relation with the PSDM in both the perfectionism literature and the treatment literature to obtain a nuanced understanding.

The failure to consider gender difference can also lead to wrong conclusions. In the current study, quality of relationship with relatives was not a significant mediator in the simple mediation model. However, moderated mediation model revealed that the overall mediation effect was possibly wiped out by the relatively large number of female participants, for whom the mediation effect was not significant. Without investigating gender differences, researchers could miss important findings regarding gender differences and arrive at wrong conclusions regarding main effects.

Gender did not interact with quality of romantic love in predicting treatment outcome. This is unexpected since men tend to limit their emotional intimacy to marriages (Antonucci & Akiyama, 1987; Lowenthal & Robinson, 1976) and experience greater social distress than women with disruption in marital relationships (Berardo, 1970). Upon inspection of data, only 49

(30%) participants were in marriage or marriage like relationships at pre-treatment. For the 69 (27%) participants who are not in an intimate relationship, the quality of romantic love subscale likely measures desire to start an intimate relationship. For the 43 (27%) participants who separated from intimate relationships, the subscale likely measures satisfaction of past intimate relationship. Therefore, the quality of romantic love subscale likely did not measure the intended construct, and this could be a reason behind the lack of mediation effect for the romantic relationships.

In summary, the current study demonstrates that perfectionism traits have a negative impact on group therapy outcome. In addition, the findings provide support for the PSDM in treatment context. To our best knowledge, this study is one of the first to examine gender differences with specific social relationship in perfectionism and psychotherapy research. The study highlights the role of social relationships in patients' recovery during psychotherapy. We were able to demonstrate that patients, constrained by their perfectionism traits, can actively shape their surrounding social environment, which in turn influence psychotherapy outcomes.

4.4 Limitations and future directions

One limitation in the current study is that the use of self-report measure does not allow researchers to study objective social disconnections in the PSDM. The quality of life inventory requires participants to rate their subject feelings that could be influenced by perceptions different from reality. For example, a person with supportive friends might find friendship unsatisfactory since the person perceives the friends to be judgmental. In order to assess the relational reality of a person and study objective social disconnection path in the PSDM, quality of relationship measures need to be administrated to the significant others of the participant in future studies. Furthermore, each sub-domain in the quality of life measure consisted only one rating on the importance of the domain and one rating on the satisfaction of the domain. As a

result, the use individual scores of each sub-domain could introduce considerate amount of measurement error. In an attempt to increase reliability, exploratory factor analysis was used to extract a social dimension from the scale. However, no satisfactory solution was found and scores from each sub-domain were used as mediators instead. The results of mediational analyses could be improved by using a more in-depth measure of relationship functioning.

Another limitation of the study is that individual indirect effects need to be interpreted with caution when multiple mediators are in parallel. Because multiple mediators were entered simultaneously in path b, the individual indirect effect reflects the mediation effect of that specific pathway while accounting for the effect of other parallel mediators. The model has the best point estimate when mediators are not correlated with each other. However, this ideal scenario rarely plays out in real data. In the current study, although quality of romantic love, friendship and relationships with relatives are distinct concept, zero order correlation revealed that they are all correlated at $p < .01$. The associations between these mediators suppressed each individual indirect effect. As a result, the individual indirect effect reported in the current study likely underestimated the true parameter in the population.

This study could be improved by adding multiple points of assessment during and after treatment. The change scores, either difference score or the residual score, only provide information on treatment outcome. By adding additional assessment during treatment, researchers can examine the trajectory of change and how perfectionism can influence psychotherapy at different stages. Likewise, by adding additional assessment after treatment, researchers can examine whether perfectionism can predict symptom relapse and develop potential after-treatment interventions.

The current findings suggest that perfectionism can have a negative impact on social relationships outside therapy, which in turn contribute to poor treatment outcome. In addition to

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this pathway, future studies can also examine whether perfectionism can lead to poor treatment outcome through therapy related factors such as therapeutic alliance, group coherence, and group compatibilities. This can shed light on how perfectionism can influence various treatment mechanisms in leading to poor outcome. The effect of perfectionism within and outside of therapy can also be compared so better interventions can be implemented.

Lastly, a fast growing field in treatment literature is person-centered research with a focus on examining how individual differences affect treatment outcome (Bohart & Wade, 2013; Bultler & Strupp, 1986). This line of research could help researchers to better predict treatment outcomes and enable clinicians to choose tailored interventions for individuals with different characteristics. The current study focused on individual differences in personality and examined how perfectionism and resulting extratherapeutic factors influenced treatment outcome. The findings confirmed the negative impact of perfectionism on treatment outcomes and the study could be expanded to explore whether perfectionism interact with other personality or environmental factors in predicting therapy outcomes.

4.5   Clinical implications

Clearly, trait perfectionism could lead to real and perceived social disconnections (Hewitt et al., 2017). The resulting social difficulties could be amplified in treatment settings and interfere with treatment through reduced quality of social relationships outside of treatment. Therefore, treating perfectionism could lead to effective and long lasting reduction in psychological distress (Hewitt et al., 2003; Hewitt et al., 2008; Hewitt et al., 2015). In contrast, treatment focused solely on the symptoms of the disorder may neglect this important vulnerability and maintenance factor and this neglect may lead to poor treatment outcomes during treatment and symptom relapse after treatment (Blatt, Auerbach, Zuroff, & Shahar, 2006; Hewitt et al., 2015). Thus, trait perfectionism needs to be identified and targeted in treatment

delivery in order to achieve long lasting changes in perfectionists' psychological and

interpersonal difficulties.

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