

MOTIVATIONAL PATTERNS AND RELATED PSYCHOPATHOLOGY IN
CHINESE PATIENTS WITH EATING DISORDERS

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Abstract

Eating disorders (EDs) are serious mental disorders that have a tremendous negative impact on both physical and mental health. Despite the substantial cost of EDs on patients and their families, resistance to change has been a major obstacle to successful treatment and has recently become a focus of research interest. A variety of factors have been proposed to account for treatment resistance in Western ED patients, including ego-syntonic motivations related to overvaluation of thinness and various adaptive functions served by EDs. As EDs are becoming more prevalent in China, Chinese clinicians have encountered an increasing number of ED patients in clinical practice and experienced high resistance to change from this population. Although overvaluation of thinness has been denied as a major reason for symptoms by a significant proportion of patients with anorexia nervosa (AN) from Hong Kong, it is not clear whether or to what extent this overvaluation and resultant ego-syntonic motivations, along with other identified functions of EDs in Western populations, have contributed to the development and maintenance of EDs in individuals from Mainland China. The current study was designed to explore motivational patterns and related psychopathology in Chinese ED patients using clinical interviews and Western-developed questionnaires. Eighty-four Chinese patients seeking treatment for EDs at Shanghai Mental Health Center participated in the baseline assessment at intake and two-thirds of the sample, who remained in treatment after one month, completed the follow-up assessment. Both assessments involved completing an interview with the research psychiatrist and a set of Western-developed questionnaires translated using the back-translation method to evaluate motivational factors and clinical symptoms. The research psychiatrist made a DSM-IV-TR ED diagnosis for each participant based on the interview and collateral

information following the baseline assessment. The research psychiatrist and each participant's attending psychiatrist also assessed the individual's motivation for change at both baseline and follow-up. The sample was composed of 39 Chinese patients with AN, 25 with bulimia nervosa (BN), and 20 with eating disorder not otherwise specified (EDNOS). All Western-developed measures showed acceptable to excellent internal consistency. Motivation measures demonstrated satisfactory convergent and concurrent validity, equivocal predictive validity, promising structural and discriminative validity, and sensitivity to change over time. Over the study period, Chinese ED patients identified the lack of self-efficacy, avoidance functions of EDs, and ego-syntonic motivations for symptoms as major motivational barriers to change. They also described experiencing more costs than benefits from their disorders, especially the consequence of EDs and guilt for loved ones. In addition, they endorsed the importance of weight and shape concerns in their ED psychopathology and exhibited mild depression over the first month of treatment. Compared to ED patients, attending psychiatrists put more emphasis on emotion regulation functions and less on ego-syntonic motivations as barriers to recovery but perceived a higher level of resistance to change in their patients. At baseline, Chinese BN patients were significantly more resistant and AN patients less symptomatic, with the exception of the body mass index (BMI), when they were compared to the other two diagnostic groups, respectively. After the first month of treatment, no significant group differences existed in motivation and symptoms except for the BMI between AN and the other two diagnostic groups and weight concern between BN and EDNOS groups. All three diagnostic groups showed some improvement in motivation for change and clinical psychopathology at one-month follow-up, with greater improvement found in BN patients than in the other two diagnostic groups. Subgroup analysis further revealed that only AN patients with

low weight concern (LAN patients) but not those with high weight concern (HAN patients) were significantly less resistant to change than BN patients at baseline. At follow-up, LAN patients showed no improvement while HAN patients mild to moderate improvements in motivation and psychopathology, but HAN patients gained less weight than LAN patients and became the most resistant among all participants. Finally, motivational factors and clinical symptoms (except for the BMI of AN patients) demonstrated a positive cross-sectional relationship and correspondence in changes over time for all participants. In conclusion, some similar motivational factors seem to play an important role in treatment resistance for both Chinese and Western ED patients, such as self-efficacy concerns, avoidance functions, and ego-syntonic motivations. Patterns of motivation and psychopathology between different patient groups and over time are found to be more similar than different in Chinese and Western ED patients, particularly when Chinese AN patients with low and high weight concern are examined separately. Reducing treatment resistance may help improve clinical symptoms except for promoting weight gain in AN patients. Future cross-cultural studies with a time series design may further elucidate cultural differences between Chinese and Western ED patients and evaluate the causal relationship between motivational factors and clinical outcomes.

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Chapter 1. Introduction to the Study

Background

Eating disorders (EDs) are serious mental illnesses that have a tremendous negative impact on both physical and mental health (Comerci, 1990; McCallum et al., 2006; Mehler, Crews, & Weiner, 2004; Mitchell & Crow, 2006). Although health risks associated with EDs are apparent to both professionals and family members, effective treatment is often hampered by patient resistance to change (Amettler, Castro, Serrano, Martinez, & Toro, 2005; Geller, Drab-Hudson, Whisenhunt, & Srikameswaran, 2004; Kaplan & Garfinkel, 1999; Rodriguez-Cano & Beato-Fernandez, 2005; Vitousek, Watson, & Wilson, 1998). In individuals with anorexia nervosa (AN), motivational issues are typically expressed as denial of illness, reluctance to enter therapy, and resistance to treatment (Vandereycken, 2006; Vitousek, 2002). Patients with bulimia nervosa (BN), on the other hand, are more likely to seek treatment voluntarily but may misrepresent symptoms because of shame, refuse to give up caloric restriction although eager to stop bingeing and purging, or drop out of treatment when core psychopathology (i.e., overvaluation of thinness) is challenged (Hamburg, Herzog, & Brotman, 1996; Vitousek et al., 1998). Thus, motivation for change has recently become a focus of research interest in the ED field (Geller, 2002a; Geller, Williams, & Srikameswaran, 2001; Mizes, 1998; Treasure & Schmidt, 2001; Vansteenkiste, Soenens, & Vandereycken, 2005).

To study the role of motivation in the treatment of EDs, different instruments have been adapted or developed for ED patients. Some of the instruments assess factors influencing decisional balance (e.g., Bemis, 1986; Cockell, 2000; Gale, Holliday, Troop, Serpell, & Treasure, 2006; Serpell, Teasdale, Troop, & Treasure, 2004; Vitousek, de Viva, Slay, & Manke, 1995), some measure

self-efficacy for change (e.g., Bemis, 1986; Geller, Cockell, & Drab, 2001; Vitousek et al., 1995), some evaluate readiness to change (e.g., Ackard, Croll, Richter, Adlis, & Wonderlich, 2009; Geller & Drab, 1999; Rieger et al., 2000; Ward, Troop, Todd, & Treasure, 1996), and others examine autonomy for change (e.g., Geller & Drab, 1999; Vansteenkiste, Claes, Soenens, & Verstuyf, 2013). These motivation measures allow researchers and clinicians to assess the level of motivation for change and identify specific factors contributing to resistance to change in individuals with EDs.

Research on motivational issues in Western ED patients has revealed high resistance to change and its significant contribution to poor outcomes in this population (Amettler et al., 2005; Bemis, 1986; Geller et al., 2001; Geller et al., 2004; Goldberg et al., 1980; Gray, 2008; Mahon, 2000; Rieger et al., 2000; Serpell, Treasure, Teasdale, & Sullivan, 1999). For example, studies showed that ED patients were more reluctant to change than individuals with phobias or obsessive-compulsive disorder (Bemis, 1986; Gray, 2008) and that most of them (70-80%) did not engage in behavior change even after entering treatment (Martinez et al., 2007; Rieger, Touyz, & Beaumont, 2002). A review of treatment dropout indicated that the median dropout rate from ED treatment was 30% in clinical settings, with a range from 15% to 65% (Mahon, 2000). In addition, lower motivation for change was found to associate with more severe psychopathology, higher dropout rates, lower adherence to treatment, poorer outcomes, and a higher risk of relapse in several studies with Western ED patients (Amettler et al., 2005; Geller et al., 2001; Geller et al., 2004; Goldberg et al., 1980; Gray, 2008; Rieger et al., 2000; Serpell et al., 1999).

Studies on specific factors contributing to treatment resistance in Western ED patients (Gale et al., 2006; Orimoto & Vitousek, 1992; Vitousek et al., 1995; Vitousek et al., 1998) have revealed

ego-syntonic motives linked to the core psychopathology of EDs (e.g., pursuing thinness, avoiding weight gain, creating an identity) and adaptive functions served by symptoms or consequences of EDs (e.g., promoting a sense of control, providing structure, regulating emotions, managing relationships, reducing uncertainty). These non-weight-related functions seem to help the individual to enhance or protect the self and may interact with weight-related concerns in their contribution to treatment resistance (Vitousek & Ewald, 1993; Vitousek & Orimoto, 1993). Thus, identifying and addressing perceived functions of EDs may help understand the psychopathology of ED patients, reduce resistance to change, and improve clinical outcomes in ED patients.

As EDs have gradually been recognized as one of the mental disorders that have the highest mortality rates and are the most difficult to treat in Western societies over the past decades, they have also become increasingly prevalent in non-Western countries, such as East Asian, Caribbean, Arabian, and South African countries (Hoek et al., 2005; le Grange, Telch, & Tibbs, 1998; Mumford, Whitehouse, & Choudry, 1992; Nobakht & Dezhkam, 2000; Tsai, 2000). These observations have inspired a series of studies on EDs among non-Western populations, in which some cultural differences have been described. One distinctive cultural difference documented in the literature is the absence of core psychopathology described in Western AN patients, including fat phobia (i.e., an intense fear of gaining weight or becoming fat), drive for thinness (i.e., relentless pursuit of thinness), and body-image distortion (i.e., perception of oneself as normal or fat despite emaciation), in a significant number of AN patients from Asian countries (Khandelwal, Sharan, & Saxena, 1995; Lee, Ho, & Hsu, 1993; Yager et al., 2006). In particular, studies in Hong Kong (Lee, 1991; Lee, Ho, & Hsu, 1993; Lee, Lee, Ngai, Lee,

& Wing, 2001) suggested that a considerable proportion of Chinese AN patients reported no fat phobia and used non-weight-related rationales to explain their food refusal and resultant emaciation.

Because overvaluation of weight and shape, manifested as fat phobia, drive for thinness, and body-image distortion, are not endorsed by a distinctive group of non-Western individuals who otherwise meet the diagnostic criteria for AN (Khandelwal et al., 1995; Lee et al., 1993), it is unclear what has motivated their efforts to achieve and maintain an abnormally low weight. It is possible that these AN patients with no weight and shape concerns are motivated by adaptive functions of EDs proposed to enhance or protect the self in Western patients (Vitousek & Ewald, 1993; Vitousek & Orimoto, 1993). These adaptive functions are likely to be universal across cultures and, combined with biased information processing and effects of caloric restriction (Fairburn, Cooper, & Shafran, 2003; Vitousek et al., 1998), may better explain the development and perpetuation of EDs in non-Western patients when overvaluation of thinness is absent.

Due to the rise of EDs in China (Chen & Jackson, 2008; Huon, Qian, Oliver, & Xiao, 2002; Lee, 1993; Lee, Ng, Kwok, & Fung, 2010), a small proportion of Chinese clinicians have worked with ED patients in their practice and experienced significant resistance to treatment from this population (Huang et al., 2012). Few studies, however, seem to have explored motivational issues in ED patients from China. Although overvaluation of thinness was denied as a motivation for weight loss by a substantial proportion of AN patients from Hong Kong (Lee et al., 1993; Lee et al., 2001), it was endorsed by an increasing number of AN and other ED patients from Hong Kong (Lee et al., 2010) and believed to be a major cause of EDs by Chinese clinicians from Mainland China (Huang et al., 2012). It is not clear whether or to what extent this overvaluation and related ego-syntonic motivations have

contributed to the development and maintenance of EDs in individuals from Mainland China. In addition, adaptive functions of EDs identified in Western patients may also cause resistance to change in their Chinese counterparts whether or not the latter are concerned about weight and shape. Thus, the current study was designed to investigate motivational patterns and related psychopathology in ED patients from Mainland China using clinical interviews and Western-developed questionnaires. The reliability and validity of translated measures were first examined to evaluate their applicability to the study population. Patterns of motivation and symptoms were then described and examined across the three diagnostic groups and over time, and perceptions of resistance to change were compared between patients and their clinicians. Finally, the relationship between motivation and psychopathology was explored cross-sectionally and over time.

Eating Disorders

The EDs are a group of mental disorders characterized by extreme overvaluation of weight and shape plus resulting disturbances in eating and weight control behaviors. The two main types of EDs are AN and BN according to the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA], 2000). In the DSM-IV-TR, diagnostic features of AN include the refusal to maintain a minimally normal body weight, intense fear of weight gain, distortion of body image, and lack of menstruation in females. Some individuals with AN control weight solely by excessive dieting and/or exercise, while others do so through a combination of restriction, bingeing, and purging (i.e., self-induced vomiting or misuse of laxatives, diuretics, or enemas). The former is classified as Restricting Type and the latter as Binge-Eating/Purging Type.

BN is defined by repeated episodes of binge eating followed by inappropriate compensatory behaviors to prevent weight gain, such as purging, fasting, and excessive exercise in the DSM-IV-TR (APA, 2000). Depending on whether purging is used to compensate for bingeing, BN is further categorized into Purging and Nonpurging Type. Unlike AN patients, individuals with BN can have a normal weight or be overweight, but both groups share the same essential feature of weight and shape concerns (APA, 2000).

A third category of EDs described in the DSM-IV-TR (APA, 2000) is Eating Disorders Not Otherwise Specified (EDNOS), which includes several variations of eating disorders that are considered clinically significant. Most of these disorders are similar to AN or BN but fail to meet the full diagnostic criteria for either one. For example, a type of AN-like EDNOS in females does not fulfill

the weight or amenorrhea criterion; a type of BN-like EDNOS fails to reach the frequency or duration required for a diagnosis of BN. Another well-recognized EDNOS is Binge-Eating Disorder (BED), featured by recurrent binge-eating episodes in the absence of inappropriate compensatory behaviors (APA, 2000).

EDs usually appear during adolescence or early adulthood, but some studies indicate that they can develop in childhood or middle and late adulthood as well. The estimated lifetime prevalence of AN and BN among Western females is approximately 0.5% and 1-3%, respectively (APA, 2000). If AN- and BN-like syndromes are included, the lifetime prevalence can increase to 3.7% for AN (Walters & Kendler, 1995) and 5.7% for BN in Western women (Kendler et al., 1991). A recent epidemiological study conducted in Portugal found a prevalence of 2.37% for EDNOS among young females, higher than the 0.39% for AN and 0.30% for BN (Machado, Machado, Goncalves, & Hoek, 2007). Another study in Finland indicated that lifetime prevalence rates of EDs in females age 18 were 2.6% for AN, 0.4% for BN, 7.7% for AN-NOS, 1.3% for BN-NOS, and 8.5% for sub-clinical EDs (Isomma, Isomma, Marttunen, Kaltiala-Heino, & Bjorkqvist, 2009). Most epidemiological studies have been conducted among females because they are much more likely than males to develop an ED. It is estimated that males account for 5% to 15% of patients with AN or BN and 35% of those with BED (APA, 2000).

EDs are serious mental disorders with complex underlying psychological and biological causes. They frequently co-exist with other psychiatric disorders, including depression, substance abuse, and anxiety disorders (Garfinkel et al., 1995). Patients with EDs may also develop numerous physical complications, some of which (e.g., cardiac conditions, electrolyte disturbances) can lead to sudden death (Comerci, 1990; McCallum et al., 2006; Mehler et al., 2004; Mitchell & Crow, 2006). A

considerable proportion of ED patients, especially AN patients, suffer from long-term morbidity (Jones, Halford, & Dooley, 1993; Nicolas, 2008; Rigotti, Neer, Skates, Herzog, & Nussbaum, 1991). Mortality rates in EDs, particularly in AN, are among the highest in all mental disorders (Button, Chadalavada, & Palmer, 2010; Crow et al., 2009).

Given the complexity of EDs, patients with these disorders are usually difficult to treat in clinical settings. A high proportion of ED patients fail to respond to outpatient treatment and up to two-thirds of AN patients require inpatient care at some point during the course of illness (Kennedy, Kaplan, & Garfinkel, 1992). Several reasons are speculated to account for the difficulty of treatment. First, many ED symptoms are ego-syntonic as they are either the goal of the individual with an ED (e.g., low body weight) or the means to achieve the goal (e.g., caloric restriction). Certain ED symptoms are also reinforcing because of their adaptive functions (e.g., feeling in control by restricting food, avoiding distress through binging). Therefore, it is often difficult for ED patients to give up their symptoms (Vitousek et al., 1998). Second, some non-motivational factors, including lack of insight, biased schematic processing, and effects of caloric restriction, may further contribute to treatment difficulty (Vitousek et al., 1998). Third, difficulty trusting professionals in treatment may add to the challenge in working with this population (Bruch, 1982). Fourth, the presence of other psychological disorders, personality disturbance, and physical complications and their interaction can also complicate the treatment of EDs (Kaplan & Garfinkel, 1999).

Regarding prognosis, the overall percentage of full recovery from EDs is modest (van Son, van Hoeken, van Furth, Donker, & Hoek, 2010; Nicolas, 2008). For example, information on 147 ED patients provided by general practitioners in the Netherlands indicated that about 57% of AN patients

and 61% of BN patients achieved full recovery (van Son et al., 2010). Generally, AN has a poorer prognosis than BN. A review of 119 outcome studies on AN over the second half of the 20th century suggested that, on average, less than one-half of treated patients recovered, one-third improved, and one-fifth remained chronically ill (Steinhausen, 2002). In contrast, a long-term outcome study with 173 BN patients in the United States (Keel, Mitchell, Miller, Davis, & Crow, 1999) reported that 69.9% were fully or partially recovered at a mean follow-up of 11.5 years. A recent review on the course and outcome of EDs in the United States revealed an overall remission rate of 50% for AN and 75% for BN after 10 or more years following intake (Keel & Brown, 2010). In this study, EDNOS showed more favorable short-term outcomes compared to AN and BN, but few differences remained evident between EDNOS and BN as the duration of follow-up increased to five years or above. Longitudinal studies in Western AN patients also indicated that this group may relapse after successful treatment, take years to fully recover from the disorder, and suffer from other psychosocial problems if staying chronically ill (Herpertz-Dahlmann et al., 2001; Löwe et al., 2001; Strober, Freeman, & Morrell, 1997).

Motivation for Change in Eating Disorders

Although professionals working with ED patients are dedicated to helping patients recover from their EDs, most patients do not seem to share the same goal when they enter treatment. In fact, patients with EDs are notorious for their resistance to change, especially their unwillingness to give up ego-syntonic symptoms such as overvaluation of thinness and weight control behaviors (Vitousek et al., 1998; Vitousek & Ewald, 1993). To protect perceived benefits provided by their symptoms, ED patients may consciously or unconsciously use denial, deception, or rationalization to resist intervention (Vitousek et al., 1998). Clinically, this resistance to change may manifest as inaccuracy

in self-report, refusal of treatment, ambivalence about recovery, difficulty with compliance, and premature termination of therapy (Vitousek et al., 1998). Thus, assessing and addressing motivational factors that contribute to resistance to change has become the first challenge in the treatment of EDs.

Motivational Issues in Eating Disorders

Different motives have been proposed to contribute to symptom maintenance and treatment resistance in ED patients. The core psychopathology, overvaluation of weight and shape, is considered to be the overarching motivation for symptoms in ED patients (Fairburn et al., 2003; Vitousek et al., 1998). This overvaluation may explain ego-syntonic motivations for patients to engage in disordered eating behaviors and resist giving up control over their eating and weight. Depending on the extent to which thinness is achieved and what strategies are used to control weight, different diagnostic groups of EDs may exhibit different patterns in their resistance to change.

For many AN patients, extremely low weight is the goal they have worked hard to achieve and other symptoms are the means they have used to reach this goal (Vitousek et al., 1998). Thus, any intervention that may risk them losing thinness is likely to be rejected. To maintain perceived accomplishment, they may deny, conceal, or rationalize their symptoms to avoid treatment. If they are forced into treatment, they may actively or passively resist weight gain in various ways. In addition to relentless pursuit of thinness, AN patients may also consciously or unconsciously use their disorder to enhance or protect important aspects of the self (Vitousek & Ewald, 1993). It has been suggested that symptoms and consequences of AN may serve to enhance self-worth and -respect, prove one's superiority, avoid the pressures of adulthood, or organize and simplify one's life (Vitousek

& Ewald, 1993). These perceived functions of AN may further strengthen the belief in the importance of thinness and increase resistance to change.

Patients with BN, similar to those with binge-eating/purging AN, also strive to be thin through restrictive and compensatory behaviors. But they are different from AN patients in that they fail to achieve thinness and have difficulty controlling symptoms that work against weight loss (e.g., binge eating). As a result, they may be eager to stop bingeing and purging but reluctant to forgo overvaluation of thinness and efforts to control weight. They may also like the emotion regulation functions of bingeing and purging and thus feel ambivalent about giving up these symptoms (Vitousek & Orimoto, 1993; Vitousek et al., 1998). Compared to AN patients, BN patients may be more negative about their syndrome and less consistent in their motivation to change different symptoms. Although individual with BN are more willing to seek treatment than those with AN, it is not uncommon for them to underreport their symptoms or withdraw from treatment prematurely due to shame or unwillingness to give up valued symptoms.

In addition to the overvalued belief in the importance of thinness and adaptive functions served by EDs, lack of self-efficacy for change may also contribute to treatment resistance in ED patients (Vitousek et al., 1998). Disturbance in satiety and recurrent binge eating may decrease one's confidence in regaining ability to eat normally. After years of efforts to control one's weight and shape, either successfully or unsuccessfully, the individual may also feel it impossible or difficult to eat and live in another way. Thus, insufficient self-efficacy may prevent patients from changing even when they are willing to give up thinness and adaptive functions of EDs.

As a variety of motivational factors may contribute to treatment resistance in ED patients, identifying specific motivational barriers for each individual patient may be essential, though not sufficient, for clinicians to understand resistance, enhance motivation, and facilitate change in their work with this patient population. Thus, researchers have adopted different motivational theories of behavior change to examine and enhance motivation for change in ED patients. These theories and their application to EDs are reviewed in the following section.

Motivational Theories of Behavior Change

Many theories, such as motivational interviewing (Miller & Rollnick, 1991, 2002), transtheoretical model (Prochaska & DiClemente, 1983; Prochaska, Redding, & Evers, 2002), and self-determination theory (Deci & Ryan, 1985, 2004), have studied motivational factors involved in the modification of a problem behavior or adoption of a healthy behavior. As all three have been applied to EDs (Geller & Dunn, 2011; Pelletier & Dion, 2007; Rieger et al., 2000; Touyz, Thornton, Rieger, George, & Beumont, 2003; Treasure & Ward, 1997; Vansteenkiste et al., 2005; Wilson & Schlam, 2004), a brief review of each is provided below.

Motivational interviewing (MI). The MI is a collaborative, person-centered counseling method designed to elicit and enhance intrinsic motivation for change by exploring and resolving ambivalence about change (Miller & Rollnick, 1991, 2002; Rollnick, Miller, & Butler, 2008). Originally developed for the treatment of substance use disorders, MI has been successfully applied to the modification of maladaptive behaviors and promotion of adaptive behaviors (Miller & Rose, 2009). As suggested by its definition, a large part of MI is focused on exploring the pros and cons of the status quo and of change to resolve ambivalence and shift one's decisional balance toward change. It also

emphasizes the importance of intrinsic motivation for change because successful change is unlikely when it is irrelevant to the individual's own values and concerns (Miller & Rollnick, 2002).

Motivation for change is defined by Miller and Rollnick (1991) as the probability that a person will enter into, continue, and adhere to a specific change strategy. Three critical components have been identified for this complex construct: willingness, ability, and readiness. Willingness to change refers to the perceived importance of a particular change (Miller & Rollnick, 2002). No one wishes to change if the status quo is exactly what one desires. Only when the current situation is sufficiently discrepant from one's ideal can motivation become strong enough to instigate change efforts. The more cons of the status quo and pros of change one perceives, the more likely the individual is to commit to change. Ability to change represents confidence or self-efficacy in making the actual change (Miller & Rollnick, 2002). Before people take action for change, they have to find a way that they believe works and are able to follow. The final component, readiness to change, indicates the relative priority of change in a person's life (Miller & Rollnick, 2002). A low priority change may never occur even when perceived as important and possible because it can always be put aside for other priorities.

MI has been adapted to address resistance and ambivalence to change in ED patients as a stand-alone intervention or an addition to treatment (Cassin, von Ranson, Heng, Brar, & Wojtowicz, 2008; Geller & Dunn, 2011; Treasure & Schmidt, 1997, 2008; Treasure & Ward, 1997). Because ED patients may highly value the ability to control weight and some adaptive functions of EDs as reviewed above, MI seems to be ideal for helping them explore perceived pros and cons of symptoms, examine the discrepancy between current and desired states, and consider the possibility of change. The style

of MI is also suitable for building and maintaining therapeutic alliance with ED patients who are usually ambivalent, resistant, and sometimes, hostile. Especially when core ED psychopathology is challenged, MI provides useful techniques to evaluate the utility of overvalued thinness. Preliminary evidence appears to support the use of MI to reduce treatment resistance and improve clinical outcomes in ED patients (Cassin et al., 2008; Dunn, Neighbors, & Larimer, 2003; Geller, Brown, & Srikameswaran, 2011; Geller, Brown, Srikameswaran, & Dunn, 2006; Treasure et al., 1999).

Transtheoretical model (TTM). The TTM is a comprehensive model that integrates diverse psychological constructs from various theories to explain and predict an individual's behavior change (Glanz, Rimer, & Lewis, 2002). It includes three constructs closely related to motivation for change (Prochaska et al., 2002). The first is stages of change, consisting of five sequential stages that reflect an individual's readiness to change in a temporal dimension. The precontemplation stage indicates no intention to change a behavior in the foreseeable future. Contemplation and preparation stages denote intention to make a change in the near or immediate future. Action and maintenance stages represent taking action to make or maintain a change. The construct of stages of change corresponds conceptually to the readiness to change in the MI model, and has been widely used as a measure of motivation for change (McConaughy, DiClemente, Prochaska, & Velicer, 1989; DiClemente et al., 1991). Despite its wide use, this motivational construct has been criticized for arbitrary definition, measurement difficulty, stage discreteness, sequential transition, and predictive utility (Littell & Girvin, 2002; Sutton 2001; Weinstein, Rothman, & Sutton, 1998; Wilson & Schlam, 2004).

The second construct associated with motivation for change in the TTM is decisional balance, referring to a person's relative weighing of the advantages and disadvantages of changing a behavior. Unless perceived benefits exceed perceived costs of a particular change, an individual is unlikely to take action to make the change. A large increase (about one standard deviation) in the pros of change and a moderate decrease (about half a standard deviation) in the cons have been found to correlate with progression from the precontemplation to the action stage of change across a variety of health behaviors (Prochaska, 1994; Hall & Rossi, 2008). This construct involves similar factors contributing to willingness to change proposed by MI.

The last motivational construct in the TTM, self-efficacy, is defined as a person's confidence in one's ability to make and maintain changes in situations that tempt the individual to engage in problem behavior. This concept is equivalent to ability to change in MI and is considered necessary for taking action to change. Self-efficacy has been observed to increase monotonically from precontemplation to maintenance (Hall & Rossi, 2004; Prochaska, & Marcus, 1994; Velicer, Prochaska, Fava, Norman, & Redding, 1998).

In addition to the three motivational constructs, the TTM also specifies ten processes of change used by individuals to move from the precontemplation toward the maintenance stage. The experiential processes of change are cognitive or affective strategies that involve consciousness raising, dramatic relief, self-reevaluation, environmental reevaluation, and social liberation; the behavioral processes of change are action oriented, including self-liberation, helping relationships, counter conditioning, reinforcement management, and stimulus control (Prochaska et al., 2002). Although it is suggested that individuals in earlier stages rely primarily on experiential processes while

those in later stages employ more behavioral processes (Prochaska & DiClemente, 1983; Prochaska, Velicer, DiClemente, & Fava, 1988), the proposed link of certain change processes to specific stages and temporal precedence of experiential over behavioral processes do not seem to be supported by available evidence (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2000; O'Leary & Wilson, 1987; Wilson & Schlam, 2004).

Although the TTM has been successfully applied to a variety of health behaviors (DiClemente, 2007; Evers et al., 2006; Johnson et al., 2008; Velicer, Redding, Sun, & Prochaska, 2007), its application in the field of EDs may have some limitations (Wilson & Schlam, 2004). One limitation is that ED patients are usually at different stages of change for different ED symptoms (e.g., ego-syntonic vs. ego-dystonic), making it difficult to determine a patient's stage of change. Another limitation is that sequential progression through stages of change may be complicated by differential improvement in motivation to change different symptoms (e.g., cognitive vs. behavioral) and fluctuations in motivation for change over the course of treatment (e.g., when overvalued beliefs in the importance of thinness are challenged). In addition, the match between stages of change and intervention strategies may not apply to ED patients as behavioral strategies are needed in early stages of treatment to normalize eating and weight, which, in turn, can help reduce treatment resistance and facilitate cognitive change in later stages of treatment.

Empirical studies have provided mixed support for the application of the TTM to EDs. In one study (Blake, Turnbull, & Treasure, 1997), pros of change increased from the precontemplation to the action stage as predicted by the TTM, but cons did not change across stages of change. Although generic stage-of-change measures modified for EDs were associated with clinical outcome in two

studies (Franko, 1997; Gusella, Butler, Nichols, & Bird, 2003), they failed to either predict treatment dropout and outcome or support stages of change and treatment matching in another four studies (Geller et al., 2001; Levy, Lucks, & Pike, 1998; Treasure et al., 1999; Wolk & Devlin, 2001). On the other hand, measures assessing stages of change for individual ED symptoms and allowing simultaneous endorsement of different stages showed better ability to predict concurrent ED behaviors, completion of recovery activities, weight gain, and treatment dropout (Dunn et al., 2003; Geller et al., 2001; Rieger et al., 2000).

Self-determination theory (SDT). As suggested by its name, the SDT emphasizes the role of autonomy in behavioral regulation and places different forms of motivation on a self-determination continuum (Deci & Ryan, 1985, 2004, 2008). Intrinsic motivation is the most self-determined motivation, referring to the pleasure or satisfaction inherent in a behavior that motivates a person to engage in the behavior (Deci & Ryan, 1985). In terms of behavior change, intrinsic motivation for change indicates that the change itself is an interesting, satisfying process that an individual wants to experience. Three subtypes of intrinsic motivation have been proposed to further illustrate this construct, including intrinsic motivation to know, to accomplish, and to experience stimulation.

Opposite to intrinsic motivation, extrinsic motivation is defined as incentives external to a behavior that cause an individual to engage in the behavior (Deci & Ryan, 1985). In this case, extrinsic motivation for change is separated from the change itself, and the change process does not need to be pleasant for the individual to make the change. That is, the individual may have to endure distress or overcome difficulties involved in the change to achieve a desired goal promised by the change. Deci and Ryan (2004) further distinguished four different forms of extrinsic motivation based

on the extent to which they are self-determined, from the most self-determined form, integrated motivation (i.e., motivation coherent to other self-structures), to identified motivation (i.e., motivation valued by the self), to introjected motivation (i.e., motivation related to obligations), and to the least self-determined form, external motivation (i.e., motivation associated with environmental contingencies).

The last form of motivation in the SDT, amotivation, denotes a relative lack of motivation to engage in a behavior. Individuals unmotivated for change may perceive no reason to make the change, feel little or no control of the change, or expect negative outcomes of the change (Ryan & Deci, 2000). Thus, they usually persist in the status quo or quit the change very easily.

In the framework of the SDT, intrinsic motivation is not the only form of motivation that is experienced as autonomous; integrated and identified motivation are also highly self-determined. These three forms of motivation have been put together as autonomous motivation to explain self-determined behaviors (Deci & Ryan, 2008). On the other hand, introjected and external motivations are grouped into controlled motivation to denote motivation intended to avoid internal or external pressure (Deci & Ryan, 2008). It is suggested that autonomous motivation, compared to controlled motivation, is associated with better performance, relationship, and well-being (Deci & Ryan, 2008).

The SDT has been used to explain both development of disordered eating behaviors (Kopp & Zimmer-Gembeck, 2011; Pelletier & Dion, 2007; Thøgersen-Ntoumani, Ntoumanis, Cumming, & Chatzisarantis, 2011; Verstuyf, Patrick, Vansteenkiste, & Teixeira, 2012) and motivation for change in the treatment of EDs (Mansour et al., 2012; Vansteenkiste et al., 2005; van der Kaap-Deeder et al.,

2014; Vandereycken & Vansteenkiste, 2009). According to the theory, ED patients often enter treatment with controlled rather than autonomous motivation as they are either pressured by their loved ones or motivated by guilt or shame (Vansteenkiste et al., 2005). In contrast, their motivation for maintaining ego-syntonic symptoms is largely autonomous, which may explain their resistance to change. To facilitate and sustain change in ED patients, it is suggested that clinicians help patients internalize the personal importance of recovery and integrate it with other self-structures (Vansteenkiste et al., 2005). This proposal seems to be consistent with functional and philosophical emphases in cognitive behavioral therapy for EDs (Vitousek et al., 1998). Several empirical studies have supported the importance of autonomous motivation for change in improving treatment engagement and outcomes in ED patients (Geller et al., 2004; Mansour et al., 2012; van der Kaap-Deeder et al., 2014; Vandereycken & Vansteenkiste, 2009).

Review of the three motivational theories reveals some common motivational factors hypothesized to influence behavior change, such as willingness to change or decisional balance, ability to change or self-efficacy, readiness to change or stages of change, and autonomy for change. These distinct but related components suggest that motivation for change is a multidimensional construct that changes dynamically across contexts and over time (Miller & Rollnick, 2002; Prochaska et al., 2002; Vitousek et al., 1998). Research in the application of these theories to EDs also indicates the importance to assess and enhance motivation for change in ED patients from different aspects and at various time points (Geller & Drab, 1999; Vitousek et al., 1998). In particular, exploring and identifying various purposes or functions of different ED symptoms and their relative importance to

individual patients may play an essential role in understanding and addressing treatment resistance in EDs.

Assessment of Motivation for Change

Given the important role of motivation in behavior change, a growing interest in studying motivational patterns to facilitate change has emerged across a variety of clinical fields (Burke, Arkowitz, & Dunn, 2002; Stotts, Schmitz, Rhoades, & Grabowski, 2002, Velicer et al., 1998). To understand and enhance motivation for change, many instruments have been developed to assess different aspects of this construct. Four types of motivation measures assessing decisional balance, self-efficacy, readiness to change, and autonomy for change have been identified in the literature and are briefly described below.

Measures of decisional balance. Decisional balance is proposed as an important component of motivation for change by both MI and TTM. This motivational construct is usually measured by asking individuals to rate the pros and cons of having or changing a problem. Examples of decisional balance measures include the Smoking Decisional Balance Scale (Velicer, Diclemente, Prochaska, & Brandenburg, 1985), Alcohol and Drug Consequences Questionnaire (Cunningham, Gavin, Sobell, Sobell, & Breslin, 1997), Decisional Balance Proportion (Collins, Carey, & Otto, 2009), and Pros and Cons of Eating Disorders Scale (Gale et al., 2006). It has been shown that the likelihood for a person to change increases as the ratio of pros to cons increases for change or decreases for the status quo (Janis & Mann, 1977). Decisional balance has also been found to correlate with readiness to change and predict behavior change (Collins et al., 2009; Pollak, Carbonari,

DiClemente, Niemann, & Mullen, 1998). In addition, specific pros and cons identified in an individual may potentially be used as targets for intervention to improve the individual's motivation for change.

Measures of self-efficacy. Another set of motivation measures uses self-efficacy as an indicator of motivation for change. Self-efficacy for change can be measured as perceived confidence or difficulty in implementing specific activities related to the change. Different scales have been designed to measure self-efficacy for controlled drinking (Sitharthan, Job, Kavanagh, Sitharthan, & Hough, 2003), smoking cessation (Dijkstra & De Vries, 2000), physical exercise (McAuley, 1992; 1993), and recovery activities for EDs (Geller et al., 2001). Self-efficacy has been found to predict intention to change, attempt to change, and maintenance of change (Dijkstra & De Vries, 2000; McAuley, 1992, 1993; Shaw, Dzewaltowski, & McElroy, 1992; Weinberg, Grove, & Jackson, 1992; Weiss, Wiese, & Klint, 1989). Research has also suggested that specification of the means to achieve the change can improve the validity of self-efficacy measures (Dijkstra, Bakker, & De Vries, 1997). This idea is consistent with improved predictive validity of situation-specific self-efficacy proposed by Bandura (1997).

Measures of readiness to change. Readiness to change is conceptualized by MI and TTM as priority of or proximity to change. Readiness measures have been widely used to evaluate motivation for change. A readiness index can be obtained by measuring perceived readiness level (Hesse, 2006; Rollnick, Mason, & Butler, 1999; Zimmerman, Olsen, & Bosworth, 2000), the stage of change a person is in (Ackard et al., 2009; DiClemente & Hughes, 1990; Geller & Drab, 1999; Rieger et al., 2000), or factors theoretically contributing to readiness to change such as problem recognition, ambivalence, and taking steps (Miller & Tonigan, 1996). Readiness measures have been found to

correlate with measures of decisional balance and self-efficacy (Rieger et al., 2002) and predict behavior change and treatment outcome (Carbonari & DiClemente, 2000; Hesse, 2006; Mitchell & Angelone, 2006).

It should be noted that conceptual and empirical problems with using stages of change as a measure of motivation for change have been raised and discussed extensively in the literature (Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003; Littell & Girvin, 2002; Pantaloni & Swanson, 2003; Sutton, 2001; Wilson & Schlam, 2004). For example, time frames used in the definition of different stages are considered arbitrary and alteration of time limits can easily change the composition of stages (Weinstein et al., 1998). It is also difficult to determine a person's stage of change as most individuals endorse items from more than one stage (Littell & Girvin, 2002). In addition, the five proposed stages of change are not supported by either cluster or factor analysis of stage-of-change measures (Blanchard et al., 2003; Miller & Tonigan, 1996). There is little evidence for sequential movement from earlier to later stages (Littell & Girvin, 2002). Furthermore, stages of change have failed to reliably predict behavior change or treatment outcome (Blanchard et al., 2003; Sutton, 2001). Matching treatment strategies to a particular stage of change does not seem to significantly improve treatment adherence or outcome (Pantaloni & Swanson, 2003; Project MATCH Research Group, 1997).

Measures of autonomy for change. Measures that examine the autonomy for change are mainly based on the SDT. A family of self-regulation questionnaires has been developed to assess the extent to which a person is self-determined to engage in a variety of behaviors, ranging from school work and prosocial behavior to EDs and treatment (Gagne, 2003; Levesque et al., 2007; Pelletier,

Tuson, & Haddad, 1997; Ryan & Connell, 1989; Vansteenkiste et al., 2013). Simple ratings of the degree to which a behavior change is perceived as “for self” have also been used to measure the autonomy for change (Geller & Drab, 1999). Results from studies in various behavioral domains have demonstrated a positive association of more internalized motivation to greater interest and effort, enhanced learning and performance, higher self-esteem, and better well-being (Chatzisarantis, Biddle, & Meek, 1997; Grolnick & Ryan, 1987; Miserandino, 1996; Ryan & Connell, 1989; Vallerand, 1997). Autonomous motivation has also been linked to better treatment engagement and sustained behavior change compared with controlled motivation in different patient populations (Ryan, Plant, & O’Malley, 1995; Senecal, Nouwen, & White, 2000; Williams & Deci, 2001; Williams, Freedman, & Deci, 1998; Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams, Rodin, Ryan, Grolnick, & Deci, 1998; Zuroff et al., 2007). For example, Williams et al. (1996) found that the more strongly people endorsed autonomous motivation to lose weight, the more successful they were in maintaining weight loss following treatment.

As reflected above, no single motivation measure has been designed to capture all hypothesized components of motivation for change. Although all motivation measures can provide helpful information about the strength of motivation for change and likelihood of behavior change, measures of decisional balance, in particular, appear to offer richer information on individual reasons for resisting or embracing a change that can be utilized to better understand and enhance motivation for change. This may be particularly important for the assessment of motivation in EDs given the ego-syntonic nature of these disorders.

To better understand motivation for change in ED patients, different motivation measures have been developed or adapted to examine constructs related to decisional balance (e.g., Bemis, 1986; Cockell, 2000; Gale et al., 2006; Serpell et al., 2004; Vitousek et al., 1995), self-efficacy (e.g., Bemis, 1986; Geller et al., 2001; Vitousek et al., 1995), readiness to change (e.g., Ackard et al., 2009; Geller & Drab, 1999; Rieger et al., 2000; Ward et al., 1996), and autonomy for change (e.g., Geller & Drab, 1999; Vansteenkiste et al., 2013) in this population. These measures allow researchers and clinicians to identify specific factors contributing to resistance to change, assess the level of motivation for change, and study the relationship between motivation and other clinical variables in ED patients. The following section reviews and summarizes findings from research on motivational patterns in Western ED patients.

Motivational Patterns in Western Eating Disorder Patients

Studies examining motivational issues in Western ED patients revealed that ED patients were more reluctant to change than individuals with phobias or obsessive-compulsive disorder (Bemis, 1986; Gray, 2008) and most of them (70-80%) did not engage in behavior change even after entering treatment (Martinez et al., 2007; Rieger et al., 2002). A review of treatment dropout found that the median dropout rate from ED treatment was 30% in clinical settings, with a range from 15% to 65% (Mahon, 2000). In two studies with Canadian ED patients, participants demonstrated lower motivation to change caloric restriction and compensatory behaviors than to change binge eating (Geller et al., 2004); their motivation to change behavioral symptoms increased faster than their motivation to change cognitive symptoms although both improved over the course of treatment (Geller, Zaitsoff, & Srikaneswaran, 2005). In addition, both AN and BN patients from the United Kingdom

perceived more cons than pros of their syndrome, especially the consequence of EDs and preoccupation with weight and shape (Gale et al., 2006).

Differences among diagnostic groups. A closer examination reveals some important differences in motivational patterns between the three DSM-IV-TR diagnostic groups in Western ED patients. Sunday, Halmi, and Einhorn (1995) reported that American individuals with restricting AN were least motivated to change food- and weight-related preoccupations and rituals compared to patients with binge-eating/purging AN and BN. Geller and her colleagues (2005) also found that Canadian AN patients showed the least improvement in motivation for change over the course of treatment among the three diagnostic groups. In addition, a study conducted among Spanish ED patients indicated that individuals with EDNOS were more reluctant to change than BN patients and as resistant as AN patients (Casasnovas et al., 2007).

In several studies on a measure of motivational barriers to change conducted in the United States and Canada (Bemis, 1986; Gray, 2008; Vitousek, 1997; Vitousek et al., 1995), AN patients were consistently more concerned about change than BN and EDNOS patients, particularly when recovery was linked to loss of ego-syntonic goals and adaptive functions. Specifically, individuals with AN were more concerned about losing ego-syntonic goals and positive reinforcement as a result of change and more likely to deny their problem than BN patients on the original measure (Bemis, 1986). On the revised measure, AN patients were more afraid of losing ego-syntonic goals and adaptive functions of their disorder, going through the process of change, and admitting their problem compared with BN and EDNOS individuals (Vitousek, 1997; Vitousek et al., 1995). In contrast, BN and EDNOS patients were very similar in their motivational patterns except that the former relied more on their disorder to

cope with negative emotions (Vitousek, 1997; Vitousek et al., 1995). In a later study (Gray, 2008) including participants from the previous study (Vitousek, 1997; Vitousek et al., 1995) and additional participants from another two sites, the AN group still scored the highest on their concerns about change and exhibited similar motivational patterns; the EDNOS group, on the other hand, demonstrated greater similarity to the AN than to the BN group in this study.

In a study of perceived benefits and costs of EDs among ED patients from the United Kingdom (Gale et al., 2006), AN patients perceived higher benefits and lower costs on most subscales compared to BN patients. Specifically, individuals with AN reported benefiting from the safety, structure, specialness, and accomplishment provided by their disorder. Conversely, BN patients endorsed the advantage of eating without gaining weight by having an ED. In addition, AN participants perceived guilt as a greater disadvantage of their disorder while BN individuals disagreed more strongly with the fitness benefit of their disorder (Gale et al., 2006).

Relationship among motivational factors. Different components of motivation for change have been found to correlate with each other as predicted by motivational theories in several empirical studies. In a group of Australian AN patients (Rieger et al., 2002), lower readiness to change was correlated with more concerns about change, more perceived pros and less perceived cons of the disorder, as well as lower self-efficacy to change symptoms. A study with ED patients in Canada (Geller et al., 2001) suggested that readiness to change was positively associated with anticipated difficulty of behavior change, an indicator of self-efficacy for change. In ED samples from the United Kingdom, perceived pros of EDs correlated more consistently than perceived cons with overall

ambivalence about change (Gale et al., 2006), and an increase in perceived pros of change was linked to progression from precontemplation to action (Blake et al., 1997).

Relationship between motivational factors and other clinical variables. The influence of motivational factors on other clinical variables in ED patients suggested by motivational theories also seems to be supported by empirical evidence. Research in Western ED patients indicated that lower motivation for change was associated with more severe psychopathology, higher dropout rates, lower adherence to treatment, poorer outcomes, and higher relapse risk (Ametller et al., 2005; Goldberg et al., 1980; Geller et al., 2011; Geller et al., 2001; Geller et al., 2004; Gray, 2008; Rieger et al., 2000; Serpell et al., 1999). For example, readiness to change was found to predict completion of recovery activities, decision to enroll in an intensive treatment program, and dropout from treatment in a sample of Canadian ED patients (Geller et al., 2001). For this sample, readiness to change caloric restriction emerged as the most consistent predictor of short-term outcome; autonomy for change was associated with symptom reduction at six-month follow-up (Geller et al., 2004).

Culture and Eating Disorders

Although initially considered culturally bound syndromes, EDs have emerged in non-Western countries following globalization of economy and culture (Hoek et al., 2005; le Grange et al., 1998; Mumford et al., 1992; Nobakht & Dezhkam, 2000; Tsai, 2000). A series of studies have been conducted to investigate EDs among non-Western populations. It is speculated that culture may play a role in the prevalence, etiology, symptom presentation, assessment, and treatment of EDs.

Incidence and Prevalence

Some studies have examined the prevalence of EDs in ethnic groups other than Caucasian Europeans and North Americans. In the United States, EDs appear to be more common in Native American females, equally common in Hispanic American females, and less common in African and Asian American females compared to their Caucasian counterparts (Crago, Shisslak, & Estes, 1996). Outside of the United States and other Western countries, diagnosable EDs seem to be relatively rare while the prevalence of disordered eating appears to be comparable to that in Western countries. Tsai (2000) reviewed studies on ED-related problems among Asian populations that were published in English between 1966 and 1999. The review found that estimated prevalence rates of EDs among Japanese females of different ages ranged from 0.02% to 0.12% for AN and 0.0032% to 2.9% for BN; in Chinese females, estimated prevalence rates of AN were 0.014 – 0.020% and BN 0.56 – 1.30%. In contrast, prevalence rates of body dissatisfaction ranged from 68% to 81% and dieting from 34% to 68% among women from different Asian countries in this review. The prevalence of ED attitudes, as assessed by surveys, in non-Caucasian women from South Africa, Fiji, and Iran was also comparable to that in Western women (Becker, Burwell, Gilman, Herzog, & Hamburg, 2002; le Grange et al., 1998; Nobakht & Dezhkam, 2000).

It seems that the incidence and prevalence of EDs and related problems in non-Western countries have increased following globalization of economy and culture. An early review of ED studies in Japan (Nogami, 1997) documented a rapid increase in the number of ED patients at institutions during the early 1980s, which continued into the 1990s. In a later review, Chisuwa and O'Dea (2010) concluded that the community prevalence of EDs in Japanese females had been

increasing significantly over the last three decades of the 20th century, although it remained relatively low compared to that in Western females. In addition, they suggested that the prevalence of body-image disturbance and ED-related problems also significantly increased from the 1990s to 2000s.

Similarly, EDs have become increasingly prevalent in China over the past few decades, not only in more developed regions like Hong Kong but also in less developed ones such as Sichuan (Chen & Jackson, 2008; Fu, Wang, Wang, & Chen, 2008; Guan & Wang, 2003; Huon et al., 2002; Lee, 1993; Lee & Lee, 2000; Liang, Guo, & Liu, 2008; Qian & Liu, 2002; Xiao, Qian, Huon, & Wang, 2001). In Hong Kong, Lee and Katzman (2002) noted that the number of patients referred to a university-affiliated psychiatric clinic for ED-related issues increased from two per year in the early 1990s to at least one per week by mid-2000. By comparing the socio-demographic characteristics of Chinese ED patients seen at this tertiary psychiatric clinic between 1987 – 1997 and 1998 – 2007, Lee et al. (2010) found that the number of patients with EDs in the second decade was nearly twice that in the first decade (128 vs. 67).

In Mainland China, the same trend has been observed. A large-scale study conducted among 1,246 Chinese female students aged 12 – 19 during the early 2000s identified nine (0.7%) cases meeting partial criteria for AN excluding the amenorrhea criterion and seven (0.6%) fulfilling criteria for BED (Huon et al., 2002). Six years later, the estimated total prevalence of EDs increased to 3.32% in a study with 1,486 female students from universities and high schools in Chengdu (Liang et al., 2008), with the highest prevalence rate (5.21%) reported among high school girls. Another study in the same year, which sampled 1,320 females and 783 males between 12 and 22 years old from various

regions of China, demonstrated a similar increase in prevalence of EDs (Chen & Jackson, 2008).

Based on the DSM-IV diagnostic criteria (APA, 1994), the study found that 2.3% of the participants had a diagnosable ED, with 1.1% meeting all but the amenorrhea criterion for AN, 0.3% all criteria for BN, 0.3% all but the frequency criterion for BN, and 0.4% all criteria for BED.

Risk and Maintenance Factors

The increasing prevalence of EDs around the world has inspired researchers to investigate the development of these originally “culture-bound syndromes” in non-Western cultures. It has been proposed that acculturation, culture clash, sociocultural transition, and indigenous cultural values may all contribute to the emergence of EDs in non-Western populations, each of which is discussed in more detail below.

Acculturation. Acculturation to Western society has been hypothesized to increase the desirability of thinness in non-Western populations, which, in turn, may result in eating pathology (Stice, 1994). Research findings regarding the role of acculturation, however, are ambiguous. Some researchers reported a positive association between acculturation levels and ED symptoms among Chinese college students, Asian women, and Hispanic women in the United States, and among Japanese females in the United Kingdom (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000; Davis & Katzman, 1999; Pumariega, 1986; Waller & Matoba, 1999). Others found no relationship between acculturation levels and disordered eating in African, Asian, and Mexican Americans, as well as in Japanese and Chinese female students from the United States (Akan & Grilo, 1995; Joiner & Kashubeck, 1996; Stark-Wroblewski, Yanico, & Lupe, 2005). Still others revealed a negative

correlation between acculturation levels and ED symptomatology in Hong Kong women studying at Australian universities (Lake, Staiger, & Glowinski, 2000).

Stark-Wroblewski et al. (2005) suggested that acculturation may be too broad a concept to exhibit a consistent relationship with eating pathology. Awareness and internalization of Western beauty standards may be sufficiently specific as an aspect of acculturation in this regard. Among Japanese and Chinese international students attending universities in the United States (Stark-Wroblewski et al., 2005), internalization of the thin ideal were found to predict ED symptoms after controlling for general distress and acculturation. These findings suggested that overvaluation of thinness may serve as a motivation for EDs in non-Western individuals.

Culture clash. The culture-clash hypothesis proposes that the conflict between parental control intended to reduce Western influences and children's attempts to emulate their Western peers may contribute to the development of EDs in non-Western females when they search for internal control that cannot be governed by their family (Mumford, Whitehouse, & Platts, 1991). Studies supporting this hypothesis have demonstrated the mediating effect of high levels of perceived parental control between cultural conflicts and eating psychopathology among Asian schoolgirls living in the United Kingdom (Ahmad, Waller, & Verduyn, 1994; McCourt & Waller, 1995). Thus, the attempt to claim autonomy from controlling parents may become another motivation for non-Western individuals to engage in ED behaviors.

To clarify the relative impact of acculturation and culture clash, Humphry and Ricciardelli (2004) conducted a study with acculturated and traditional Chinese Australian women and revealed both similar and different risk factors for eating pathology in these two groups. Specifically, low levels of

physical appearance satisfaction and high levels of parental overprotection or perceived pressure to lose weight from best female friends were risk factors for both acculturated and traditional women, while acculturated women who perceived higher levels of pressure to lose weight from their fathers or best male friends and traditional women who experienced higher levels of parental care reported the greatest eating pathology. Therefore, desire to be thin and search for autonomy may both contribute to the development of EDs in non-Western populations.

Sociocultural transition. The sociocultural transition model argues that rapid, profound social changes accompanied by urbanization, modernization, and upward mobility may increase risk for EDs in non-Western societies. Two studies have linked sociocultural transition to the increased prevalence of EDs and related problems in non-Western countries. One study in the Czech Republic, a country undergoing sociocultural transition in the 1990s, reported that the admission rate for EDs in females aged 10 – 39 increased from 2.6 per 100,000 in 1981 to 10.6 in 2001, and remained elevated through 2005 (Pavlova, Uher, Dragomirecka, & Papezova, 2010). A study in China using the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979) to investigate eating attitudes among high school girls also provided supportive evidence. This study (Lee & Lee, 2000) revealed a positive correlation between the proportion of participants exhibiting abnormal eating attitudes and the socioeconomic development level of their respective communities. Specifically, 10.8% of the participants in Hong Kong, 5.2% in Shenzhen, and 2.5% in Hunan demonstrated disordered eating attitudes on the EAT.

Some researchers have hypothesized that conflicts between traditional values and modern expectations during the sociocultural transition may lead to an identity crisis that triggers EDs in non-Western women (Gordon, 2001; Skarderud, 2001). As the body is directly associated with the

self, women may attempt to recreate self-identity through their physical body when traditional gender roles are no longer valued. For example, EDs in Japan were considered to provide a means of protesting traditional values imposed on Japanese women and avoiding gender responsibilities associated with maturation (Pike & Borovoy, 2004). The rise of EDs in South Africa, accompanying its tremendous social, political, and cultural changes, was also seen as an expression of psychological tension to choose between tradition and liberation (Szabo & le Grange, 2001). The authors suggested that because success and wealth are normally equated with discipline among South African women, caloric restriction may be perceived as a symbol of discipline and thus believed to bring success and power in a modernizing society by these women. In these cases, EDs seem to create a new identity that represents independence, freedom, success, and power in modern societies for these struggling women.

Western influence may also play a role in the development of EDs in non-Western societies undergoing sociocultural transition. It is proposed that when traditional gender images are disrupted by rapid social changes in non-Western cultures, exposure to Western media that associate thinness with social status and economic power may provide the young generation a role model for self-fulfillment (Becker, 2004). Becker et al. (2002) documented an increased prevalence of disordered eating attitudes and behaviors among Fijian adolescent girls after three years of television exposure. Narrative data from interviews with 30 participants who reported eating disturbance explicitly associated the changing attitudes toward diet, weight loss, and beauty ideals with exposure to Western media imagery; however, their pursuit of a thin body was not characterized as an end in itself but a means to improve career opportunities, economic status, and social position (Becker, 2004).

Therefore, pursuit of thinness in some non-Western females may be motivated by the perceived link between thinness and socioeconomic success after exposure to Western culture.

Indigenous cultural values. In addition to the impact of cultural and economic globalization, indigenous values specific to each culture may also play a role in the development of EDs for a particular population. A recent study in Mainland China indicated that preoccupation with facial appearance, not weight or shape, emerged as one of the strongest predictors of a diagnosable ED (Jackson & Chen, 2007). Concerns about poverty and lack of food were found to contribute to the development of EDs in female adolescents from South Africa and Hong Kong (le Grange, Louw, Breen, & Katzman, 2004; Ma, 2007). Similarly, ED behaviors in some Belizean women were not driven by desire to be thin but by motivation to get a better job in tourism, wish to meet family expectations, or concerns about family reputation as the culture embraces diverse beauty ideals and values self-care (Anderson-Fye, 2004). Although drive for thinness is not directly linked to the emergence of EDs in these cases, other positive values seem to be attached to ED behaviors and become extrinsic motivations for these behaviors.

It appears that diverse motivational factors may have contributed to the development of EDs in women from non-Western cultures. Except for adoption of the thin ideal, many factors reflect positive values that are associated with thinness in Western countries, such as self-control, autonomy, identity, empowerment, discipline, reputation, and socioeconomic success. Others represent avoidance functions of EDs, for example, avoidance of gender responsibilities and maturation. These motivations for EDs, indeed, do not differ significantly from what have been described in Western ED patients. For example, sense of accomplishment or self-control, admiration or attention from others,

avoidance of responsibility or sexuality, regulation of tension or emotion, and provision of simplicity or predictability have all been proposed as motives for symptoms in Western ED patients (Bemis, 1983; Slade, 1982; Vitousek & Orimoto, 1993).

In terms of the maintenance of EDs, both motivational and non-motivational factors are proposed to contribute to the perpetuation of symptoms in affected individuals. Overvaluation of weight and shape maintains ego-syntonic symptoms, which, in turn, reinforce this core psychopathology. Adaptive functions derived from symptoms and consequences of EDs also positively or negatively reinforce the maintenance of EDs. These motivational factors may vary in their presence and importance from individual to individual and across different cultures. On the other hand, similar non-motivational factors may contribute equally to the maintenance of EDs in non-Western and Western patients. For example, symptoms resulting from prolonged caloric restriction, such as binge eating, food preoccupation, impaired self-control, depression, and rigidity, are maintained by biological mechanisms that are universal across cultures (Keys, Brozek, Henschel, Mickelson, & Taylor, 1950; Vitousek, 2004; Vitousek, Manke, Gray, & Vitousek, 2004). Conditioning and selective information processing may also perpetuate EDs in a relatively automatic manner regardless of the original reason for self-starvation (Vitousek & Ewald, 1993; Vitousek & Hollon, 1990). In addition, accompanying depression in many ED patients may contribute to symptom maintenance independently from overvaluation of thinness by reducing the perceived possibility to change (Vitousek et al., 1998).

Symptom Expression

Differences in cultural norms for the expression of psychological distress have been well recognized in the literature on cross-cultural psychopathology (Kleinman, 1980), which often result in different presentations of psychopathology. For example, somatization of depression in Chinese individuals has been widely cited as an evidence for cultural variations in symptom presentation (Parker, Gladstone, & Chee, 2001; Ryder & Chentsova-Dutton, 2012). This somatic symptom emphasis in presenting psychological distress, however, does not imply the absence or denial of psychological symptoms (Simon, VonKorff, Piccinelli, Fullerton, & Ormel, 1999). Rather, it reflects a pattern of symptom reporting shaped by an individual's cultural background (Parker, Cheah, & Roy, 2001; Ryder et al., 2008).

Different emphasis in symptom presentation may also result in observed cultural differences in the presentation of core ED psychopathology (i.e., overvaluation of weight and shape) between non-Western and Western patients. In Western culture, this overvaluation is manifested cognitively by fat phobia, drive for thinness, and body-image distortion and behaviorally by weight control behaviors. In non-Western cultures, cognitive symptoms of this core psychopathology seem to be deemphasized while behavioral symptoms remain largely the same. The following provides further information on cultural differences in symptom presentation between non-Western and Western ED patients.

Fat phobia. Lee (1991) first reported the lack of fat phobia in 16 Chinese AN patients from Hong Kong, who exhibited emaciation, food refusal, and amenorrhea but reported no intense fear of fatness, drive for thinness, or body-image distortion. A later study of 70 Chinese AN patients in Hong

Kong (Lee et al., 1993) revealed that 41 of them did not exhibit fat phobia throughout the course of their illness. These non-fat-phobic individuals attributed their food refusal and emaciation to epigastric bloating (31.4%), lack of appetite or hunger (15.7%), or naturally eating less (12.9%). Among a range of patient characteristics and clinical features examined in this study, non-fat-phobic patients had a lower pre-morbid weight and were less likely to exhibit bulimic symptoms compared to their fat-phobic counterparts.

The lack of fat phobia has also been observed in a subgroup of AN patients from other Asian cultures, like India, Singapore, and Japan (Khandelwal & Saxena 1990; Ong & Tsoi, 1982; Suematsu, Ishikawa, Kuboki, & Ito, 1985), less affluent societies in Europe, such as Czechoslovakia and Poland (Faltus, 1986; Kasperlik-Zaluska, Migdalska, Kazubska, & Wisniewska-Wozniak, 1981), as well as developed Western countries, including the United States, Australia, and the United Kingdom (Banks, 1992; Norvell & Cooley, 1986; Rieger, Touyz, Swain, & Beaumont, 2001; Soomro, Crisp, Lynch, Tran, & Joughin, 1995). Nonetheless, it appears to be more common among non-Caucasian patients with AN. In Lee et al.'s (1993) study, 58.6% AN patients from Hong Kong were characterized as non-fat-phobic. A chart review of AN patients in the United Kingdom revealed that 12% of non-Caucasian patients versus 5% of Caucasian patients denied concerns about fatness (Soomro et al., 1995).

Rather than a categorical, static characteristic, fat phobia may vary over time in both fat-phobic and non-fat-phobic AN patients. As noted by Lee et al. (2001), 19% of Hong Kong patients with non-fat-phobic AN endorsed fat phobia as one of their rationales for food refusal a year prior to clinical presentation. Although fat phobia was the most commonly selected reason for caloric restriction

among fat-phobic patients over the year before intake, it became less prevalent in this group as AN progressed over time. In another case study of four AN patients from Hong Kong (Ngai, Lee, & Lee, 2000), four different patterns in the change of fat phobia were identified: present consistently, present and then absent, absent and then present, and absent consistently.

Over the past few decades, fat phobia seems to have become increasingly common in Chinese AN patients. In a study examining the clinical charts of AN patients from a tertiary psychiatric clinic in Hong Kong (Lee et al., 2010), a decrease in the proportion of non-fat-phobic patients and an increase in the proportion of fat-phobic patients were noted from 1987 to 2007. This trend appears to coincide with what has been observed in Western populations. In the mid-20th century, most AN patients in developed Western countries, such as the United Kingdom, Canada, Italy, and Berlin, did not express fear of weight gain (Shorter, 1994); in the literature, their self-starvation was attributed to an unwillingness to eat, a fear of food, an aversion to food, or a loss of appetite (Nemiah, 1958). Beginning in the 1970s, the fear of weight gain came to be perceived as the major cause of self-starvation in the underweight (Russell, 1970; Bruch, 1973; Shorter, 1994) and was included as an essential diagnostic feature of AN by the third edition of the DSM (DSM-III; APA, 1980).

Drive for thinness. The drive for thinness, another symptom derived from overvaluation of weight and shape, has also been found to be relatively low in individuals from non-Western cultures. A case study of two AN patients from Hong Kong (Kam & Lee, 1998) reported their difference in drive for thinness based on clinical charts and the Eating Disorder Inventory (EDI; Garner, 1991; Garner, Olmstead, & Polivy, 1983). The patient who developed AN in Canada endorsed both drive for thinness and fat phobia, while the other who developed AN in Hong Kong exhibited neither symptom.

In a later study using clinical assessment combined with the EDI (Lee, Lee, & Leung, 1998), Hong Kong patients with restricting AN showed a significantly lower drive for thinness compared to Canadian patients with restricting AN and Hong Kong female undergraduates. Similarly, the drive for thinness in Japanese patients with restricting AN or BN was also significantly lower than that in their North American counterparts when measured by the EDI (Pike & Mizushima, 2005). In another cross-cultural study with AN patients from East and West Berlin (Steinhausen, Neumarker, Vollrath, Dudeck, & Neumarker, 1992), AN patients from East Berlin scored significantly lower on the Drive for Thinness subscale of the EDI than AN patients from West Berlin and as low as normal individuals from East Berlin.

It should be noted that four studies of AN patients in Western countries (i.e., Italy, Belgium, and Canada) using the EDI and Eating Disorder Examination (EDE; Fairburn & Cooper, 1993; Fairburn, Cooper, & O'Connor, 2008) also identified a subgroup with low drive for thinness (Abbate-Daga, Piero, Gramaglia, Gandione, & Fassino, 2007; Dalle Grave, Calugi, & Marchesini, 2008; Ramacciotti et al., 2002; Vervaet, van Heeringen, & Audenaert, 2004). The proportion of Western AN patients reporting low levels of drive for thinness ranged from 17% (Ramacciotti et al., 2002) to 38% (Abbate-Daga et al., 2007) across these studies. In two of the studies, patients with low drive for thinness cited bloating, nausea, and postprandial discomfort as reasons for caloric restriction (Dalle Grave et al., 2008; Ramacciotti et al., 2002), similar to those used by non-fat-phobic AN patients from Hong Kong (Lee et al., 1993). A comparison between AN patients with low and high drive for thinness in these studies further indicated that the former exhibited less severe eating pathology, as demonstrated by lower EDI

or EDE scores and lower rates of bingeing and purging (Abbate-Daga et al., 2007; Dalle Grave et al., 2008; Ramacciotti et al., 2002; Vervaet et al., 2004).

As pointed out by Becker, Thomas, and Pike (2009), evidence of cultural differences in fat phobia and drive for thinness is largely provided by case studies and theoretical reviews. They argued that most studies supporting the non-fat-phobic variant of AN in non-Western populations were conducted by a single research group in Hong Kong, in which diagnoses of fat-phobic and non-fat-phobic AN were based primarily on clinical judgment. The meta-analysis showed that the standard mean difference in eating pathology between fat-phobic and non-fat-phobic AN patients from non-Western cultures was similar to the difference between AN patients with high and low drive for thinness in Western samples (Becker et al., 2009). In this review study, both non-Western AN patients without fat phobia and Western AN patients with low drive for thinness were found to have less eating pathology but similar physical status compared to their respective counterparts with typical AN (Becker et al., 2009). As reviewed above and summarized by Becker et al. (2009), the lack of fat phobia and low drive for thinness were also identified in a proportion of Western AN patients, who used similar reasons for caloric restriction as non-fat-phobic AN patients from non-Western cultures. Therefore, it seems that available data on non-fat-phobic AN may not support a culturally specific diagnosis sufficiently distinct from AN defined in the DSM-IV-TR (APA, 2000).

Although non-fat-phobic AN patients in Lee's (1991) study reported no fear of weight gain or drive for thinness, they seemed to be as resistant to weight gain as their fat-phobic counterparts. This inconsistency between cognition and behavior has led to a revision of diagnostic criteria for AN in the fifth edition of the DSM (DSM-5; APA, 2013), which added persistent behavior interfering with weight

gain as an alternative to intense fear of weight gain or fatness in the second criterion for a diagnosis of AN. There may be two possibilities that account for the absence of cognitive resistance in the presence of behavioral resistance to weight gain. One is that self-starvation is motivated and sustained by non-weight-related goals although the behavior inevitably prevents weight gain. Another is that pursuit of thinness is the reason for self-starvation but is denied or ignored for different purposes. Specifically in Asian cultures, respect for authority, avoidance of conflict, and emphasis on conformity may prevent disclosure of opinions believed to be different from parents or professionals. In either case, the behavioral resistance to weight gain is likely to be motivated by important reasons given the efforts needed to maintain an extremely low weight.

Body-image distortion. Body-image distortion is another manifestation of core ED psychopathology, which is also reported to be absent in a subgroup of non-Western AN patients. For example, a study with 16 non-fat-phobic AN patients from Hong Kong found that distorted body image was absent in nine patients (56%) and weakly present in the other seven (Lee, 1991). In a study of five AN patients from India who presented with refusal to eat, persistent vomiting, marked weight loss, and amenorrhea, four (80%) did not display body-image distortion, fear of maintaining a normal weight, desire for thinness, or preoccupation with food (Khandelwal et al., 1995). In addition, distorted body image was also absent in a small portion (16%) of 49 Singapore patients with EDs (Ung, Lee, & Kua, 1997).

Meanwhile, atypical AN patients without body-image distortion have been identified in Western populations as well. Strober, Freeman, and Morrell (1999) reported that 21% of AN patients admitted to an ED treatment program in the United States between 1980 and 1985 did not exhibit body-image

distortion or fear of weight gain. Distorted body image was also absent in the majority (80%) of Italian AN patients with low drive for thinness (Ramacciotti et al., 2002).

For individuals with weight and shape concerns, distorted body image may develop from frequent body checking, selective attention, and biased information processing. When thinness is overvalued, these individuals may never see their body as thin as they want regardless of the actual size. In this case, body-image distortion is consistent with fat phobia and drive for thinness, all of which help motivate patients to continue losing weight despite thinness. On the other hand, individuals with no weight and shape concerns may not pay particular attention to their body or subjectively distort their body image. Their acknowledgement of emaciation, however, does not imply that they recognize the seriousness of their low weight or the need to regain weight. In addition, body-image distortion may gradually emerge during prolonged starvation, which may or may not be linked to overvaluation of weight and shape. As mentioned above, Asian cultural values may also inhibit expression of distorted body image in patients from Asian countries.

In summary, fat phobia, drive for thinness, and body-image distortion can be seen as cognitive expression of weight and shape concerns, which have been reported to be absent to various degrees in both non-Western and Western ED patients. In patients with no symptoms of weight and shape concerns, somatic rationales are often used to explain self-starvation and resultant emaciation. The lesser tendency to express overvaluation of weight and shape in Asian patients with EDs may be related to stigmatization of psychopathology, respect for authority, emphasis on modesty, and avoidance of conflict with significant others. Nonetheless, cultural variations in presentation of core ED psychopathology do not necessarily reflect differences in core psychopathology underlying EDs.

Given that AN patients reporting no weight and shape concerns have used similar weight control behaviors to maintain an abnormally low weight that otherwise is impossible as those endorsing such concerns in both non-Western and Western populations, some common psychological processes may underlie this set of behaviors. It is likely that the differences between non-Western and Western ED patients are quantitative rather than qualitative.

Behavioral symptoms. Some cultural variations in behavioral manifestations of EDs have also been documented. Lee (1991) reported that excessive exercise was largely absent among 16 non-fat-phobic AN patients from Hong Kong. Their self-reported “binges” were mild (e.g., 150 g of biscuits and 100 g of cake at one time) to moderate (e.g., 200 g of biscuits and 500 g of bread at one time) and not secret in nature, usually substituting for regular meals and encouraged by relatives. Fasting was more commonly used than vomiting or laxatives to compensate for binge eating (Lee, 1991). Another study conducted in a community sample of female Hispanic, Asian, African, and European Americans with EDs showed that Hispanic Americans were most likely to use diuretics and African Americans laxatives as their compensatory strategy, respectively (Cachelin et al., 2000).

Assessment and Diagnosis

Cultural issues in the assessment and diagnosis of EDs that have been raised so far include the use of DSM diagnostic criteria with non-Western populations, dependence on Western-developed measures, and different cultural norms of eating (Becker, 2007; Cummins, Simmons, & Zane, 2005). Each of these is briefly reviewed below.

Use of DSM diagnostic criteria. Because intense fear of gaining weight or becoming fat is a required diagnostic criterion in the DSM-IV-TR (APA, 2000), absence of this symptom may exclude a

substantial proportion of non-Western AN patients from a DSM-IV-TR diagnosis. In contrast, the Chinese Classification of Mental Disorders (3rd ed.; CCMD-3; Chinese Psychiatric Society [CPS], 2001; Chen, 2002) does not require the presence of fat phobia to diagnose AN; instead, it is listed as a possible manifestation. This problem, as mentioned earlier, has been recognized and remedied in the DSM-5 (APA, 2013) by adding persistent behavioral resistance to weight gain as an alternative to fat phobia.

In addition, physical differences between ethnic groups may cause problems in the diagnosis of AN when the DSM weight criterion (i.e., BMI < 17.5) is used with non-Western populations. A meta-analysis study comparing the body mass index (BMI) of multi-ethnic groups (Deurenberg, Yap, & van Staveren 1998) showed that when compared with Caucasians, African Americans and Polynesians had higher BMI means while Ethiopians, Chinese, Thais, and Indonesians had lower BMI means. Thus, Asian individuals are more likely to have a BMI lower than 17.5 in the absence of caloric restriction, which may make the DSM weight criterion inappropriately high for these ethnicities in the diagnosis of AN. This concern, however, is partially mitigated by the fact that Asian populations are recommended to use the same BMI cutoff of 18.5 for underweight as other ethnicities although a lower BMI cutoff of 23 for overweight is proposed (World Health Organization [WHO], International Association for the Study of Obesity [IASO], & International Obesity Task Force [IOTF], 2000). In fact, the same weight cutoffs (i.e., 85% of normal body weight or a BMI of 17.5) have been used in both CCMD-3 and DSM-IV-TR diagnostic criteria for AN (APA, 2000; CPS, 2001).

Different from the BMI, Asian ethnic groups demonstrated a higher percent body fat than Caucasians and African Americans when the BMI, age, and gender were matched (Deurenberg-Yap,

Schmidt, van Staveren, & Deurenberg, 2000). This paradoxical relationship between ethnic differences in BMI and body fat percentage may also have implications for the application of the amenorrhea criterion in the diagnosis of AN to Asian populations because the percent body fat is more closely related to menstrual function than weight per se (Frisch & McArthur, 1974). As Asian ethnic groups tend to have a higher percent body fat at the same BMI level compared to Western populations, Asian patients with AN may still have menstrual cycles when their BMI falls below the diagnostic cutoff of 17.5.

The speculated problems with the use of DSM weight and amenorrhea criteria for the diagnosis of AN in non-Western populations seem to be partially confirmed by a large-scale survey of ED symptomatology conducted in Mainland China (Huon et al., 2002). In this study, 348 (27.9%) of 1,246 girls aged 12 to 19 had a BMI under 18, while only nine (0.7%) participants fulfilled a partial diagnosis of AN in the absence of amenorrhea and dieting. It should be noted that the age-adjusted BMI cutoffs for underweight (i.e., <5th percentile for age) in American adolescent girls aged 12 to 19 are also below 18 (ranging from 14.8 to 17.4), according to recent Centers for Disease Control and Prevention (CDC) growth charts (CDC, 2000). Hence, the finding that a large proportion of Chinese female adolescents have a BMI under 18 may not indicate that they are naturally leaner than their American counterparts.

Having recognized the aforementioned problems and other issues associated with weight and amenorrhea criteria in the DSM-IV-TR (APA, 2000), the newly published DSM-5 (APA, 2013) has made the weight criterion more context-specific and removed the amenorrhea criterion. Compared with DSM-IV-TR criteria, current DSM-5 diagnostic criteria for AN are more similar to corresponding

CCMD-3 criteria. In the CCMD-3 (CPS, 2001), a diagnosis of AN requires marked weight loss that is self-imposed and results in an abnormally low weight, persistence of symptoms for at least 3 months, and exclusion of weight loss caused by medical conditions, while fat phobia and amenorrhea are listed as possible manifestations.

Dependence on Western-developed measures. Linguistic and cultural equivalence in translation and cultural variations in symptom presentation may cause assessment issues when Western-developed instruments are applied to non-Western populations. Specifically for the assessment of EDs, differences in presentation of core ED psychopathology between non-Western and Western patients may affect the cross-cultural validity of the measures of eating pathology. For example, the EAT misclassified 88.6% of non-fat-phobic AN patients from Hong Kong as non-cases when the conventional cutoff of 20 was used (Lee, Kwok, Liao, & Leung, 2002). Non-fat-phobic AN patients from Hong Kong also showed an atypical profile on the EDI (Lee et al., 1998), with a significantly lower score (0.18) on the Drive for Thinness subscale compared to Hong Kong female undergraduates (3.97) and Canadian patients with restricting AN (11.3).

It should be noted that there is also evidence supporting the cross-cultural validity of ED measures in Chinese population. A study on the psychometric properties of the EDI in AN patients from Beijing revealed that AN patients obtained significantly higher scores on the Drive for Thinness subscale than normal controls from Beijing (Zhang & Kong, 2004). Another study with female college students from Beijing also demonstrated good convergent validity of the Drive for Thinness subscale on the EDI (Lei, Wang, Zhang, Bi, & Chen, 2005). In addition, the EDE demonstrated satisfactory

internal consistency, discriminative validity, and criterion validity in ED patients from Hong Kong, including those with no fat phobia (Lau, Lee, Lee, & Wong, 2006).

As shown above, the cross-cultural validity of the Western-developed measures of EDs in non-Western populations may depend on a variety of contextual factors, such as assessment formats and populations. For typical ED patients from non-Western cultures, Western-developed measures seem to be generally applicable. For non-fat-phobic AN patients, in particular, in-depth interviews conducted by a clinician experienced in EDs to elicit detailed information about cognitive and behavioral symptoms may provide a more accurate assessment.

Differences in cultural norms. Variations in cultural norms of eating can also introduce problems into the assessment and diagnosis of EDs. In Fijian culture, for example, periodic feasting followed by using indigenous herbal preparations as purgatives to compensate for over-consumption is culturally sanctioned and therefore not considered a problem (Becker, 1995). Similarly, the use of herbal remedies to cleanse the body, especially after overindulgence, is also prevalent and thought to promote health by many people in China. As a result, this kind of purging behavior, as opposed to self-induced vomiting, may not be taken as seriously in these cultures as in Western societies, and thus a diagnosis may not be made if an individual uses only herbal remedies to purge. Clinicians inexperienced with EDs may not even ask about the use of herbs for purging in their assessment of EDs.

Treatment and Management

Studies conducted in Western societies, such as the United States and Australia, have found that a large number of patients with EDs in primary care and community settings are not engaged in

treatment and most are not receiving optimal treatment (Cachelin & Striegel-Moore, 2006; Hay, Marley, & Lemar, 1998). Among those who seek treatment in ED clinics, only 3% to 5% are minority women, even in cities with large minority populations in the United States (Cachelin et al., 2000). In a study conducted in Los Angeles (Cachelin & Striegel-Moore, 2006), Mexican Americans with EDs were less likely to seek treatment for their disorder and, when they did, to receive a diagnosis or treatment. In addition, European Americans were more likely to seek help from psychotherapists and psychiatrists and to receive psychotropic medications in their treatment, whereas Mexican Americans more frequently visited general practitioners for weight concerns and received prescriptions for diet pills.

When the efficacy of medication in the treatment of AN was doubted in the West (Yager et al., 2006), treatment of AN in Hong Kong was still based on a biomedical model with emphasis on psychiatric diagnosis followed by medication (Ma, Lai, & Pun, 2004). It appeared, however, that Chinese clinicians had begun to realize the importance of an interdisciplinary approach to EDs. In a case report from Mainland China (Huang et al., 2006), an interdisciplinary approach was adopted in the treatment of six adolescents with EDs, which included medical management for physical complications, cognitive-behavioral therapy for eating attitudes and behaviors, and psychiatric medication for severe body-image distortion or treatment resistance.

Regarding family therapy for adolescents with AN, Chinese clinicians seem to hold different attitudes. Chen (1990) from Mainland China recommended that parents be excluded from treatment because they usually interfered with treatment, which was a common attitude in the West several decades ago. Ma and Lai (2009) from Hong Kong, on the other hand, argued that family therapy should be included to facilitate weight regain and symptom reduction. In their study conducted in

Hong Kong, family therapy was perceived by participants as helpful with patients' eating problems and psychological well-being, with parents' psychological distress and coping, and with family conflicts (Ma & Lai, 2009). They indicated that parents of AN patients in their study were highly motivated and actively engaged in treatment, with an engagement rate of 86% (Ma & Lai, 2009). In contrast, Ma (2007a) reported that only 20% of parents in Mainland China agreed to participate in family therapy for their children's EDs, which was quite low compared to the participation rate of parents in Hong Kong. In addition, filial piety to parents was reported as a motivation for recovery while financial difficulty and inadequate knowledge of health services as barriers in AN patients from poor families in Hong Kong (Ma, 2007b).

Purpose of the Study

Even though only a small proportion of Chinese clinicians reported having actually worked with ED patients in their practice in a recent survey (Huang et al., 2012), they perceived relatively high resistance to treatment in this patient population compared to other patient populations they had worked with. In addition, Chinese clinicians and AN patients expressed different opinions about whether weight and shape concerns were the principal motivation for self-starvation (Huang et al., 2012; Lee et al., 1993; Lee et al., 2001). It has been suggested that ego-syntonic motivations based on overvaluation of thinness (e.g., drive for thinness, avoidance of weight gain, achievement of an identity) and adaptive functions of EDs (e.g., regulation of emotion or relationship, avoidance of responsibility or maturity, reduction of complexity and uncertainty) may interact with each other to result in significant resistance to change observed in Western ED patients (Gale et al., 2006; Gray, 2008; Vitousek et al., 1995; Vitousek & Orimoto, 1993; Vitousek et al., 1998). It is possible that

similar motivational factors also constitute barriers to recovery in Chinese ED patients. For Chinese ED patients endorsing weight and shape concerns, both weight-related and non-weight-related motivations identified in Western ED patients may similarly contribute to their resistance to change. For Chinese ED patients reporting no overvaluation of weight and shape, non-weight-related reasons may lead them to self-starvation and prevent them from recovery independently from weight-related ones.

As few studies seem to have explored motivational issues in ED patients from China despite their importance in addressing treatment resistance, the current study aimed to investigate motivational patterns and related psychopathology in Chinese ED patients via clinical interviews and Western-developed questionnaires. First, the psychometric properties of Western-developed measures in Chinese ED patients were evaluated to provide evidence for their use in this population. Second, patterns of motivation and psychopathology in Chinese ED patients were described and explored across the diagnostic groups and over time, and perceptions of motivational barriers to recovery were compared between patients and their clinicians. Finally, the cross-sectional and longitudinal relationships between motivational factors and clinical symptoms were examined.

Several sets of hypotheses were developed for the current study based on previously reviewed theories and empirical studies. Given that motivational factors had not been well studied in Chinese ED patients from Mainland China and that measures translated for the study were used in this population for the first time, proposed hypotheses are largely exploratory and descriptive. These hypotheses are presented below in three sets organized by research objectives.

Psychometric Properties of Study Measures

Both reliability and validity were examined to evaluate the psychometric properties of Western-developed measures in Chinese ED patients. It was hypothesized that if similar motivational and symptom constructs exist in Chinese as in Western ED patients and can be accurately measured by Western-developed instruments, these measures would demonstrate adequate reliability and validity. Specifically, high internal consistency of the subscales or total scale, whichever applies to the examined measure, would provide initial evidence for reliability. Convergent validity would be demonstrated by positive correlations between measures of resistance to change (i.e., concerns about change and perceived benefits of EDs) and between measures of motivation for change (i.e., readiness to change and perceived costs of EDs), as well as negative correlations between these two sets of motivation measures. Evidence of the concurrent validity would be established by positive correlations between measures of resistance to change and concurrent anticipated difficulty of behavior change, and by negative correlations between measures of motivation for change and the same concurrent criterion. Predictive validity would be supported if baseline measures of resistance to change positively predict treatment dropout and bulimic behaviors at follow-up while baseline measures of motivation for change exhibit the opposite predictive pattern. According to a previous study comparing the criterion validity of readiness to change rated by Western AN patients, intake clinicians, and research assessors (Geller, 2002b), researcher-rated motivation measure used in this study was predicted to exhibit the highest criterion validity, followed by self-rated and clinician-rated measures in sequence.

As the primary measure of the study, the structural validity of the Concerns about Change Scale-Revised (CCS-R) in the current sample was explored. It was proposed that conceptually related CCS-R subscales (e.g., subscales measuring fear of maturity and responsibility) would contribute to the same latent variable if not every subscale replicated as a single factor. However, factors and item loadings are likely to be different from those found in Western ED patients (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995) as perception, interpretation, and expression of motivational barriers may vary in different cultures. For example, EDs haven been described as a means to avoid gender responsibilities (e.g., role of wife and mother) associated with maturation in Eastern cultures (Pike & Borovoy, 2004). Sex education in China often emphasizes reproductive function over human sexuality. Actually, it is hard to find a concept exactly equivalent to sexuality in Chinese vocabulary. Therefore, it is possible that concerns about maturity, responsibility, and sexuality are highly correlated and contribute to the same latent variable in Chinese ED patients.

Considering that factor analysis of the CCS-R may not yield reliable results given the small sample size, the discriminative validity of CCS-R subscales was evaluated to provide further evidence for its construct validity. If CCS-R subscales accurately classify participants into their predetermined DSM-IV diagnostic groups, the discriminative validity would be supported. Based on the diagnostic group differences in motivational patterns described in Western ED patients, subscales measuring ego-syntonic motivations and emotion regulation functions would demonstrate more predictive power in discrimination functions compared to those measuring self-efficacy.

Patterns of Motivation and Psychopathology

Hypotheses about patterns of motivation and psychopathology in Chinese ED patients were speculated from previous studies in ED patients and general knowledge of Chinese culture. These hypotheses were proposed to provide a framework for exploration rather than to test an existing theory.

In terms of motivational patterns, it was hypothesized that Chinese ED patients would report similar motivational factors as their Western counterparts. Specifically, adaptive functions served by EDs, self-efficacy for change, consequences of disordered eating, and cost to control weight were considered relatively universal across cultures so that they may constitute barriers to recovery in both Chinese and Western ED patients (Vitousek et al., 1998; Vitousek & Orimoto, 1993). Although overvaluation of thinness may not account for treatment resistance in the subgroup of Chinese AN patients expressing no weight and shape concerns, this motivational factor may contribute to symptom maintenance in other Chinese ED patients reporting weight and shape concerns.

Because of cultural differences between China and the West, the relevance of individual motivational factors was postulated to vary in Chinese and Western ED patients. For example, Chinese ED patients may not perceive their disorder as a goal or an achievement or disclose positive valuation of symptoms due to highly valued conformity and modesty in Chinese culture. Cai (2003) proposed the existence and difference between implicit and explicit self-esteem in Chinese population. A recent cross-cultural study showed that North Americans exhibited higher explicit self-esteem than Chinese while both demonstrated similar implicit self-esteem (Yamaguchi et al., 2007). Another cross-cultural study on the EDI also suggested that cultural emphasis on moderation, humility, and collectivism over individual success might have resulted in lower scores on the Perfectionism subscale

in Chinese than in Canadian ED patients and the failure of this subscale to discriminate Chinese ED patients from Chinese undergraduates (Lee et al., 1998). Thus, ego-syntonic motivations may not be found to represent a major reason for resistance to change in Chinese patients.

Several other differences in the relevance of various motivational factors were also speculated from characteristics of Chinese culture. As Chinese people tend to suppress negative emotions and hide their opinions to avoid interpersonal conflicts (Ting-Toomey, 1999; Ting-Toomey & Oetzel, 2001), emotion regulation functions, such as disinhibition, communication, and avoidance, may emerge as important motivations for maintaining an ED. Raised in a collective culture that values social connections and filial piety, Chinese patients may attach more importance to the relationship benefits of EDs but at the same time feel extremely guilty about adding burden to their families (Ma, 2007a). In addition, Chinese people often perceive sexuality negatively as a result of traditional sex education so that fear of sexuality may contribute significantly to symptom maintenance in Chinese ED patients. Although inadequate self-efficacy for change is likely to be a culturally universal barrier to recovery, it may be particularly prominent in Chinese ED patients due to the cultural emphasis on modesty and humility.

Among the three diagnostic groups of Chinese ED patients, patterns and levels of motivation for change were hypothesized to be different. If the group differences are similar to those observed in Western ED patients, ego-syntonic motivations would be perceived more important by individuals with AN while emotion regulation functions more valuable by those with BN (Gray, 2008; Sunday et al., 1995; Vitousek et al., 1995). AN patients were also predicted to demonstrate the highest level of concerns about change, perceived benefits of their disorder, and anticipated difficulty of behavior

change and the lowest level of perceived costs of their disorder (Gale et al., 2006; Gray, 2008; Vitousek et al., 1995). The lowest researcher-rated readiness to change, highest clinician-rated concerns about change, and highest treatment dropout rate were also anticipated for individuals with AN. On the other hand, BN patients would exhibit the lowest level of resistance to change, with EDNOS patients falling in between AN and BN patients (Casasnovas et al., 2007; Gray, 2008; Vitousek et al., 1995).

After a month of treatment, levels of resistance to change were predicted to change differently in three diagnostic groups. According to the standard ED treatment provided at the research institute, the first month of treatment usually involves engaging patients in treatment, providing psychoeducation, and normalizing eating behaviors. The first two components were expected to enhance motivation for change in all three diagnostic groups, while the last component was hypothesized to influence patients' motivation differently. In particular, increased caloric intake and weight regain in AN patients may provoke significant anxiety and increase resistance to change; regular eating and reduced bingeing and/or purging in BN and EDNOS patients may help increase self-efficacy and improve motivation for change. Two studies with Western ED patients suggested that motivation for change in AN patients could increase following a month of treatment (Engel & Wilms, 1986) but might improve less over the course of the treatment compared to motivation in the other two diagnostic groups (Geller et al., 2005). Thus, it was predicted that after the first month of treatment study participants with AN would demonstrate no or less improvement in resistance to change compared to the other two diagnostic groups.

In comparison of perceived motivational barriers to recovery between Chinese clinicians and their ED patients, higher ratings on ego-syntonic concerns were expected from clinicians given the previously reported difference in perceived contribution of weight and shape concerns to eating pathology between Chinese clinicians and patients (Huang et al., 2012; Lee et al., 1993; Lee et al., 2001). It was also hypothesized that Chinese clinicians would perceive higher resistance to change in their ED patients compared to patients themselves, paralleling the findings from Western studies (Engel & Wilms, 1986; Geller, 2002b).

With regard to symptomatology, Chinese ED patients were speculated to exhibit similar patterns to their Western counterparts except for a noncentral role of weight and shape concerns in the symptom profile of AN patients (Lee, 1991; Lee et al., 1993). According to a meta-analysis of 125 studies conducted in Western ED samples between 1987 and 2007 (Thomas, Vartanian, & Brownell, 2009), BN patients exhibited greater eating pathology and depressive symptoms than AN and EDNOS patients while the latter two reported similar levels of symptoms across studies. If Chinese ED patients were similar in symptom expression to their Western counterparts, the same pattern would be found in this study. One exception may be that AN patients have a higher level of restriction compared to the other two diagnostic groups. In addition, a greater reduction in psychopathology was expected for individuals with BN after the first month of treatment as bulimic symptoms usually respond well to normalization of eating and early behavioral intervention.

Relationship between Motivation and Psychopathology

Hypotheses of the relationship between motivational factors and clinical psychopathology in Chinese ED patients were based on the motivational theories and studies in Western ED patients

reviewed above because the relationship was assumed to be similar across cultures. In particular, motivation measures were expected to relate differentially to ego-syntonic (e.g., restriction, weight and shape concerns) and ego-dystonic (e.g., eating concern, bulimic behaviors) symptoms of EDs. Concerns about change and perceived benefits of EDs were predicted to correlate positively with ego-syntonic symptoms but negatively with ego-dystonic symptoms (Gray, 2008; Serpell et al., 2004). In contrast, an opposite pattern was postulated for the relationship of perceived costs of EDs with different ED symptoms. On an overall level, higher concerns about change and perceived pros of EDs were expected to result in high levels of eating pathology, which, in turn, was anticipated to lead to higher perceived cons of EDs. Depressive symptoms, often resulting from ED symptoms and lowering self-efficacy, were speculated to contribute positively to concerns about change and perceived costs of EDs but negatively to perceived benefits of EDs (Gray, 2008; Vitousek et al., 1998). In addition, it was hypothesized that a decrease in concerns about change and perceived pros of EDs and an increase in perceived cons of EDs would correspond with an improvement in clinical symptoms (e.g., ED psychopathology, bulimic behaviors, weight of AN patients, depressive symptoms) over time.

Design

The study was conducted at the Psychosomatic Inpatient Unit of Shanghai Mental Health Center in China and supervised by Dr. Jue Chen, Chief of the research unit. On-site research personnel included Dr. Chen, a research psychiatrist, and a research assistant. Prior to the study, Dr. Chen had been trained in the Eating Disorders Clinical and Research Program at Massachusetts General Hospital and had worked with ED patients in China for many years; the research psychiatrist had completed a three-year post-graduation fellowship in psychiatry, including training in DSM-IV-TR diagnosis and specialized training in EDs at the research unit. Neither research psychiatrist nor the research assistant was involved in participants' treatment at the research institute. All assessments in the study were conducted by the research psychiatrist.

The study consisted of two assessments for each participant to examine motivational patterns and related psychopathology over the first month of treatment at the research institute. Correlational and quasi-experimental designs were used to test hypotheses. Data were collected through clinical interviews and self-report questionnaires at baseline and one-month follow-up. No intervention was provided as part of the research, but participants received standard treatment for EDs at the research institute during and after the study unless they decided to drop out of treatment.

Participants

Participants were recruited from Chinese patients seeking treatment for EDs at Shanghai Mental Health Center. Patients who were under 14 years of age or who were too impaired to give consent or assent to participate were excluded from the study. Eligible patients were referred by their

psychiatrists after the intake assessment. Patients who agreed to participate after the consent process signed consent or assent forms. Parents or legal guardians of adolescent patients also participated in the consent process and signed parent/guardian consent forms if they agreed their children to participate.

A total of 84 Chinese ED patients participated in the study and completed the baseline assessment. One 13-year-old patient with AN was referred and included in the study because she would be 14 years old within three months and the referring psychiatrist considered it beneficial for her to participate in the study without increased risk of harm. Table 3.1 summarizes baseline participant characteristics for all participants and each DSM-IV-TR diagnostic group. The mean age of the entire sample was 20.7 ($SD = 4.6$), with a range from 13 to 34. About one fourth (27.4%) of the participants were adolescents under 18 years of age. There were four male participants in the sample who had a diagnosis of AN ($n = 2$) or BN ($n = 2$). Among the 84 participants, 39 (46.4%) were diagnosed with AN, 25 (29.8%) with BN, and 20 (23.8%) with EDNOS. The BMI of the entire sample ranged from 11.4 to 25.2, with a mean of 17.0 ($SD = 3.0$). The median for the duration of illness was approximately two years, with a maximum duration of 17 years. For comorbidities, nearly half (47.6%) reported a concurrent mood disorder and one-fifth (20.2%) disclosed an anxiety or somatoform disorder. A significant proportion of BN (52.0%) and EDNOS (40.0%) participants also reported a history of another ED. Regarding treatment currently received by participants, the most common was medication (59.5%), followed by psychotherapy (44.0%) and inpatient treatment (19.0%) in sequence. Prior to seeking treatment at the research site, the majority of participants (84.5%) had received

inpatient or outpatient treatment for EDs somewhere else, with 72.6% treated with medication and 41.7% with psychotherapy.

Significant differences at the .05 level were found in age, BMI, ED history, and previous ED treatment across the three DSM-IV-TR diagnostic groups. Specifically, AN patients had a younger age and lower BMI compared to BN and EDNOS patients. Participants with a current diagnosis of BN or EDNOS were more likely to have a history of another ED, especially AN, compared to those with a current diagnosis of AN. Relative to AN participants, a larger proportion of EDNOS participants had received outpatient treatment in the past.

Table 3.1

Baseline Participant Characteristics

Variable	All (<i>N</i> = 84)	AN (<i>n</i> = 39)	BN (<i>n</i> = 25)	EDNOS (<i>n</i> = 20)
Age (Years)				
Range	13 – 34	13 – 27	14 – 34	15 – 31
<i>M</i> (<i>SD</i>)	20.7 (4.6)	18.7 (3.5)	23.0 (5.4)	21.8 (3.9)
Gender				
Female (%)	80 (95.2%)	37 (94.9%)	23 (92.0%)	20 (10.0%)
Male (%)	4 (4.8%)	2 (5.1%)	2 (8.0%)	0 (0.0%)
Current BMI				
Range	11.4 – 25.2	11.4 – 19.0	13.2 – 25.2	12.4 – 23.6
<i>M</i> (<i>SD</i>)	17.0 (3.0)	15.0 (2.1)	19.0 (2.5)	18.6 (2.6)
ED duration (months)				
Range	0.1 – 204	0.1 – 127	1 – 204	1 – 96
<i>Mdn</i>	23.5	15.0	31.0	26.0
Additional diagnoses				
Mood disorder (%)	40 (47.6%)	19 (48.7%)	11 (44.0%)	10 (50.0%)
Anxiety/somatoform disorder (%)	17 (20.2%)	5 (12.8%)	5 (20.0%)	7 (35.0%)
Substance use disorder (%)	4 (4.8%)	0 (0.0%)	2 (8.0%)	2 (10.0%)
Pervasive developmental disorder (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Personality disorder (%)	1 (1.2%)	1 (2.6%)	0 (0.0%)	0 (0.0%)
Other mental disorder (%)	4 (4.8%)	1 (2.6%)	3 (12.0%)	0 (0.0%)
Medical condition (%)	2 (2.4%)	2 (5.1%)	0 (0.0%)	0 (0.0%)
ED history				
AN (%)	45 (53.6%)	31 (79.5%)	8 (32.0%)	6 (30.0%)
BN (%)	14 (16.7%)	0 (0.0%)	12 (48.0%)	2 (10.0%)
BED (%)	6 (7.1%)	0 (0.0%)	2 (8.0%)	4 (20.0%)
Other EDNOS (%)	13 (15.5%)	1 (2.6%)	3 (12.0%)	9 (45.0%)
Current ED treatment				
Inpatient (%)	16 (19.0%)	9 (23.1%)	5 (20.0%)	2 (10.0%)
Psychotherapy (%)	37 (44.0%)	17 (43.6%)	13 (52.0%)	7 (35.0%)
Medication (%)	50 (59.5%)	22 (56.4%)	15 (60.0%)	13 (65.0%)
Previous ED treatment				
Inpatient treatment	34 (40.5%)	18 (46.2%)	10 (40.0%)	6 (30.0%)
Outpatient treatment	65 (77.4%)	26 (66.7%)	30 (80.0%)	19 (95.0%)
Psychotherapy	35 (41.7%)	17 (43.6%)	11 (44.0%)	7 (35.0%)
Medication	61 (72.6%)	27 (69.2%)	18 (72.0%)	16 (80.0%)
Psychiatric medication	59 (70.2%)	24 (61.5%)	19 (76.0%)	16 (80.0%)

Note. BMI = body mass index; ED = eating disorder; AN = anorexia nervosa; BN = bulimia nervosa; BED = Binge Eating Disorder; EDNOS = eating disorder not otherwise specified.

At one-month follow-up, 56 (67%) participants remained in treatment and completed the follow-up assessment. Participants who dropped out of treatment within one month did not return for assessment although they were contacted twice for follow-up. Independent group comparisons using the independent-samples *t* test, Mann-Whitney *U* test, or chi-square test found no significant differences at the .05 level in baseline participant characteristics and measures of motivation and psychopathology between participants who dropped out and those who did not.

Measures

All self-report questionnaires used in the current study were originally developed in Western countries. These measures were translated into Chinese for this study, with the exception of the BDI-II, which had been translated and validated in Chinese patients with depression prior to the study (Wang et al., 2011). The original authors of these instruments, as well as the translator of the BDI-II, were contacted to obtain approval for the translation and/or use of their measures in this study. The original English measures were first translated into Chinese by the principal investigator, a Chinese doctoral student in clinical psychology at the University of Hawai'i at Mānoa. These Chinese versions were then back-translated by a fellow doctoral student from China. An expert in the ED field, the original author of the CCS-R and CCS-R-CV, evaluated the linguistic equivalence of the original and back-translated English versions of these questionnaires. Discrepancies were reconciled through consultation with a third Chinese doctoral student and a Chinese faculty member in psychology.

Clinician Report Form (CRF)

The CRF was designed to help the research psychiatrist collect data during the baseline interview. It solicits information about participant characteristics related to EDs, such as age, weight history, illness duration, additional diagnoses, ED history, and current and previous ED treatment. It also includes a checklist of DSM-IV-TR diagnostic symptoms for EDs (APA, 2000) and a readiness to change scale (RTC) adapted from a previous study (Geller, 2002b) that compared patients', clinicians' and research assessors' estimation of patients' readiness to change. The RTC consists of three items that ask the research psychiatrist to rate a participant's readiness for treatment, recovery, and normalization of eating on a 7-point Likert scale ranging from 1 to 7. An RTC score can be calculated by averaging the three item scores to represent the overall level of readiness to change, with higher ratings indicating higher levels of readiness. The RTC was completed by the research psychiatrist at both baseline and follow-up assessments.

Concerns about Change Scale-Revised (CCS-R)

The CCS-R (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995), an expanded version of the original CCS (Bemis, 1986), is a 112-item questionnaire designed to assess perceived motivational barriers for psychiatric patients to overcome their presenting problem. It was developed initially to explore whether ED patients are different from other psychiatric patients in their motivational patterns (Bemis, 1986). To examine different functions of a presenting problem valued by an individual in a way to minimize denial, CCS-R items are purposefully worded by stating what the person believes she or he might lose or struggle with if the problem were absent. Respondents are asked to use a 5-point Likert scale to indicate how strongly each statement reflects their concerns about giving up their

presenting problem, with 1 representing the view that the statement does not reflect their concerns at all and 5 representing the view that the statement reflects their concerns very strongly. Patients with AN from the United States and Canada have consistently achieved the highest scores on their overall concerns about change across several studies compared to other psychiatric patients and ED diagnostic groups (Bemis, 1986; Goodyear, 1990; Gray, 2008; Vitousek, 1997; Vitousek et al., 1995).

There are 17 rational subscales on the CCS-R that assess motivational barriers to change in different domains. These subscales include only 102 items on the CCS-R; the other 10 items are retained from the original CCS but do not contribute to any subscale. Table 3.2 lists 17 CCS-R subscales, each provided with a description and an example item. These subscales reflect various disadvantages of change and self-efficacy deficits that may interfere with motivation for change. Each subscale score is the average score of corresponding subscale items and ranges from 1 to 5. The CCS-R total score is the sum of all subscale scores divided by the number of subscales, which has the same range as subscale scores.

Table 3.2

Description and Example Items for CCS-R Subscales

CCS-R subscale	Description	Example item
Change-Unable	Lack of skills, ability, or strength to change	I may not be strong enough to change.
Change-Unworthy	Unworthiness to change or deserving to suffer	I don't deserve to be different.
Fear-Risks	Fear of risks or dangers associated with change	I may risk making a fool of myself if I change.
Fear-Maturity	Fear of growing up after change	My problem shelters me from all the complications of being an adult.
Fear-Sexuality	Fear of dealing with sexuality after change	I may have to deal with my sexuality if I change.
Fear-Process	Fear of difficulty and pain involved in the process of change	The process of change would be too painful for me to bear.
Loss-Accomplishment	Loss of a sense of accomplishment, pride, or self-control after change	I may lose a sense of self-control if I change.
Loss-Hedonic	Loss of pleasure or excitement after change	I may not have as much fun if I change.
Loss-Interpersonal	Loss of attention or concern from others after change	I am afraid that people will stop worrying about me if I change.
Loss-Peer Group	Loss of one's friends or social group after change	I wouldn't have anything in common with my friends if I change.
Loss-Identity	Loss of a sense of identity or individuality after change	This problem is an important part of my identity.
Loss-Disinhibition	Loss of a means to express or discharge feelings after change	I wouldn't be able to express how I feel if I change.
Fear-Responsibility	Fear of taking responsibility after change	I'd have to take responsibility for my mistakes if I change.
Fear-Negative Affect	Fear of coping with negative affect or life stress after change	Without this problem, I wouldn't have any other ways of coping with stress.
Loss-Goal	Loss of the goal after change	This problem helps me obtain an immediate goal.
Fear-Deeper Flaw	Fear of facing deeper and more serious problems after change	This problem is just covering up a deeper, more serious problem.
Denial-Irrationality	Denial of the irrationality or dysfunctionality of the problem	It's just a question of individual preference for me to be the way I am right now.

Note. CCS-R = Concerns about Change Scale-Revised.

CCS-R subscales demonstrated good internal consistency in Western ED patients, with Cronbach's α coefficients ranging from .80 to .91 (Vitousek, 1997; Vitousek et al., 1995). Several studies also supported the discriminative validity of CCS-R subscales in Western ED samples. Compared to individuals with agoraphobia, specific phobia, and obsessive-compulsive disorder, people with EDs scored significantly higher on most subscales (Bemis, 1986; Gray, 2008). CCS-R subscales also differentiated well between the three diagnostic groups of EDs; AN patients scored significantly higher than BN patients on 10 to 11 subscales, and significantly higher than the EDNOS group on 3 to 14 subscales (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995). In terms of convergent validity, all but one of the CCS-R subscales were negatively associated with readiness to change measured by the Anorexia Nervosa Stages of Change Questionnaire (Rieger et al., 2002).

The initial exploratory factor analysis of the CCS-R suggested that an eight-factor solution best fit the data collected in ED patients from the United States, with some subscales merging as a coherent factor (Vitousek, 1997; Vitousek et al., 1995). For example, items from Fear-Maturity and -Responsibility subscales loaded on the same factor, and so did those measuring goal attainment and rationalization of symptoms. A later study with a larger sample in North America also yielded an eight-factor solution for the CCS-R empirical factors demonstrated good to excellent internal consistency (Cronbach's α s = .87 – .92). Most of them correlated positively with symptoms of EDs, depression, and anxiety. As a group, patients with EDs scored significantly higher than patients with obsessive-compulsive disorder on all eight factors. Within the ED sample, AN patients demonstrated significantly higher scores on five factors than BN patients and on two factors than EDNOS patients, further providing evidence for strong resistance to change in AN patients.

Table 3.3

Eight CCS-R Factors and Corresponding CCS-R Subscales

CCS-R factor	CCS-R subscale
1. Difficulty of Change	Change-Unable (5 items) Fear-Process (3 items) Fear-Risks (1 item)
2. Loss of Accomplishment	Loss-Accomplishment (5 items) Loss-Goal (1 item) Loss-Hedonic (1 item)
3. Loss of Coping Strategy	Fear- Negative Affect (4 items) Loss-Disinhibition (2 items)
4. Fear of Maturity	Fear-Maturity (6 items)
5. Minimization/Denial of Symptoms	Denial-Irrationality (6 items) Loss-Goal (1 item)
6. Fear of Sexuality	Fear-Sexuality (6 items)
7. Unworthy of Change	Change-Unworthy (5 items)
8. Loss of Care/Attention from Others	Loss-Interpersonal (3 items) Loss-Identity (1 item)

Note. CCS-R = Concerns about Change Scale-Revised.

Taken together, the CCS-R appears to be a promising instrument for identifying important motivational barriers to recovery among patients with a mental disorder. With particular reference to ED patients, the measure may help clinicians better understand specific factors contributing to treatment resistance in this population and tailor treatment to the motivational profile of individual patients. The CCS-R was used as the primary measure of the study to explore motivational patterns in Chinese ED patients.

Concerns about Change Scale-Revised Clinician Version (CCS-R-CV)

The CCS-R-CV (Vitousek, 1998) is a questionnaire parallel to the CCS-R designed to be completed by the patient's clinician. It includes 17 items that ask the clinician to assess the presence and degree of a patient's concerns about change in different domains. These domains correspond with CCS-R subscales and provide the clinician's perspective on motivational barriers that may interfere with the patient's recovery. Specifically, each item includes three questions that ask clinicians to indicate the extent to which their patients have expressed the concern (Expressed), the extent to which clinicians believe that their patients have the concern regardless of whether or not patients have expressed it (Exists), and the extent to which clinicians believe that the concern will arise when their patients attempt to change regardless of whether patients currently have such a concern (Will Arise). The rating scale also matches the one used in the CCS-R, ranging from 1 (*not at all*) to 5 (*very strongly*). CCS-R-CV item scores are average scores of the three questions included in each item and CCS-R-CV total score is the mean of item scores, both in correspondence with CCS-R subscale and total scores. Three subscale scores (i.e., Expressed, Exists, and Will Arise) can also be obtained by computing the mean scores of corresponding questions from each item. The CCS-R-CV was selected to compare patients' and clinicians' perceptions of motivational barriers that may prevent patients from recovery.

Pros and Cons of Eating Disorders Scale (P-CED)

The P-CED (Gale et al., 2006) is a 67-item scale that examines the positive and negative aspects of having an ED from patients' perspective. This questionnaire was adapted from the Pros and Cons of Anorexia Nervosa (P-CAN; Serpell et al., 2004) to measure perceived benefits and costs

of EDs in both AN and BN individuals. The P-CED consists of 14 subscales, with eight assessing Pro themes and six evaluating Con themes (see Table 3.4).

Table 3.4

Description of P-CED Subscales

P-CED subscale	Description
Pro themes	
Pro-Safe/Structured	Anorexia/bulimia provides the individual safety or structure.
Pro-Appearance	Anorexia/bulimia improves the individual's attractiveness or confidence.
Pro-Fertility/Sexuality	Anorexia/bulimia helps the individual avoid sexuality or pregnancy.
Pro-Special/Skilled	Anorexia/bulimia helps the individual feel superior to others or good at something.
Pro-Fitness	Anorexia/bulimia helps the individual increase fitness or energy.
Pro-Communication	Anorexia/bulimia helps the individual communicate emotions or distress.
Pro-Eat & Stay Slim	Anorexia/bulimia enables the individual enjoy food but remain thin.
Pro-Boredom	Anorexia/bulimia helps the individual deal with boredom.
Con themes	
Con-Trapped	The individual feels isolated or taken over by Anorexia/bulimia.
Con-Guilt	Anorexia/bulimia makes the individual feel guilty about causing worry to loved ones.
Con-Hatred	The individual hates the consequences of Anorexia/bulimia.
Con-Stifled Emotions	The individual feels emotions are limited or numbed by Anorexia/bulimia.
Con-Negative Self	Anorexia/bulimia makes the individual think negatively about oneself.
Con-Weight/Shape	Anorexia/bulimia makes the individual become preoccupied with weight and shape.

Note. P-CED = Pros and Cons of Eating Disorder Scale.

Each item on the P-CED asks respondents to indicate their degree of agreement with a statement on a 5-point Likert scale scored from -2 (*disagree strongly*) to +2 (*agree strongly*). The subscale score is the average score of all items contained in the subscale, which also ranges from -2 to +2. A positive subscale score indicates agreement with the theme assessed by that subscale and negative score represents disagreement, with higher scores suggesting higher endorsement of the

theme. P-CED Pro and Con total scores are mean scores of all Pro and Con subscales, respectively, with the same range as subscale scores. At the end of the questionnaire, there are two questions that ask respondents to rate how positively and negatively they feel about living with an ED on a 7-point Likert scale (1 indicating *not at all positive or negative* and 7 *extremely positive or negative*). These two ratings can be used to calculate an ambivalence score that indicates overall attitude toward EDs. A high ambivalence score represents a highly equivocal attitude, and a low score may denote an extremely positive or negative attitude. The formula used to calculate the ambivalence score is based on the Similarity-Intensity Model (Thompson, Zanna, & Griffin, 1995) and shown below:

$$\text{Ambivalence} = (\text{positive} + \text{negative}) / 2 - |\text{positive} - \text{negative}|$$

In terms of psychometric properties, P-CED items modified from the P-CAN largely replicated the factor structure identified for the original P-CAN (Serpell et al., 2004) among 202 ED patients from the United Kingdom (Gale et al., 2006). Items created for BN individuals yielded four factors that meaningfully reflected themes usually endorsed by this group, including Pro-Eat & Stay Slim, Pro-Boredom, Con-Negative Self, and Con-Weight/Shape (Gale et al., 2006). In addition, good convergent validity of the P-CED was supported by significant positive correlations between perceived pros of EDs and positive attitude toward EDs, between perceived cons and negative attitude, and between perceived pros and ambivalence, as well as by a significant negative association between perceived pros and negative attitude (Gale et al., 2006).

Because the P-CED measures constructs that are theoretically related to those assessed by the CCS-R, it was included to corroborate the motivational patterns derived from the CCS-R and evaluate the convergent validity of both.

Anticipated Difficulty of Recovery Activities (ADRA)

The ADRA was developed as a criterion measure to validate the Readiness and Motivation Interview (Brown et al., 2010; Geller et al., 2008; Geller et al., 2001). The instrument is an interviewer-administered questionnaire that asks ED patients to rate the anticipated difficulty of completing 26 recovery activities commonly prescribed in ED treatment on a 10-point Likert scale ranging from 1 (*not at all difficult*) to 10 (*extremely difficult*). An ADRA score can be calculated by dividing the sum of all item scores by the number of items to represent the average level of perceived difficulty, which has the same range as item scores. The ADRA was adapted to a self-report format for this study with the help of Krista Brown, a fellow doctoral student in clinical psychology at the University of Hawai'i at Mānoa and the former Research Coordinator at the St. Paul's Hospital Eating Disorders Program where the ADRA was developed. The ADRA served as a criterion measure in the study to examine the concurrent validity of motivation measures.

Treatment Dropout

There were 28 (33.3%) participants who dropped out of treatment over the duration of the study. As dropout from treatment often indicates low motivation for change, it was used as a criterion measure to evaluate the predictive validity of motivation measures.

Eating Disorder Examination Questionnaire 6.0 (EDE-Q 6.0)

The EDE-Q 6.0 (Fairburn & Beglin, 2008) is the latest questionnaire version of the well-established interview measure of ED psychopathology, Eating Disorder Examination (EDE; Cooper & Fairburn, 1987; Fairburn & Cooper, 1993; Fairburn et al., 2008). The questionnaire measures cognitive symptoms of EDs on four subscales: Restraint, Eating Concern, Shape Concern,

and Weight Concern. It also evaluates the frequency of behavioral symptoms and can be used to establish a DSM-IV-TR diagnosis of EDs. The EDE-Q 6.0 consists of 28 questions asking respondents to either fill in a number or rate on a 7-point Likert scale to indicate the severity of their ED symptoms. All items can be scored from 0 to 6 and a score of 4 or higher on key items is considered to be clinically significant (Fairburn & Beglin, 2008). The questionnaire also includes three additional questions about the respondent's current weight, height, and menstrual function to facilitate diagnosis. A global score and four subscale scores with the same range as item scores can be calculated from the EDE-Q 6.0 to represent the severity of ED psychopathology.

In terms of reliability, all EDE-Q subscales have shown acceptable to excellent internal consistency (Cronbach's α s = .70 – .93) and test-retest reliability (Pearson r s = .66 – .94) in studies with American college women, Australian female community residents, or American ED patients (Bardone-Cone & Boyd, 2007; Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beaumont, 2004a; Peterson et al., 2007; Reas, Grilo, & Masheb, 2006). The discriminative validity of the instrument has been supported by significantly higher scores obtained in ED patients compared to non-ED patients from Australia and the United States (Mond, Hay, Rodgers, Owen, & Beaumont, 2004b; Wilson, Nonas, & Rosenblum, 1993). Research has also shown generally satisfactory agreement between EDE-Q and EDE in British, Australian, and American ED patients, with slightly higher symptom severity reported on the EDE-Q (Fairburn & Beglin, 1994; Mond et al., 2004b; Sysko, Walsh, & Fairburn, 2005; Wolk, Loeb, & Walsh, 2005). The factor analysis of the EDE-Q, however, has failed to support the four subscales; instead, a single-factor and a three-factor solution (i.e., Restraint, Eating Concern, and Shape/Weight Concern) have been found, respectively, among

Australian ED patients and female undergraduates and among American ED patients (Allen, Byrne, Lampard, Watson, & Fursland, 2011; Peterson et al., 2007).

On average, psychometric studies have supported the reliability and validity of the EDE-Q as a measure of ED psychopathology (Berg, Peterson, Frazier, & Crow, 2012). The questionnaire appears to yield similar diagnoses and symptom profiles as the EDE in both adolescent and adult ED patients in the United States (Binford, le Grange, & Jellar, 2005; Sysko et al., 2005; Wolk et al., 2005). Thus, the EDE-Q 6.0 was chosen to assess the severity of ED symptoms, profile patterns of ED psychopathology, and examine the relationship between ED psychopathology and motivation for change. Particularly in this study, self-reported BMI (EDE-Q 6.0 BMI) and an average score for bulimic behaviors (EDE-Q 6.0 bulimia) were also derived from questions inquiring weight and height and items assessing the frequency of binge eating, vomiting, laxative use, and compulsive exercise, respectively, to serve as indicators of behavioral symptoms and clinical outcomes. The bulimia score was created by converting the frequency of each bulimic behavior to the same 7-point Likert scale used by other EDE-Q 6.0 items and averaging the converted scores across all bulimic behaviors.

Beck Depression Inventory-II (BDI-II)

The BDI-II (Beck et al., 1996) is one of the most widely used instruments that evaluate the presence and severity of depressive symptoms in individuals aged 13 or above. This instrument includes 21 groups of statements corresponding to symptoms listed in the DSM-IV diagnostic criteria for a major depressive disorder (APA, 1994). Respondents are asked to select one of the four statements in each group that best describes their experience in the past two weeks. The four statements in each group are scored on a 4-point Likert scale with 0 representing no symptom and 3

representing a severe symptom. A BDI-II score can be obtained by summing all item scores to indicate the severity of depressive symptoms, with a possible score range of 0-63. A BDI-II score of 0 to 13 represents minimal depression, 14 to 19 mild depression, 20 to 28 moderate depression, and 29 to 63 severe depression (Beck et al., 1996).

The BDI-II has demonstrated high internal consistency and test-retest reliability in nonclinical adults from the United States and Canada and in clinical and nonclinical adolescent samples from the United States (Beck et al., 1996; Osman, Barrios, Gutierrez, Williams, & Bailey, 2008; Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004; Steer & Clark, 1997; Storch, Roberti, & Roth, 2004). It has also shown good convergent validity with measures of similar or related constructs in the same populations (Beck et al., 1996; Osman et al., 2008; Osman et al., 2004; Steer & Clark, 1997; Storch et al., 2004). Factor analysis of the BDI-II has demonstrated different factor solutions across studies. Data from clinical adult samples in the United States most commonly yielded two factors, i.e., Somatic-Affective and Cognitive (Arnau, Meagher, Norris, & Bramson, 2001; Beck et al., 1996; Steer, Ball, Ranieri, & Beck, 1999). Data from nonclinical adult samples, on the other hand, typically fit a two-factor solution consisting of a Cognitive-Affective and a Somatic factor (Beck et al., 1996; Steer & Clark, 1997; Whisman, Perez, & Ramel, 2000). In addition, a three-factor solution comprised of Negative Attitude, Performance Difficulty, and Somatic Elements factors has provided the best fit for nonclinical adolescents in Canada (Byrne & Baron, 1993), Sweden (Byrne, Baron, Larsson, & Melin, 1995), and Bulgaria (Byrne, Baron, & Balev, 1998).

The BDI-II has been translated into Chinese and validated in adults and adolescents from Mainland China, Hong Kong, and Taiwan (Byrne, Stewart, & Lee, 2004; Chang, 2005; Lu, Che, Chang,

& Shen, 2002; Wang et al., 2011; Wu & Chang, 2008). The Chinese BDI-II showed good internal consistency in these samples (Byrne et al., 2004; Chang, 2005; Lu et al., 2002; Wang et al., 2011). Convergent validity was also established for depressive patients in Mainland China and nonclinical adolescents in Hong Kong (Byrne et al., 2004; Wang et al., 2011). In these two studies, a two-factor solution (i.e., Somatic-Affective and Cognitive) provided the best fit for the former sample and a three-factor solution (i.e., Attitude, Performance Difficulty, and Somatic Elements) for the latter sample. Using the Rasch method, a study with nonclinical adolescents in Taiwan (Wu & Wang, 2008) revealed a two-dimension structure that corresponded with Cognitive-Affective and Somatic factors described in American college students (Beck et al., 1996; Steer & Clark, 1997; Whisman et al., 2000). Therefore, the Chinese BDI-II seems to be a reliable and valid measure of depressive symptoms in Chinese population.

ED patients usually present with depressive symptoms, which may result from their EDs and affect their motivation for change. The BDI-II was included to examine concurrent depression in Chinese ED patients and explore its relationship with resistance to change.

Procedure

The study was approved by the University of Hawai'i at Mānoa Human Studies Program (CHS #20388). All research personnel received training on the research protocol prior to the start of the study. Participants were enrolled on an ongoing basis until each diagnostic group had a minimum of 20 participants. Data collection ended when all participants had completed, or had been contacted twice to complete, the follow-up assessment.

To recruit participants, the research supervisor first contacted psychiatrists working with ED patients at the research institute and asked them to refer eligible patients after the intake assessment. The research assistant then approached eligible patients to describe the study and explain the consent process. Parents or legal guardians of adolescent patients also participated in the recruitment and consent process. Potential participants, and their parents or legal guardians if applicable, had a chance to ask questions and receive answers prior to making an informed decision. An adult patient who agreed to participate signed two copies of the consent form and returned one copy to the research assistant. An adolescent patient and the patient's parent or legal guardian signed and returned one copy of the assent and parent/guardian consent forms, respectively, if both agreed to the participation in the study.

At baseline, the research psychiatrist conducted a clinical interview with each participant to collect information specified in the CRF. Each participant then completed a set of self-report questionnaires that measure motivations for EDs and recovery (i.e., CCS-R and P-CED), self-efficacy for behavior change (i.e., ADRA), and related psychopathology (i.e., EDE-Q 6.0 and BDI-II). The baseline assessment lasted about an hour and a half.

After the baseline interview with a participant, the research psychiatrist determined a DSM-IV-TR ED diagnosis by examining diagnostic information collected in the CRF, checking the participant's medical record, and consulting with the participant's attending psychiatrist. When there was ambiguity about the diagnosis, the research psychiatrist discussed the case with the research supervisor to determine the final diagnosis for the participant. Within two days of the interview, the participant's attending psychiatrist was asked to complete the CCS-R-CV for the participant.

At one-month follow-up, every participant had another brief interview with the research psychiatrist and completed the same questionnaires taken at baseline. The follow-up interview was mainly for the research psychiatrist to reassess the participant's readiness to change on the RTC after the individual was exposed to treatment. The participant's attending psychiatrist was also asked to complete another CCS-R-CV for the participant within two days of the individual's follow-up interview. All participants, whether or not they dropped out of treatment during the one-month period, were contacted to complete the follow-up assessment. When a participant's attending psychiatrist judged that the individual was too impaired to participate in the assessment at follow-up, the follow-up assessment was withheld temporarily and the participant was provided with more intensive care at the research institute or, if indicated, at a comprehensive hospital. After the participant's condition improved, the individual was contacted again to complete the follow-up assessment. In an effort to reduce attrition, a second contact was made to participants who did not respond to the first contact for the follow-up assessment.

At the end of each assessment with a participant, the research psychiatrist took time to address questions, concerns, or distress that might have arisen during the assessment. When suicidal ideation was indicated from the assessment, the research psychiatrist took appropriate steps to ensure the participant's safety, including close monitoring, proactive intervention, and communication with the participant's attending psychiatrist.

Between and after the two assessments, participants received standard care for EDs at the research institute on an inpatient or outpatient basis unless they decided to drop out of treatment. The outpatient treatment consists of weekly individual psychotherapy and, if indicated, psychiatric

medication. The inpatient treatment involves medical management, nutrition counseling, individual psychotherapy, and psychiatric medication. The level of care was based on a participant's physical condition and treatment progress. Outpatient participants were admitted to an inpatient unit at the research institute or referred to a comprehensive hospital if their condition deteriorated; inpatient participants were discharged to outpatient care at the research institute when they made sufficient progress.

Data Analysis

Data analysis was conducted using the IBM SPSS Statistics V21.0. First, a missing value analysis was conducted to examine the pattern of missing data in variables subject to inferential analysis, including RTC, CCS-R, CCS-R-CV, P-CED, ADRA, EDE-Q 6.0, and BDI-II item, subscale, and total scores at baseline and follow-up. Most baseline variables, with the exception of RTC and CCS-R-CV scores, were missing in less than 5% of the cases. Baseline RTC scores were available only for 76 (90%) participants and CCS-R-CV scores for 72 (86%) participants. At one-month follow-up, data on all study measures were missing for 28 participants who dropped out of treatment and did not return for assessment. Among 56 participants who completed the follow-up assessment, RTC scores were missing for 4 (7%) and CCS-R-CV scores for 6 (11%). Little's MCAR tests (Little, 1998) showed that both baseline and follow-up data on examined measures were missing completely at random at item ($\chi^2 = 0.00$, $df = 6117$, $p = 1.00$), subscale ($\chi^2 = 263.93$, $df = 284$, $p = .80$), and total scale levels ($\chi^2 = 118.94$, $df = 106$, $p = .18$). Thus, single imputation using expectation-maximization (EM) was conducted respectively with variables rated by the research psychiatrist, attending

psychiatrists, and patients to replace the missing values with imputed values. The imputed data were used in the following analysis unless specified otherwise.

Second, the DSM-IV-TR ED diagnoses (i.e., AN, BN, and EDNOS) determined by the research psychiatrist after the baseline interview were used to categorize participants into three diagnostic groups. The distribution of baseline and follow-up subscale and total scores on measures of motivation and psychopathology was examined for each diagnostic group and for the entire sample using the Kolmogorov-Smirnov test. About two-thirds of subscale scores and one-third of total scores were not normally distributed for at least one diagnostic group or the entire sample or both at either baseline or follow-up. Therefore, both parametric and nonparametric procedures were used in subsequent inferential analysis to reduce potential bias in parameter estimates due to non-normality of the data.

Third, a power analysis was performed based on the current sample size ($N = 84$) of the study and effect sizes estimated from the results of a previous study on the primary measure CCS-R in a sample of 230 Western ED patients (Gray, 2008). According to Cohen (1988), the probability of detecting a medium main effect of diagnosis ($f = .24$; Gray, 2008) in a 3x2 mixed-design ANOVA at the .05 level would be 47%. If the same effect size were assumed for the main effect of time and interaction effect between time and diagnosis, the power to detect these effects in a 3x2 mixed-design ANOVA at the same significance level would be 61% and 50%, respectively. With regard to correlation analysis, the current study had a power of 66% to 98% to reveal a significant correlation of .26 to .47 (Gray, 2008) at the .05 level. As traditional significance tests might fail to detect an existing effect due to limited power, effect sizes were used to interpret the results of data analysis with

statistical significance reported as a reference. For the same reason, no Bonferroni correction was made to the significance level used in multiple hypothesis testing. Table 3.5 provides Cohen's (1988) guidelines for interpreting effect size indices used in the study.

Table 3.5

Interpretation Guidelines for Effect Size Indices

Effect size	η^2 (η_p^2)	d	r_{pb} (r_{rb})	r (r_s)	R	R^2
Small	.01	.20	.10	.10	.14	.02
Medium	.06	.50	.24	.30	.36	.13
Large	.14	.80	.37	.50	.51	.26

Note. η^2 (η_p^2) = eta square (partial eta square); d = Cohen's d ; r_{pb} = point-biserial correlation based on the independent-samples t test; r_{rb} = rank-biserial correlation based on the Mann-Whitney U test; r = Pearson correlation; r_s = Spearman correlation; R = multiple correlation; R^2 = multiple coefficient of determination.

Fourth, the reliability and validity of study measures in the current sample were examined with a particular focus on the primary measure CCS-R. The internal consistency of all Western-developed measures, including the RTC embedded in the CRF, was examined using Cronbach's α and criteria recommended by Kline (2000). The convergent and criterion validity of motivation measures were evaluated by computing Pearson and Spearman correlations or point-biserial (based on the independent-samples t test) and rank-biserial (based on the Mann-Whitney U test) correlations among baseline motivation measures (i.e., RTC, CCS-R-CV, CCS-R, P-CED Pro, and P-CED Con) and between these measures and criterion measures (i.e., baseline ADRA, treatment dropout, and follow-up EDE-Q 6.0 bulimia). To explore the structural validity of the primary measure CCS-R, factor analysis was attempted although there were fewer cases (84) than subscale items (102). As expected, confirmatory factor analysis was aborted because the sample covariance matrix could not

be inverted. Similarly, exploratory factor analysis using the maximum likelihood and principal axis factoring could not be completed because the correlation matrix was not positive definite. Therefore, a principal component analysis with Promax rotation was conducted to provide preliminary information on the structure of the CCS-R in Chinese ED patients and guide future research on this translated measure, with the recognition that the resulted solution may not be reliable due to insufficient sample size. To further evaluate the construct validity of the CCS-R, a discriminant analysis was performed to examine the discriminative validity of CCS-R subscales to differentiate between the three DSM-IV-TR ED diagnostic groups in the current sample.

Fifth, motivational patterns and symptom profiles on self-report measures were compiled for the entire sample and each diagnostic group at both baseline and follow-up. A 3×2 mixed-design ANOVA, followed by post-hoc tests of main effect and simple contrasts, was used to examine the main effects of diagnosis (between-subjects factor) and time (within-subjects factor) as well as interaction effects between diagnosis and time on these measures. As interaction effects could not be tested by nonparametric procedures, Kruskal-Wallis *H* and Wilcoxon signed-rank tests were performed respectively to test the main effects of diagnosis and time on self-reported motivation and psychopathology. In addition, treatment dropout rates were compared across the three diagnostic groups using the chi-square test to further explore the effect of diagnosis on motivation for change.

Sixth, to explore the relationship between self- and clinician-perceived motivational barriers to change in Chinese ED patients, Pearson and Spearman correlations were computed between corresponding CCS-R subscales and CCS-R-CV items at both baseline and follow-up. In addition, paired-samples *t* and Wilcoxon signed-rank tests were conducted on corresponding CCS-R and

CCS-R-CV scores to see whether clinicians perceived higher resistance to change in their patients than patients themselves.

Seventh, the cross-sectional relationship between motivational factors and specific ED symptoms was examined by computing parametric and nonparametric correlations between CCS-R and P-CED total scores and EDE-Q 6.0 subscale scores at baseline and follow-up. To investigate concurrent relationships between motivation for change and overall clinical symptoms, simple and partial correlations (including both Pearson r and Spearman ρ) between self-reported motivation scores (i.e., CCS-R, P-CED Pro, and P-CED Con total scores) and symptom scores (i.e., EDE-Q 6.0 global, EDE-Q 6.0 bulimia, and BDI-II scores) were calculated at baseline and follow-up. To explore how change in motivation for change corresponds with change in clinical symptoms over time, follow-up EDE-Q 6.0 measures (i.e., EDE-Q 6.0 global, bulimia, and BMI) and BDI-II were each regressed on one of the follow-up motivation measures (i.e., CCS-R, P-CED Pro, and P-CED Con) while controlling for baseline corresponding motivation and symptom measures.

Psychometric Properties of Study Measures

Table 4.1 presents Cronbach's α coefficients and levels of internal consistency for Western-developed measures used in the study. All measures demonstrated acceptable to excellent internal consistency (Cronbach's α s = .71 – .92). Specifically, 14 out of 17 CCS-R subscales showed good to excellent internal consistency (Cronbach's α s = .80 – .91). The three subscales with acceptable internal consistency were Fear-Sexuality (Cronbach's α = .72), Denial-Irrationality (Cronbach's α = .75), and Fear-Deeper Flaw (Cronbach's α = .77). On an overall level, P-CED Pro subscales appeared to have better internal consistency than Con subscales. EDE-Q 6.0 subscales related to body image (i.e., Weight Concern and Shape Concern) also seemed to be more reliable than those associated with eating (i.e., Restraint and Eating Concern).

Table 4.1

Internal Consistency of Study Measures

Measure	Cronbach's α	Level of internal consistency
RTC	.85	Good
CCS-R-CV		
Expressed	.83	Good
Exist	.87	Good
Will arise	.87	Good
CCS-R		
Fear-Sexuality	.72	Acceptable
Denial-Irrationality	.75	Acceptable
Fear-Deeper Flaw	.77	Acceptable
Loss-Interpersonal	.80	Good
Loss-Identity	.80	Good
Fear-Responsibility	.81	Good
Change-Unworthy	.82	Good
Fear-Risks	.83	Good
Fear-Maturity	.84	Good

Table 4.1. Continued

Measure	Cronbach's α	Level of internal consistency
Loss-Disinhibition	.84	Good
Loss-Peer Group	.85	Good
Loss-Goal	.87	Good
Change-Unable	.87	Good
Fear-Process	.87	Good
Loss-Accomplishment	.89	Good
Loss-Hedonic	.90	Excellent
Fear-Negative Affect	.91	Excellent
P-CED		
Con-Stifle Emotions	.71	Acceptable
Con-Trapped	.73	Acceptable
Con-Guilt	.74	Acceptable
Con-Weight/Shape	.76	Acceptable
Pro-Fertility/Sexuality	.77	Acceptable
Pro-Fitness	.77	Acceptable
Con-Hatred	.78	Acceptable
Pro-Communication	.78	Acceptable
Pro-Appearance	.79	Acceptable
Con-Negative Self	.81	Good
Pro-Special/Skilled	.82	Good
Pro-Boredom	.90	Excellent
Pro-Eat & Stay Slim	.91	Excellent
Pro-Safe/Structured	.92	Excellent
ADRA	.85	Good
EDE-Q 6.0		
Restraint	.79	Acceptable
Eating Concern	.82	Good
Weight Concern	.87	Good
Shape Concern	.90	Excellent
BDI-II	.92	Excellent

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED = Pros and Cons of Eating Disorder Scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; BDI-II = Beck Depression Inventory-II.

Both parametric and nonparametric correlations among motivation measures and between motivation and criterion measures are reported in Table 4.2, which are close in values. The

convergent validity of motivation measures was demonstrated by large significant positive correlations among measures of resistance to change (i.e., CCS-R-CV, CCS-R, and P-CED Pro) and medium significant negative correlations between these measures and readiness to change (i.e., RTC). In terms of concurrent validity, anticipated difficulty of recovery activities (i.e., ADRA) showed medium to large significant positive correlations with measures of resistance to change and a medium significant negative correlation with readiness to change. As shown in Table 4.2, the supporting evidence for predictive validity was small to medium significant positive correlations between baseline self-report measures of resistance to change (i.e., CCS-R and P-CED Pro) and follow-up bulimic behaviors (i.e., EDE-Q 6.0 bulimia). Although resistance measures also positively correlated with treatment dropout, these correlations were small and non-significant, with the highest correlation observed between concerns about change and treatment dropout ($r_{pb} = .12$, $r_{rb} = .15$, $ps > .05$). It was noted that the P-CED Con total scale demonstrated poor convergent and criterion validity due to the lack of a positive correlation with readiness to change and unexpected significant positive correlations with measures of resistance to change, anticipated difficulty of behavior change, and follow-up bulimic behaviors. Among the three motivation measures rated by the research psychiatrist, participants' attending psychiatrists, and participants (i.e., RTC, CCS-R-CV, and CCS-R), CCS-R showed larger effect in predicting anticipated difficulty of behavior change, treatment dropout, and follow-up bulimic behaviors compared to the other two measures (see Table 4.2).

Table 4.2

Correlations among Motivation Measures and between Motivation and Criterion Measures

Measure	1	2	3	4	5	6	7 ^a	8
1. RTC	—	-.37**	-.43**	-.34**	.00	-.38**	.01	-.02
2. CCS-R-CV	-.36**	—	.60**	.50**	.36**	.37**	.01	.21
3. CCS-R	-.52**	.63**	—	.73**	.40**	.51**	.12	.26*
4. P-CED Pro	-.41**	.51**	.79**	—	.36**	.43**	.06	.27*
5. P-CED Con	-.08	.37**	.51**	.37**	—	.30**	.19	.30**
6. ADRA	-.39**	.38**	.53**	.42**	.30**	—	.05	.24*
7. Treatment dropout ^a	-.06	.00	.15	.09	.24	.04	—	.32**
8. EDE-Q 6.0 bulimia	-.08	.15	.29**	.32**	.36***	.24*	.57***	—

Note. Pearson correlations are presented above the diagonal, and Spearman correlations are presented below the diagonal. All measures presented are baseline measures except for treatment dropout and EDE-Q 6.0 bulimia. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure.

^aPoint-biserial correlations are based on the independent-samples *t* test and presented above the diagonal, and rank-biserial correlations are based on the Mann-Whitney *U* test and presented below the diagonal.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

As none of the total scores on baseline motivation measures significantly predicted treatment dropout, point-biserial and rank-biserial correlations between baseline CCS-R and P-CED subscale scores and treatment dropout were derived from independent-measures *t* and Mann-Whitney *U* tests to see whether any of the subscales could significantly predict treatment dropout. It was found that CCS-R Change-Unable subscale was the only motivational variable that significantly positively predicted treatment dropout at one-month follow-up with a small effect size ($r_{pb} = .23$, $r_{rb} = .25$, $ps < .05$).

Because the sample size ($N = 84$) was smaller than the number of subscale items ($p = 102$) on the CCS-R, only a principal component analysis with Promax rotation was able to be performed to explore the structural validity of the CCS-R as explained in the previous chapter. It was recognized that the resulted solution from principal component analysis may not be reliable due to the same reason. Comparison of the structure matrices obtained from several analyses retaining different numbers of components around the number suggested by the scree plot revealed a seven-component solution that best fit the data (i.e., all item loadings above .30, relatively few item cross-loadings, and all components with more than three items) according to Costello and Osborne (2005). The first four components accounted for 52.0% of the total variance in 102 CCS-R subscale items and the last three explained an additional 8.7%. Both pattern matrix and structure matrix were examined to ascribe individual items to appropriate components. Table 4.3 illustrates the correspondence between CCS-R subscales and derived principal components. Among the 17 CCS-R subscales, 14 had at least half of their items loaded on the same component. The first five of the seven components subsumed subscales that were aggregated meaningfully, such as those related to emotion regulation, self-efficacy, ego-syntonic motivations, and to a lesser extent, relationship maintenance and avoidance of responsibility. The last two components were predominated by items from Change-Unworthy and Fear-Sexuality subscales, respectively.

Table 4.3

Correspondence between CCS-R Subscales and Principal Components

CCS-R subscale	Principal component						
	Emotion	Relationship	Self-efficacy	Ego-syntonicity	Responsibility	Unworthiness	Sexuality
Fear-Negative Affect	5		1				
Loss-Disinhibition	4	1				1	
Loss-Hedonic	4	2					
Loss-Peer Group		6					
Loss-Interpersonal		2		2	2		
Change-Unable	1		5				
Fear-Process	2		3	1			
Fear-Risks		2	3	1			
Fear-Deeper Flaw	1	1	3		1		
Loss-Accomplishment		1		5			
Denial-Irrationality		1		4			1
Loss-Goal		3		3			
Fear-Responsibility			1		4	1	
Fear-Maturity	1		1		2	1	1
Change-Unworthy	1		1			4	
Loss-Identity			2	1		2	1
Fear-Sexuality		2			1		3

Note. The number of items loaded on each principal component is presented for 17 CCS-R subscales. The mode(s) for each subscale is in boldface. CCS-R = Concerns about Change Scale-Revised.

To further evaluate the convergent and discriminant validity of the principal components extracted from this exploratory analysis, the average variance extracted (AVE) of individual components and shared variances between components were calculated and compared according to the method recommended by Fornell and Larcker (1981). Table 4.4 presents AVE, correlations, and shared variances for extracted CCS-R principal components. The AVE of individual components ranged from .38 to .50, at or below the .50 threshold proposed for adequate convergent validity (Fornell & Larcker, 1981). Correlations between different components ranged from .17 to .52 and shared variances from .03 to .27, which were small to medium in size. Because the AVE for each CCS-R principal component was greater than its shared variance with other components, the discriminant validity of the extracted principal components was considered to be supported. It was also noted that the first four components had relatively large correlations with each other compared to the correlations among the last three components and between the two sets of components (see Table 4.4).

Table 4.4
AVE, Correlations, and Shared Variances for CCS-R Principal Components

Component	1	2	3	4	5	6	7
1. Emotion	—	.42	.45	.44	.34	.17	.31
2. Relationship	.18	—	.42	.52	.30	.35	.18
3. Self-efficacy	.20	.17	—	.40	.25	.36	.39
4. Ego-syntonicity	.20	.27	.16	—	.27	.33	.23
5. Responsibility	.12	.09	.06	.08	—	.25	.35
6. Unworthiness	.03	.12	.13	.11	.06	—	.22
7. Sexuality	.10	.03	.15	.05	.12	.05	—
AVE	.50	.44	.43	.45	.43	.38	.38

Note. Correlations are presented above the diagonal, and shared variances are presented below the diagonal. AVE = average variance extracted; CCS-R = Concerns about Change Scale-Revised.

In addition, a discriminant analysis was performed to assess the discriminative validity of CCS-R subscales. The analysis resulted in two discriminant functions that together accurately classified 70.2% of the participants into their predetermined diagnostic groups (Wilks' Lambda = .47, Chi-square = 54.81, $df = 34$, $p < .05$). Specifically, 84.6% of AN patients, 72.0% of BN patients, and 40.0% of EDNOS patients were correctly assigned by the discriminant functions. Fear-Negative Affect, Change-Unable, Fear-Deeper Flaw, and Loss-Goal subscales had correlations greater than .30 with the first discriminant function and Denial-Irrationality, Loss-Goal, Loss-Accomplishment, and Loss-Identity subscales with the second discriminant function. According to the standardized canonical coefficients, Fear-Negative Affect (1.66), Denial-Irrationality (1.02), Loss-Interpersonal (-0.98), Fear-Deeper Flaw (-0.84), and Loss-Disinhibition (-0.81) subscales were the most discriminative between the three diagnostic groups. A further examination of the classification function coefficients revealed that Denial-Irrationality (2.94), Fear-Sexuality (2.67), Change-Unworthy (1.97), and Change-Unable (1.70) subscales contributed substantially to AN, Change-Unable (2.64), Denial-Irrationality (1.84), Fear-Negative Affect (1.65), and Loss-Peer Group (1.57) subscales to BN, and Fear-Sexuality (2.74), Loss-Interpersonal (2.42), Change-Unable (2.23), and Fear-Deeper Flaw (2.14) subscales to EDNOS group membership.

Patterns of Motivation

Motivational Barriers to Change

The patterns of self-perceived concerns about change are summarized for the entire sample and each diagnostic group at both baseline and one-month follow-up in Table 4.5. All CCS-R subscale and total scores were below the average (3) of the possible range for all participants and

each diagnostic group. At both baseline and follow-up, participants reported relatively high levels of concerns about encountering difficulties in change and losing emotional avoidance strategies and low levels of concerns about dealing with sexuality and losing peer groups as a result of change. Across the three diagnostic groups, BN patients showed a relatively high level of overall concerns about change compared to AN and EDNOS patients at baseline, but the difference almost disappeared at follow-up. Over a month of treatment, the AN group scored consistently the highest on the Denial-Irrationality subscale and the BN group on Change-Unable and Fear-Risks subscales. All three diagnostic groups exhibited lower levels of overall concerns about change at follow-up, but the BN group showed a greater decrease compared to the other two diagnostic groups.

Table 4.5

Baseline and Follow-up CCS-R Scores for All Participants and Each Diagnostic Group

CCS-R	ALL (N = 84)			AN (n = 39)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
Change-Unable	2.19	1.05	2.00	1.89	0.97	1.67	2.68	1.11	2.67	2.16	0.94	2.00
	1.76	0.77	1.67	1.72	0.80	1.60	1.82	0.72	1.75	1.76	0.78	1.58
Change-Unworthy	1.58	0.77	1.33	1.59	0.77	1.17	1.71	0.93	1.50	1.41	0.51	1.33
	1.42	0.62	1.17	1.45	0.68	1.17	1.40	0.45	1.33	1.40	0.72	1.17
Fear-Risks	1.78	0.92	1.50	1.65	0.83	1.33	2.13	1.06	1.83	1.60	0.83	1.25
	1.54	0.72	1.41	1.53	0.77	1.33	1.61	0.73	1.54	1.48	0.65	1.17
Fear-Maturity	1.86	0.95	1.50	1.75	1.03	1.33	2.06	0.92	1.83	1.80	0.84	1.58
	1.70	0.82	1.50	1.71	0.88	1.33	1.67	0.79	1.52	1.72	0.77	1.66
Fear-Sexuality	1.40	0.62	1.17	1.39	0.64	1.00	1.46	0.64	1.33	1.36	0.60	1.00
	1.12	0.30	1.00	1.13	0.32	1.00	1.11	0.13	1.12	1.13	0.43	1.00
Fear-Process	2.27	1.12	2.00	2.09	1.02	1.83	2.66	1.20	2.67	2.14	1.14	1.92
	1.98	0.91	1.93	1.90	0.91	1.83	1.99	0.91	1.94	2.11	0.95	2.01
Loss-Accomplishment	1.96	1.09	1.58	1.95	1.05	1.67	2.27	1.31	1.67	1.58	0.75	1.17
	1.69	0.84	1.40	1.80	0.99	1.33	1.69	0.67	1.65	1.48	0.73	1.08
Loss-Hedonic	1.78	1.03	1.17	1.74	0.96	1.17	1.99	1.11	1.67	1.58	1.08	1.00
	1.54	0.77	1.33	1.63	0.93	1.31	1.38	0.35	1.41	1.56	0.82	1.25
Loss-Interpersonal	1.66	0.83	1.33	1.62	0.81	1.17	1.84	1.03	1.50	1.54	0.53	1.50
	1.50	0.68	1.33	1.59	0.79	1.33	1.47	0.64	1.35	1.36	0.45	1.25
Loss-Peer Group	1.36	0.70	1.00	1.32	0.56	1.00	1.55	1.02	1.00	1.19	0.36	1.00
	1.24	0.62	1.00	1.31	0.80	1.00	1.17	0.25	1.14	1.20	0.56	1.00
Loss-Identity	1.85	0.92	1.50	1.84	0.85	1.67	2.09	1.10	1.50	1.58	0.76	1.33
	1.66	0.78	1.50	1.73	0.79	1.60	1.65	0.82	1.52	1.52	0.72	1.17
Loss-Disinhibition	1.73	0.84	1.50	1.60	0.75	1.33	1.97	0.95	1.83	1.68	0.85	1.50
	1.59	0.70	1.50	1.53	0.78	1.33	1.63	0.61	1.55	1.65	0.69	1.50
Fear-Responsibility	2.03	1.01	1.67	1.94	0.96	1.50	2.24	1.04	1.83	1.94	1.07	1.50
	1.81	0.89	1.66	1.70	0.78	1.50	1.86	0.95	1.68	1.95	1.04	1.80
Fear-Negative Affect	2.10	1.17	1.75	1.78	0.99	1.33	2.79	1.20	2.67	1.86	1.14	1.42
	1.92	1.03	1.67	1.74	0.86	1.50	2.03	0.99	1.82	2.12	1.33	1.75
Loss-Goal	1.94	1.07	1.50	1.85	1.01	1.50	2.39	1.26	1.83	1.55	0.69	1.25
	1.71	0.82	1.52	1.78	0.95	1.63	1.70	0.62	1.59	1.60	0.78	1.17
Fear-Deeper Flaw	2.04	0.89	1.83	1.82	0.78	1.67	2.41	1.00	2.50	2.00	0.84	1.83
	1.65	0.61	1.60	1.69	0.69	1.65	1.53	0.47	1.57	1.71	0.59	1.64
Denial-Irrationality	1.84	0.85	1.67	2.07	0.93	1.83	1.79	0.82	1.50	1.47	0.57	1.17
	1.59	0.63	1.55	1.74	0.75	1.60	1.52	0.51	1.57	1.39	0.45	1.25
Total	1.84	0.75	1.63	1.76	0.73	1.48	2.12	0.81	1.89	1.67	0.62	1.50
	1.61	0.60	1.49	1.63	0.69	1.37	1.60	0.47	1.59	1.60	0.61	1.32

Note. The upper row of each entry presents baseline scores, and the lower row presents follow-up scores. CCS-R = Concerns about Change Scale-Revised; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

The ranks of grand means and marginal means for each diagnostic groups on subscales measuring ego-syntonic motivations (i.e., Denial-Irrationality, Loss-Accomplishment, Loss-Goal, and Loss-Identity), emotion regulation functions (i.e., Fear-Negative Affect, Loss-Hedonic, and Loss-Disinhibition), and self-efficacy concerns (i.e., Change-Unable, Fear-Process, and Fear-Risks) are compiled in Table 4.6. Among the three set of motivational barriers to recovery, concerns about self-efficacy and emotional avoidance function (i.e., Fear-Negative Affect) ranked the highest for all participants, followed by ego-syntonic and by other emotion regulation functions. Within each diagnostic group, ego-syntonic concerns were the most important motivational barrier to AN patients, followed by self-efficacy and emotional concerns in sequence. For BN participants, lack of self-efficacy was more concerning than loss of ego-syntonic goals or emotion regulation functions with the exception of losing the coping strategy for negative affect. With regard to individuals with EDNOS, concerns about self-efficacy and emotion regulation were about equally important and more important than concerns about losing ego-syntonic goals.

Across the three diagnostic groups, concerns about losing ego-syntonic goals were the most prominent in AN patients, followed by BN and by EDNOS patients. The emotional avoidance function and insufficient self-efficacy appeared to be more important motivational barriers to individuals with BN or EDNOS than to those with AN. The EDNOS group seemed to put more emphasis on positive emotional effects of EDs (i.e., Loss-Hedonic and -Disinhibition) compared to AN and BN groups.

Table 4.6

Ranks of Grand Means and Marginal Means on Selected CCS-R Subscales

CCS-R	Rank			
	All	AN	BN	EDNOS
Ego-syntonic concerns				
Denial-Irrationality	10	2	14	14
Loss-Accomplishment	7	3	6	12
Loss-Goal	6	5	5	8
Loss-Identity	9	7	9	10
Mean rank	8.00	4.25	8.50	11.00
Emotional concerns				
Fear-Negative Affect	2	8	1	2
Loss-Hedonic	13	11	12	9
Loss-Disinhibition	12	14	11	7
Mean rank	9.00	11.00	8.00	6.00
Self-efficacy concerns				
Change-Unable	3	6	3	3
Fear-Process	1	1	2	1
Fear-Risks	11	13	8	11
Mean rank	5.00	6.67	4.33	5.00

Note. CCS-R = Concerns about Change Scale-Revised; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Table 4.7 reports overall effects of diagnosis, time, and their interaction on CCS-R subscales and total scale; Tables 4.8 and 4.9 provide effect sizes for main effect and simple contrasts between the diagnostic groups and time points. The 95% confidence interval for η_p^2 was constructed based on the noncentral F distribution (Smithson, 2001). Both parametric and nonparametric procedures produced similar results in testing the main effects of diagnosis and time. No nonparametric test was available to examine interaction effects.

In terms of main effects, medium effects of diagnostic categories were found on Change-Unable ($\eta_p^2 = .06, p = .10$), Fear-Negative Affect ($\eta_p^2 = .08, p = .03$), and Denial-Irrationality ($\eta_p^2 = .08, p = .03$) subscales. The lower limits of 95% confidence intervals for η_p^2 also suggested a small difference across the diagnostic groups on the Loss-Goal subscale, $\eta_p^2 = .04, 95\% \text{ CI} = [.01, .14], p = .18$. between-group contrasts for the main effects of diagnosis (see Table 4.8) further revealed moderately lower scores in AN than in BN patients on Change-Unable ($d = -0.56, p = .03$) and Fear-Negative Affect ($d = -0.68, p = .01$) subscales, moderately higher scores in AN than in EDNOS patients on the Denial-Irrationality subscale ($d = 0.72, p = .01$), and moderately lower scores in EDNOS than in BN patients on Loss-Accomplishment ($d = -0.53, p = .08$) and Loss-Goal ($d = -0.57, p = .06$) subscales.

As shown in Table 4.7, time demonstrated medium to large main effects on 12 out of 17 CCS-R subscales (η_p^2 s = .06 – .23) and small main effects on the other five subscales (η_p^2 s = .03 – .05). All medium to large main effects and the small main effect on the Change-Unworthy subscale ($\eta_p^2 = .05$) were significant at the .05 level. After a month of treatment, participants demonstrated small to moderate decreases in their concerns about change on 14 subscales and total scale ($ds = 0.21 – 0.48$), among which only the decrease on the Loss-Disinhibition subscale was not significant at the .05 level (see Table 4.9). In addition, participants did not improve much on their concerns about facing sexuality, losing peer groups, or dealing with negative affect after recovery from EDs over the month of treatment ($ds = 0.16 – 0.19, ps > .05$).

The interaction effects of diagnosis and time ranged from small to large (η_p^2 s = .01 – .16) on CCS-R subscales and total scale, seven of which were significant at the .05 level (see Table 4.7).

Further examination of significant interaction effects (see Table 4.9) indicated that only participants with BN, but not those with AN or EDNOS, showed significant decreases in concerns about inability to change, difficulty of change, loss of hedonic experience, loss of a coping strategy for negative affect, loss of the goal, and discovery of a deeper flaw, and in overall concerns about change at follow-up ($d_s = 0.60 - 1.02, p_s < .05$). In addition, AN and BN patients demonstrated significant decreases in their concerns about change on Fear-Sexuality and Denial-Irrationality subscales ($d_s = 0.44 - 0.53, p_s < .05$), BN and EDNOS patients on the Loss-Interpersonal subscale ($d_s = 0.44 - 0.50, p_s < .05$), and BN patients on Fear-Risks, Fear-Maturity, Loss-Accomplishment, Loss-Identity, Loss-Disinhibition, Fear-Responsibility subscales ($d_s = 0.42 - 0.60, p_s < .05$). It was also noted that patients with EDNOS showed a small non-significant increase in their fear of dealing with negative affect as a result of change at one-month follow-up ($d = -0.29, p = .21$). At follow-up, only the AN group remained significantly higher than the EDNOS group in their denial of the problem; all other significant baseline differences between the diagnostic groups disappeared (see Table 4.8).

Table 4.7

Overall Main and Interaction Effects of Diagnosis and Time on CCS-R Scores

CCS-R	Diagnosis				Time			Diagnosis × Time		
	η_p^2	95% CI	K-W η^2	η_p^2	95% CI	Wilcoxon r^2	η_p^2	95% CI		
Change-Unable	.06	.01 .16	.08*	.23***	.13 .38	.16***	.11**	.03 .23		
Change-Unworthy	.01	.00 .06	.01	.05*	.02 .16	.06*	.03	.00 .12		
Fear-Risks	.04	.00 .13	.05	.09**	.05 .22	.05*	.06	.01 .16		
Fear-Maturity	.01	.00 .05	.02	.04	.02 .15	.03	.04	.00 .13		
Fear-Sexuality	.00	.00 .02	.04	.16***	.09 .30	.23***	.01	.00 .05		
Fear-Process	.02	.00 .11	.03	.09**	.05 .22	.07*	.07*	.02 .19		
Loss-Accomplishment	.04	.00 .13	.06	.09**	.05 .22	.08*	.06	.01 .16		
Loss-Hedonic	.00	.00 .04	.02	.09**	.05 .22	.07*	.09*	.02 .21		
Loss-Interpersonal	.01	.00 .08	.00	.08*	.04 .21	.04	.05	.01 .15		
Loss-Peer Group	.01	.00 .08	.04	.03	.01 .13	.02	.05	.01 .16		
Loss-Identity	.03	.00 .11	.03	.06*	.03 .17	.06*	.04	.00 .13		
Loss-Disinhibition	.02	.00 .10	.05	.04	.02 .15	.03	.04	.00 .13		
Fear-Responsibility	.01	.00 .08	.01	.06*	.03 .18	.05*	.03	.00 .13		
Fear-Negative Affect	.08*	.02 .19	.09*	.04	.02 .14	.03	.16***	.05 .30		
Loss-Goal	.04	.01 .14	.07	.07*	.04 .20	.04	.13**	.03 .25		
Fear-Deeper Flaw	.02	.00 .10	.03	.23***	.13 .37	.17***	.15**	.04 .28		
Denial-Irrationality	.08*	.02 .20	.09*	.13***	.07 .27	.15***	.03	.00 .12		
Total	.02	.00 .10	.04	.16***	.09 .30	.16***	.11**	.03 .23		

Note. CCS-R = Concerns about Change Scale-Revised. K-W η^2 = Kruskal-Wallis $\eta^2 = H/(N - 1) = SSG/SST$. Wilcoxon $r^2 = (z/\sqrt{N})^2$.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.8

Main Effect and Simple Contrasts between Diagnostic Groups on the CCS-R

CCS-R	AN vs. BN			AN vs. EDNOS			BN vs. EDNOS		
	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂
Change-Unable	-0.56*	-0.79**	-0.13	-0.20	-0.27	-0.05	0.37	0.52	0.07
Change-Unworthy	-0.06	-0.17	0.08	0.18	0.23	0.07	0.24	0.39	-0.01
Fear-Risks	-0.38	-0.53*	-0.10	0.07	0.06	0.07	0.46	0.59	0.17
Fear-Maturity	-0.17	-0.32	0.05	-0.04	-0.05	-0.01	0.13	0.27	-0.07
Fear-Sexuality	-0.06	-0.11	0.06	0.04	0.06	-0.01	0.11	0.16	-0.07
Fear-Process	-0.37	-0.52*	-0.10	-0.15	-0.05	-0.23	0.22	0.47	-0.13
Loss-Accomplishment	-0.13	-0.30	0.13	0.40	0.35	0.39	0.53	0.65*	0.26
Loss-Hedonic	0.00	-0.24	0.31	0.13	0.15	0.08	0.13	0.39	-0.23
Loss-Interpersonal	0.01	-0.27	0.18	0.22	0.09	0.33	0.29	0.36	0.16
Loss-Peer Group	-0.07	-0.32	0.22	0.22	0.19	0.18	0.29	0.51	-0.04
Loss-Identity	-0.12	-0.27	0.09	0.32	0.29	0.27	0.43	0.56	0.17
Loss-Disinhibition	-0.34	-0.45	-0.14	-0.15	-0.10	-0.17	0.19	0.35	-0.03
Fear-Responsibility	-0.26	-0.30	-0.18	-0.14	-0.01	-0.28	0.12	0.30	-0.10
Fear-Negative Affect	-0.68*	-0.93**	-0.28	-0.24	-0.07	-0.37	0.44	0.85**	-0.09
Loss-Goal	-0.28	-0.53*	0.10	0.29	0.29	0.22	0.57	0.82**	0.13
Fear-Deeper Flaw	-0.33	-0.68**	0.28	-0.16	-0.21	-0.02	0.18	0.47	-0.30
Denial-Irrationality	0.38	0.35	0.36	0.72*	0.73**	0.57*	0.34	0.39	0.21
Total	-0.27	-0.50	0.04	0.09	0.12	0.05	0.37	0.61*	0.01

Note. CCS-R = Concerns about Change Scale-Revised; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. *d* = Cohen's *d* between marginal means of the diagnostic groups over time; *d*₁ = Cohen's *d* between baseline means of the diagnostic groups; *d*₂ = Cohen's *d* between follow-up means of the diagnostic groups.

* *p* < .05 (2-tailed). ** *p* < .01 (2-tailed).

Table 4.9

Main Effect and Simple Contrasts between Baseline and Follow-up CCS-R Scores

CCS-R	Baseline vs. follow-up			
	<i>d</i>	<i>d</i> _{AN}	<i>d</i> _{BN}	<i>d</i> _{EDNOS}
Change-Unable	0.48***	0.27	0.85***	0.41
Change-Unworthy	0.24*	0.25	0.38	0.01
Fear-Risks	0.30**	0.19	0.50*	0.18
Fear-Maturity	0.19	0.05	0.51*	0.09
Fear-Sexuality	0.45***	0.47**	0.53*	0.32
Fear-Process	0.31**	0.26	0.60**	0.03
Loss-Accomplishment	0.30**	0.19	0.49*	0.18
Loss-Hedonic	0.30**	0.20	0.64**	0.03
Loss-Interpersonal	0.25*	0.05	0.44*	0.50*
Loss-Peer Group	0.16	0.02	0.39	-0.01
Loss-Identity	0.24*	0.15	0.44*	0.09
Loss-Disinhibition	0.21	0.12	0.42*	0.05
Fear-Responsibility	0.29*	0.27	0.60**	-0.01
Fear-Negative Affect	0.18	0.05	0.69**	-0.29
Loss-Goal	0.26*	0.09	0.59**	-0.09
Fear-Deeper Flaw	0.46***	0.18	1.02***	0.34
Denial-Irrationality	0.44***	0.53**	0.44*	0.21
Total	0.41***	0.25	0.81***	0.17

Note. CCS-R = Concerns about Change Scale-Revised. *d* = Cohen's *d* between marginal means of time across the diagnostic groups; *d*_{AN} = Cohen's *d* between baseline and follow-up means of the AN group; AN = anorexia nervosa; *d*_{BN} = Cohen's *d* between baseline and follow-up means of the BN group; BN = bulimia nervosa; *d*_{EDNOS} = Cohen's *d* between baseline and follow-up means of the EDNOS group; EDNOS = eating disorder not otherwise specified.

* *p* < .05 (2-tailed). ** *p* < .01 (2-tailed). *** *p* < .001 (2-tailed).

To compare patterns of resistance to change perceived by clinicians and patients, baseline and follow-up CCS-R-CV and CCS-R scores for the entire sample are presented in Table 4.10. At baseline, both clinicians and patients perceived difficulty of change and inability to change as the top two concerns about recovery, and both rated losing peer groups, dealing with sexuality, and feeling unworthy to change as least important concerns. Similar patterns were observed at follow-up except

that clinicians considered losing peer groups as a more important concern about change after working with their patients for one month.

Table 4.10

Baseline and Follow-up CCS-R-CV and CCS-R Scores for All Participants

CCS-R-CV item/ CCS-R scale	Baseline (N = 84)						Follow-up (N = 84)					
	Psychiatrists			Participants			Psychiatrists			Participants		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
Change-Unable	3.24	1.12	3.24	2.19	1.05	2.00	3.05	1.94	3.03	1.76	0.77	1.67
Change-Unworthy	1.40	0.74	1.00	1.58	0.77	1.33	1.33	0.80	1.00	1.42	0.62	1.17
Fear-Risks	1.80	1.17	1.00	1.78	0.92	1.50	1.65	0.99	1.27	1.54	0.72	1.41
Fear-Maturity	1.71	0.98	1.17	1.86	0.95	1.50	2.04	1.07	2.00	1.70	0.82	1.50
Fear-Sexuality	1.55	0.89	1.00	1.40	0.62	1.17	1.35	1.73	1.00	1.12	0.30	1.00
Fear-Process	3.14	1.09	3.14	2.27	1.12	2.00	3.09	1.45	3.07	1.98	0.91	1.93
Loss-Accomplishment	1.98	1.12	1.67	1.96	1.09	1.58	1.78	1.44	1.75	1.69	0.84	1.40
Loss-Hedonic	2.32	1.34	2.31	1.78	1.03	1.17	2.20	1.18	2.20	1.54	0.77	1.33
Loss-Interpersonal	2.16	1.10	2.15	1.66	0.83	1.33	2.05	1.25	2.00	1.50	0.68	1.33
Loss-Peer group	1.39	0.95	1.00	1.36	0.70	1.00	2.02	1.57	1.22	1.24	0.62	1.00
Loss-Identity	1.65	1.06	1.00	1.85	0.92	1.50	1.64	1.25	1.64	1.66	0.78	1.50
Loss-Disinhibition	2.70	1.25	2.69	1.73	0.84	1.50	2.35	1.46	2.36	1.59	0.70	1.50
Fear-Responsibility	2.19	1.10	2.17	2.03	1.01	1.67	2.43	1.57	2.33	1.81	0.89	1.66
Fear-Negative Affect	2.82	1.41	2.80	2.10	1.17	1.75	2.66	1.42	2.66	1.92	1.03	1.67
Loss-Goal	2.47	1.31	2.45	1.94	1.07	1.50	2.05	1.51	2.05	1.71	0.82	1.52
Fear-Deeper Flaw	2.84	1.31	2.83	2.04	0.89	1.83	2.81	1.14	2.81	1.65	0.61	1.60
Denial-Irrationality	1.77	1.10	1.00	1.84	0.85	1.67	1.50	1.20	1.00	1.59	0.63	1.55
Total	2.19	0.64	2.17	1.84	0.75	1.63	2.12	0.75	2.11	1.61	0.60	1.49

Note. CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised.

Table 4.11 compares the ranks of means over time on corresponding CCS-R-CV items and CCS-R subscales measuring ego-syntonic, emotional, and self-efficacy concerns about change between psychiatrists and patients. Psychiatrists perceived self-efficacy and emotional concerns as more important motivational barriers than ego-syntonic concerns to their patients' recovery from EDs;

in contrast, patients were more concerned about lacking self-efficacy than losing ego-syntonic goals or emotion regulation functions in their recovery. Between the two groups, psychiatrists put more emphasis on emotional concerns and patients more on ego-syntonic concerns while both perceived self-efficacy concerns equally important as barriers to overcoming an ED (see Table 4.11).

Table 4.11

Ranks of Means over Time on Corresponding CCS-R-CV Items and CCS-R Subscales

CCS-R-CV item/CCS-R subscale	Psychiatrists	Patients
Ego-syntonic concerns		
Denial-Irrationality	15	10
Loss-Accomplishment	10	7
Loss-Goal	7	6
Loss-Identity	14	9
Mean rank	11.50	8.00
Emotional concerns		
Fear-Negative Affect	4	2
Loss-Hedonic	5	13
Loss-Disinhibition	8	12
Mean rank	5.67	9.00
Self-efficacy concerns		
Change-Unable	1	3
Fear-Process	2	1
Fear-Risks	12	11
Mean rank	5.00	5.00

Note. CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised.

Parametric and nonparametric correlations reported in Table 4.12 indicated moderate to large significant positive correlations between clinician- and patient-perceived motivational barriers to change at baseline except for fear of losing a means to express emotions ($r = .25, p < .05; r_s = .34, p < .01$) and denial of having a problem ($r = .18, r_s = .11, ps > .05$). After the first month of treatment, the

strength of positive correlations between corresponding CCS-R-CV and CCS-R scores reduced to various degrees with the exception of the correlation between corresponding Denial-Irrationality scores ($r = .23, r_s = .24, ps < .05$). No significant correlations existed between corresponding Change-Unworthy ($r = .21, r_s = .21, ps > .05$), Fear-Sexuality ($r = .03, r_s = -.01, ps > .05$), and Loss-Disinhibition ($r = .18, r_s = .09, ps > .05$) scores at follow-up.

Table 4.12

Cross-Sectional Correlations between Corresponding CCS-R-CV and CCS-R Scores

CCS-R-CV item/CCS-R scale	Baseline (N = 84)		Follow-up (N = 84)	
	<i>r</i>	<i>r_s</i>	<i>r</i>	<i>r_s</i>
Change-Unable	.42***	.45***	.20	.32**
Change-Unworthy	.42***	.45***	.21	.21
Fear-Risks	.53***	.45***	.29**	.35**
Fear-Maturity	.43***	.47***	.27*	.31**
Fear-Sexuality	.38***	.46***	.03	-.01
Fear-Process	.54***	.57***	.31**	.39***
Loss-Accomplishment	.52***	.55***	.37***	.40***
Loss-Hedonic	.46***	.51***	.37***	.37***
Loss-Interpersonal	.51***	.45***	.25*	.26*
Loss-Peer group	.47***	.50***	.23*	.21
Loss-Identity	.51***	.47***	.34**	.31**
Loss-Disinhibition	.25*	.34**	.18	.09
Fear-Responsibility	.47***	.47***	.24*	.37***
Fear-Negative Affect	.55***	.59***	.42***	.45***
Loss-Goal	.50***	.56***	.42***	.37***
Fear-Deeper Flaw	.33**	.32**	.23*	.28**
Denial-Irrationality	.18	.11	.23*	.24*
Total	.60***	.63***	.43***	.48***

Note. CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.13 shows parametric and nonparametric effect sizes for the differences between clinician- and patient-perceived concerns about change, which are similar to each other. At baseline, psychiatrists perceived higher resistance to change than their patients on most CCS-R subscales except for Change-Unworthy ($d = -0.22, p < .05$), Fear-Maturity ($d = -0.14, p > .05$), Loss-Identity ($d = -0.20, p > .05$), and Denial-Irrationality ($d = -0.06, p > .05$) subscales. Significant positive differences between psychiatrists and patients were detected in corresponding Change-Unable, Fear-Process, Loss-Hedonic, Loss-Interpersonal, Loss-Disinhibition, Fear-Negative Affect, Loss-Goal, Fear-Deeper Flaw, and total scores at baseline ($d_s = 0.43 - 0.89, p_s < .001$), which remained significant at follow-up with smaller or larger effect sizes (see Table 4.13). Albeit to a lesser degree, negative differences in Change-Unworthy, Loss-Identity, and Denial-Irrationality scores between psychiatrists and patients also remained at follow-up. In addition, psychiatrists perceived significantly higher levels of concerns about growing up, losing peer groups, taking responsibility in their patients than patients themselves after a month of treatment ($d_s = 0.29 - 0.38, p_s < .001$ or $.05$).

Table 4.13

Differences between Corresponding CCS-R-CV and CCS-R Scores

CCS-R-CV item/ CCS-R scale	Baseline (N = 84)					Follow-up (N = 84)				
	<i>d</i>	η_p^2	95% CI		Wilcoxon r^2	<i>d</i>	η_p^2	95% CI		Wilcoxon r^2
Change-Unable	0.89***	.45**	.29	.56	.45***	0.66***	.31***	.18	.44	.39***
Change-Unworthy	-0.22*	.05*	.02	.16	.05*	-0.11	.01	.00	.09	.03
Fear-Risks	0.02	.00	.00	.02	.00	0.10	.01	.00	.09	.00
Fear-Maturity	-0.14	.02	.00	.11	.02	0.29**	.08**	.04	.20	.08**
Fear-Sexuality	0.17	.03	.01	.13	.01	0.13	.02	.00	.11	.03
Fear-Process	0.82***	.41***	.25	.53	.42***	0.77***	.37***	.23	.50	.41***
Loss-Accomplishment	0.03	.00	.00	.03	.00	0.06	.00	.00	.07	.01
Loss-Hedonic	0.43***	.16***	.08	.30	.16***	0.57***	.25***	.14	.39	.28***
Loss-Interpersonal	0.50***	.20***	.11	.34	.19***	0.43***	.16***	.08	.30	.18***
Loss-Peer group	0.04	.00	.00	.06	.00	0.50***	.20***	.11	.34	.22***
Loss-Identity	-0.20	.04	.02	.15	.06*	-0.01	.00	.00	.00	.00
Loss-Disinhibition	0.73***	.35***	.21	.48	.41***	0.51***	.21***	.11	.35	.22***
Fear-Responsibility	0.15	.02	.01	.11	.03	0.38***	.13***	.07	.27	.14**
Fear-Negative Affect	0.59***	.26***	.15	.40	.26***	0.55***	.23***	.13	.38	.24***
Loss-Goal	0.44***	.17***	.09	.31	.16***	0.24*	.06*	.03	.17	.08**
Fear-Deeper Flaw	0.61***	.27***	.15	.41	.26***	1.00***	.51***	.33	.61	.53***
Denial-Irrationality	-0.06	.00	.00	.07	.02	-0.08	.01	.00	.08	.02
CCS-R total	0.54***	.23***	.13	.38	.31***	0.69***	.33***	.19	.46	.35***

Note. CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised. Wilcoxon $r^2 = (z/\sqrt{N})^2$.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Decisional Balance for Eating Disorders

Table 4.14 shows baseline and follow-up subscale and total scores on the P-CED for the entire sample and each diagnostic group. At baseline, participants disagreed with all benefits and agreed with all costs presented in the P-CED. At follow-up, participants showed agreement only on three Con subscales (i.e., Con-Weight/Shape, -Guilt, and -Hatred). Overall, Chinese ED patients perceived more cons than pros of their problem across the diagnostic groups and over time. The benefit of

avoiding sexuality or pregnancy received the highest level of disapproval and cost of consequences the highest level of approval at both time points, which were beyond the moderate range. Agreement with the cost of guilt at baseline and disagreement with benefits to fitness, safety or structure, and sense of specialness at follow-up also fell in the moderate-to-strong range. Among the three diagnostic groups, the BN group showed the highest level of overall perceived benefits and costs, the AN group the lowest costs, and the EDNOS group the lowest benefits at baseline. The differences between groups diminished over time; at follow-up, AN patients endorsed the highest level of benefits and EDNOS patients the lowest costs. All three diagnostic groups perceived lower levels of benefits and costs after the first month of treatment, with the greatest decreases observed in BN individuals (see Table 4.14).

Table 4.14

Baseline and Follow-up P-CED Scores for All Participants and Each Diagnostic Group

P-CED	ALL (N = 84)			AN (n = 39)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
Pro-Safe/Structured	-0.74	1.20	-1.00	-0.65	1.20	-0.88	-0.57	1.18	-0.63	-1.13	1.20	-1.69
	-1.12	0.89	-1.38	-0.91	1.02	-1.27	-1.28	0.63	-1.36	-1.31	0.85	-1.62
Pro-Appearance	-0.63	1.22	-0.88	-0.62	1.17	-0.50	-0.21	1.27	-0.25	-1.19	1.11	-1.50
	-0.97	1.03	-1.05	-0.73	1.05	-1.00	-1.01	0.99	-0.98	-1.38	0.95	-1.88
Pro-Fertility/Sexuality	-1.29	0.99	-1.75	-1.38	0.75	-1.50	-1.16	1.08	-1.50	-1.29	1.27	-1.88
	-1.62	0.64	-1.77	-1.51	0.83	-1.75	-1.71	0.37	-1.71	-1.73	0.46	-2.00
Pro-Special/Skilled	-0.73	1.23	-1.00	-0.74	1.23	-1.25	-0.60	1.22	-1.00	-0.86	1.28	-1.25
	-1.11	0.91	-1.21	-0.99	1.01	-1.25	-1.09	0.75	-1.00	-1.39	0.86	-1.75
Pro-Fitness	-0.74	1.12	-1.00	-0.69	1.04	-0.75	-0.55	1.21	-0.75	-1.08	1.14	-1.38
	-1.15	0.92	-1.25	-0.96	1.02	-1.25	-1.28	0.77	-1.24	-1.34	0.82	-1.63
Pro-Communication	-0.08	1.16	0.00	-0.45	1.11	-0.50	0.41	1.04	0.50	0.01	1.23	0.13
	-0.45	0.93	-0.50	-0.67	0.97	-0.61	-0.32	0.76	-0.35	-0.21	0.98	0.00
Pro-Eat & Stay Slim	-0.13	1.40	0.00	-0.12	1.48	0.00	0.50	1.20	0.60	-0.94	1.05	-1.20
	-0.51	1.16	-0.56	-0.40	1.18	-0.40	-0.32	1.04	-0.38	-0.93	1.24	-1.40
Pro-Boredom	-0.50	1.31	-0.80	-0.61	1.36	-0.80	0.04	1.23	0.60	-0.94	1.14	-1.20
	-0.71	1.02	-0.75	-0.61	1.17	-0.70	-0.89	0.54	-0.80	-0.69	1.16	-0.65
Con-Trapped	0.22	1.13	0.13	-0.11	1.11	-0.50	0.68	1.01	0.75	0.28	1.14	0.25
	-0.50	0.86	-0.48	-0.48	0.86	-0.38	-0.55	0.59	-0.51	-0.49	1.16	-0.48
Con-Guilt	1.04	0.91	1.20	1.30	0.69	1.60	0.98	0.92	1.40	0.62	1.14	1.00
	0.80	0.92	1.00	0.94	0.93	1.20	0.82	0.74	0.80	0.51	1.09	0.81
Con-Hatred	1.07	0.91	1.33	0.86	0.86	0.83	1.43	0.76	1.67	1.01	1.06	1.50
	1.17	0.90	1.18	1.13	0.94	1.14	1.27	0.61	1.19	1.13	1.15	1.27
Con-Stifled Emotions	-0.17	1.10	0.00	-0.39	1.03	-0.50	0.08	1.03	0.25	-0.05	1.28	0.25
	-0.61	0.88	-0.56	-0.66	0.88	-0.57	-0.55	0.76	-0.59	-0.58	1.03	-0.56
Con-Negative Self	0.28	1.21	0.40	-0.10	1.17	-0.20	0.76	1.02	1.20	0.42	1.32	0.90
	-0.25	0.90	-0.20	-0.48	0.94	-0.40	-0.05	0.62	-0.15	-0.07	1.05	-0.18
Con-Weight/Shape	0.50	1.14	0.60	0.31	1.04	0.20	0.96	0.89	1.00	0.32	1.46	0.40
	0.29	1.83	0.35	0.59	2.11	0.40	0.13	1.27	0.30	-0.09	1.82	-0.06
Pro total	-0.61	0.92	-0.53	-0.66	0.97	-0.62	-0.27	0.77	-0.33	-0.93	0.89	-1.15
	-0.95	0.73	-1.05	-0.85	0.87	-1.00	-0.99	0.49	-1.01	-1.12	0.67	-1.17
Con total	0.49	0.79	0.65	0.31	0.72	0.22	0.82	0.55	0.92	0.43	1.05	0.55
	0.15	0.71	0.16	0.17	0.75	0.11	0.18	0.48	0.17	0.07	0.90	0.15

Note. The upper row of each entry presents baseline scores, and the lower row presents follow-up scores. P-CED = Pros and Cons of Eating Disorder Scale; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

The ranks of grand means and marginal means of each diagnostic group on selected P-CED Pro subscales assessing ego-syntonic (i.e., Pro-Special/Skilled, -Appearance, and -Fitness) and emotional (i.e., Pro-boredom and -Communication) benefits among all P-CED subscales and among P-CED Pro subscales are summarized in Table 4.15 to compare the relative importance of these motivations for the entire sample and each diagnostic group. Different from the pattern observed on the CCS-R, ego-syntonic benefits ranked lower than emotional benefits in the entire sample and each of the three diagnostic groups. Comparison of the mean ranks for each set of selected P-CED Pro subscales indicated that ego-syntonic benefits were perceived equally important by each diagnostic group while emotional benefits more important by the EDNOS group (See Table 4.15).

Table 4.15

Ranks of Grand Means and Marginal Means on Selected P-CED Subscales

P-CED	All (N = 84)		AN (n = 39)		BN (n = 25)		EDNOS (n = 20)	
	Both	Pro	Both	Pro	Both	Pro	Both	Pro
Ego-syntonic benefits								
Pro-Special/Skilled	11	5	13	7	11	5	10	4
Pro-Appearance	10	4	10	4	10	4	13	7
Pro-Fitness	13	7	12	6	12	6	11	5
Mean rank	11.33	5.33	11.67	5.67	11.00	5.00	11.33	5.33
Emotional benefits								
Pro-Boredom	9	3	9	3	9	3	8	2
Pro-Communication	6	1	8	2	7	2	5	1
Mean rank	7.50	2.00	8.50	2.50	8.00	2.50	6.50	1.50

Note. Ranks among all P-CED subscales and P-CED Pro subscales are both presented. P-CED = Pros and Cons of Eating Disorders Scale; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Table 4.16 presents both parametric and nonparametric effect sizes for the main and interaction effects of diagnosis and time on perceived benefits and costs of EDs, which are close to each other. Medium main effects of diagnosis were found on three out of eight Pro (i.e., Pro-Appearance, -Communication, and -Eat & Slim) and two out of six Con (i.e., Con-Guilt and -Negative Self) subscales (η_p^2 s = .08 – .09, $ps < .05$). The lower limits of 95% confidence intervals for η_p^2 indicated that main effects of diagnosis on other subscales were negligible except for the small effect on the Pro total scale, $\eta_p^2 = .04$, CI [.01, .14], $p = .19$. Regardless of diagnosis, participants demonstrated significant decreases in their perceived benefits and costs of EDs (η_p^2 s = .08 – .35, $ps < .05$) on P-CED subscales and total scales except for Pro-Boredom, Con-Guilt, Con-Hatred, and Con-Weight/Shape subscales. The effect sizes were large on one Pro subscale, three Con subscales, and both Pro and Con total scales (η_p^2 s $> .14$; $ps < .001$).

Further examination of main effect contrasts between the diagnostic groups (see Table 4.17) demonstrated that AN patients scored significantly lower than BN patients on Pro-Communication ($d = -0.69$, $p < .01$) and Con-Negative Self ($d = -0.70$, $p < .01$) subscales, that AN and BN patients scored significantly higher than EDNOS patients on Pro-Appearance ($ds = 0.64$ and 0.70 , $ps < .05$) and Pro-Eat & Stay Slim ($ds = 0.63$ and 0.95 , $ps < .05$), and that AN patients scored significantly higher than EDNOS patients on the Con-Guilt subscale ($d = -0.77$, $p < .01$). Compared to EDNOS individuals, AN individuals obtained moderately lower scores on Pro-Communication ($d = -0.53$, $p > .05$) and Con-Negative Self ($d = -0.50$, $p > .05$) subscales and BN individuals showed moderately higher scores on the Pro total scale ($d = 0.55$, $p > .05$) although none of the differences were significant at the .05 level. The main effect contrasts between baseline and follow-up (see Table 4.18) showed significant

decreases in perceived benefits and costs of EDs on all but Pro-Boredom ($d = 0.18, p > .05$), Con-Hatred ($d = -0.11, p > .05$), and Con-Weight/Shape ($d = 0.11, p > .05$) subscales. The effect sizes were moderate on Con-Trapped ($d = 0.65, p < .001$) and Con-Negative Self ($d = 0.56, p < .001$) subscales.

According to Table 4.16, interaction effects of diagnosis and time on P-CED scores fell in the small to medium range on most subscales and total scales. The interactions were significant on three subscales (i.e., Pro-Appearance, Pro-Boredom, Con-Trapped) and Pro total scale with medium to large effect sizes (η_p^2 s = .08 – .15, $ps < .05$). Specifically, BN patients showed significant decreases on above four scales ($ds = 0.77 – 1.03, ps < .001$) while AN and EDNOS patients only on the Con-Trapped subscale ($ds = 0.39$ and $0.68, ps < .05$ and $.01$) after a month of treatment (see Table 4.18). Among the three diagnostic groups, only BN patients scored significantly lower on most Pro subscales and on Pro and Con total scales at one-month follow-up. They also showed significant decreases on more Con subscales with larger effect sizes compared to the other two diagnostic groups (see Table 4.18). In addition, the AN group demonstrated a small significant increase in hatred of consequences ($d = 0.33, p < .05$) and EDNOS a small non-significant increase in benefit of avoiding boredom ($d = 0.23, p > .05$). The number of significant differences between the diagnostic groups also reduced from 12 at baseline to one at follow-up (see Table 4.17). All significant baseline differences between the diagnostic groups were not significant at the .05 level after the first month of treatment, and the AN group became more appreciative of the benefit to appearance than the BN group at follow-up ($d = 0.28, p < .05$).

Table 4.16

Overall Main and Interaction Effects of Diagnosis and Time on P-CED Scores

P-CED	Diagnosis				Time			Diagnosis x Time			
	η_p^2	95% CI		K-W η^2	η_p^2	95% CI		Wilcoxon r^2	η_p^2	95% CI	
Pro-Safe/Structured	.04	.00	.13	.05	.11**	.06	.24	.09**	.04	.01	.14
Pro-Appearance	.08*	.02	.19	.08*	.10**	.05	.23	.08**	.08*	.02	.19
Pro-Fertility/Sexuality	.00	.00	.03	.01	.11**	.05	.24	.07*	.03	.00	.12
Pro-Special/Skilled	.02	.00	.09	.02	.11**	.05	.24	.08**	.01	.00	.08
Pro-Fitness	.03	.00	.12	.03	.15***	.08	.28	.14**	.04	.01	.14
Pro-Communication	.09*	.02	.21	.10*	.11**	.06	.25	.09**	.05	.01	.15
Pro-Eat & Stay Slim	.11**	.03	.24	.11**	.08**	.04	.21	.07*	.06	.02	.17
Pro-Boredom	.02	.00	.10	.02	.04	.02	.14	.03	.15**	.04	.28
Con-Trapped	.03	.00	.12	.05	.35***	.21	.48	.31***	.11**	.03	.23
Con-Guilt	.09*	.02	.21	.10*	.03	.02	.14	.06*	.01	.00	.07
Con-Hatred	.04	.00	.13	.06	.01	.00	.08	.01	.04	.00	.13
Con-Stifled Emotions	.02	.00	.11	.03	.16***	.08	.30	.14**	.02	.00	.10
Con-Negative Self	.09*	.02	.21	.10*	.25***	.14	.39	.27***	.04	.00	.13
Con-Weight/Shape	.02	.00	.10	.02	.03	.01	.12	.04	.06	.02	.17
Pro total	.04	.01	.14	.05	.19***	.10	.32	.17***	.10*	.03	.22
Con total	.03	.00	.12	.04	.18***	.09	.32	.18***	.07	.02	.18

Note. P-CED = Pros and Cons of Eating Disorder Scale. K-W η^2 = Kruskal-Wallis $\eta^2 = H/(N - 1) = SSG/SST$. Wilcoxon $r^2 = (z/\sqrt{N})^2$.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.17

Main Effect and Simple Contrasts between Diagnostic Groups on the P-CED

P-CED	AN vs. BN			AN vs. EDNOS			BN vs. EDNOS		
	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂	<i>d</i>	<i>d</i> ₁	<i>d</i> ₂
Pro-Safe/Structured	0.16	-0.07	0.42	0.48	0.40	0.45	0.33	0.47	0.03
Pro-Appearance	-0.06	-0.34	0.28*	0.64*	0.48	0.64	0.70*	0.82*	0.36
Pro-Fertility/Sexuality	-0.02	-0.23	0.31	0.10	-0.10	0.34	0.11	0.13	0.03
Pro-Special/Skilled	-0.02	-0.12	0.11	0.29	0.10	0.45	0.31	0.21	0.33
Pro-Fitness	0.10	-0.13	0.35	0.43	0.34	0.41	0.33	0.47	0.06
Pro-Communication	-0.69**	-0.77**	-0.38	-0.53	-0.41	-0.50	0.16	0.36	-0.12
Pro-Eat & Stay Slim	-0.33	-0.47	-0.07	0.63*	0.62*	0.46	0.95**	1.10***	0.53
Pro-Boredom	-0.18	-0.51*	0.27	0.20	0.26	0.08	0.39	0.77*	-0.20
Con-Trapped	-0.43	-0.72**	0.08	-0.22	-0.35	0.01	0.21	0.37	-0.07
Con-Guilt	0.30	0.35	0.14	0.77**	0.77**	0.47	0.47	0.41	0.33
Con-Hatred	-0.46	-0.64*	-0.16	-0.10	-0.16	0.00	0.37	0.47	0.15
Con-Stifled Emotions	-0.35	-0.43	-0.13	-0.26	-0.31	-0.10	0.09	0.12	0.03
Con-Negative Self	-0.70**	-0.74**	-0.48	-0.50	-0.45	-0.45	0.20	0.29	0.03
Con-Weight/Shape	-0.09	-0.59*	0.25	0.29	-0.01	0.37	0.37	0.57	0.12
Pro total	-0.17	-0.44	0.19	0.37	0.30	0.37	0.55	0.74*	0.18
Con total	-0.41	-0.66*	-0.01	-0.01	-0.16	0.14	0.39	0.50	0.15

Note. P-CED = Pros and Cons of Eating Disorder Scale; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. *d* = Cohen's *d* between marginal means of the diagnostic groups over time; *d*₁ = Cohen's *d* between baseline means of the diagnostic groups; *d*₂ = Cohen's *d* between follow-up means of the diagnostic groups.

* *p* < .05 (2-tailed). ** *p* < .01 (2-tailed). *** *p* < .001 (2-tailed).

Table 4.18

Main Effect and Simple Contrasts between Baseline and Follow-up P-CED Scores

P-CED	Baseline vs. follow-up			
	<i>d</i>	<i>d</i> _{AN}	<i>d</i> _{BN}	<i>d</i> _{EDNOS}
Pro-Safe/Structured	0.35**	0.25	0.73**	0.14
Pro-Appearance	0.31**	0.12	0.77***	0.15
Pro-Fertility/Sexuality	0.31**	0.16	0.48*	0.32
Pro-Special/Skilled	0.32**	0.26	0.36	0.36
Pro-Fitness	0.40***	0.29	0.68**	0.25
Pro-Communication	0.34**	0.22	0.59**	0.22
Pro-Eat & Stay Slim	0.30**	0.23	0.66**	-0.01
Pro-Boredom	0.18	0.00	0.91***	-0.23
Con-Trapped	0.65***	0.39*	1.03***	0.68**
Con-Guilt	0.22*	0.39*	0.17	0.07
Con-Hatred	-0.11	-0.33*	0.17	-0.10
Con-Stifled Emotions	0.41***	0.30	0.51*	0.45
Con-Negative Self	0.56***	0.45**	0.78***	0.49*
Con-Weight/Shape	0.11	-0.13	0.59**	0.20
Pro total	0.45***	0.25	1.03***	0.25
Con total	0.41***	0.19	0.91***	0.36

Note. P-CED = Pros and Cons of Eating Disorder Scale. *d* = Cohen's *d* between marginal means of time across the diagnostic groups; *d*_{AN} = Cohen's *d* between baseline and follow-up means of the AN group; AN = anorexia nervosa; *d*_{BN} = Cohen's *d* between baseline and follow-up means of the BN group; BN = bulimia nervosa; *d*_{EDNOS} = Cohen's *d* between baseline and follow-up means of the EDNOS group; EDNOS = eating disorder not otherwise specified.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Overall Patterns of Motivation and Resistance

Baseline and follow-up total scores on motivation and concurrent criterion measures are profiled for the entire sample and each diagnostic group in Table 4.19 to examine the overall pattern of motivation in Chinese ED patients. Most total scores were within the moderate range except for baseline and follow-up RTC scores. At baseline, the BN group exhibited the lowest level, and the EDNOS group the highest level, of motivation and self-efficacy for change on most measures except

that AN patients were rated as the least ready to change by the research psychiatrist, least concerned about change by their attending psychiatrists, and least appreciative of the costs of EDs and that BN patients perceived the highest level of costs of EDs. At follow-up, group differences in these measures became smaller. EDNOS patients remained the most motivated for recovery and the other two diagnostic groups obtained very similar scores on most measures (see Table 4.19). In addition, resistance to change decreased to different degrees in all three diagnostic groups over the first month of treatment, with greater changes observed in the BN group than in the other two diagnostic groups.

Table 4.19

Baseline and Follow-up Scores on Measures of Motivational Factors

Measure	ALL (N = 84)			AN (n = 39)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
RTC	5.90	1.24	6.00	5.59	1.45	5.91	5.91	1.18	6.00	6.47	0.52	6.67
	6.34	0.88	6.56	6.26	1.11	6.47	6.28	0.68	6.50	6.56	0.50	6.67
CCS-R-CV	2.19	0.64	2.17	2.09	0.76	1.96	2.36	0.51	2.17	2.15	0.49	2.17
	2.12	0.75	2.11	2.12	0.86	2.00	2.15	0.74	2.11	2.07	0.53	2.11
CCS-R	1.84	0.75	1.63	1.76	0.73	1.48	2.12	0.81	1.89	1.67	0.62	1.50
	1.61	0.60	1.49	1.63	0.69	1.37	1.60	0.47	1.59	1.60	0.61	1.32
P-CED Pro	-0.61	0.92	-0.53	-0.66	0.97	-0.62	-0.27	0.77	-0.33	-0.93	0.89	-1.15
	-0.95	0.73	-1.05	-0.85	0.87	-1.00	-0.99	0.49	-1.01	-1.12	0.67	-1.17
P-CED Con	0.49	0.79	0.65	0.31	0.72	0.22	0.82	0.55	0.92	0.43	1.05	0.55
	0.15	0.71	0.16	0.17	0.75	0.11	0.18	0.48	0.17	0.07	0.90	0.15
ADRA	3.35	1.63	3.31	3.14	1.57	2.88	4.00	1.68	3.81	2.97	1.50	2.96
	2.88	1.41	2.87	2.88	1.56	2.87	3.11	1.20	3.12	2.61	1.39	2.62

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Results of omnibus tests presented in Table 4.20 revealed small to medium main effects of diagnosis (η_p^2 s = .01 – .06), small to large main effects of time (η_p^2 s = .02 – .19), and small to medium interaction effects of diagnosis and time (η_p^2 s = .03 – .011) on measures of different motivational factors. Among these, main effects of time were significant on all measures with the exception of the CCS-R-CV total scale and interaction effects were significant on CCS-R and P-CED Pro total scales at the .05 level. According to the lower limits of 95% confidence intervals for η_p^2 , main effects of diagnosis on RTC, P-CED-Pro total, and ADRA scores and interaction effects of diagnosis and time on RTC and P-CED Con total scores were also discernible although not statistically significant (see Table 4.20).

Table 4.20

Overall Main and Interaction Effects of Diagnosis and Time on Motivational Factors

Measure	Diagnosis			Time				Diagnosis x Time		
	η_p^2	95% CI	K-W η^2	η_p^2	95% CI	Wilcoxon r^2	η_p^2	95% CI		
RTC	.06	.01 .16	.05	.16***	.08 .29	.26	.07	.02 .18		
CCS-R-CV	.01	.00 .08	.01	.02	.00 .11	.03	.03	.00 .11		
CCS-R	.02	.00 .10	.04	.16***	.09 .30	.16	.11**	.03 .23		
P-CED Pro	.04	.01 .14	.05	.19***	.10 .32	.17	.10*	.03 .22		
P-CED Con	.03	.00 .12	.04	.18***	.09 .32	.18	.07	.02 .18		
ADRA	.05	.01 .16	.07	.09**	.04 .22	.10	.03	.00 .12		

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities. K-W η^2 = Kruskal-Wallis $\eta^2 = H/(N - 1) = SSG/SST$. Wilcoxon $r^2 = (z/\sqrt{N})^2$.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Further examination of main effects indicated that EDNOS patients were significantly more ready to change than AN patients ($d = 0.62$, $p < .05$) and perceived less difficulty in changing behaviors

than BN patients ($d = -0.60, p < .05$) regardless of time (see Table 4.21). Differences in motivational factors between AN and EDNOS groups were generally smaller than those between BN and either of the two groups except for the difference in readiness to change. All participants, regardless of diagnosis, demonstrated significant improvement in motivation for change on most measures except for the CCS-R-CV ($d = 0.11, p > .05$) total scale (see Table 4.22).

Further analysis of interaction effects suggested that significant group differences existed only at baseline. As shown in Table 4.21, the AN group perceived lower costs of their disorder ($d = -0.66, p < .05$) and anticipated less difficulty of behavior change ($d = -0.55, p < .05$) than the BN group; the BN group endorsed higher levels of concerns about change, perceived benefits of their disorder, and anticipated difficulty of behavior change than the EDNOS group. Significant differences in changes of motivation over time were also detected between the three diagnostic groups. Specifically, time demonstrated similar effects on motivational factors in BN patients as in the entire sample with moderate to large effect sizes (see Table 4.22). For the other two diagnostic groups, time did not lead to significant changes in motivation except for a moderate significant increase in readiness to change in AN patients ($d = 0.62, p < .001$).

Table 4.21

Main Effect and Simple Contrasts between Diagnostic Groups on Motivational Factors

Measure	AN vs. BN			AN vs. EDNOS			BN vs. EDNOS		
	d	d_1	d_2	d	d_1	d_2	d	d_1	d_2
RTC	-0.18	-0.26	-0.02	-0.62*	-0.73**	-0.35	-0.44	-0.47	-0.32
CCS-R-CV	-0.24	-0.43	-0.04	-0.01	-0.09	0.06	0.23	0.34	0.10
CCS-R	-0.27	-0.50	0.04	0.09	0.12	0.05	0.37	0.61*	0.01
P-CED Pro	-0.17	-0.44	0.19	0.37	0.30	0.37	0.55	0.74*	0.18
P-CED Con	-0.41	-0.66*	-0.01	-0.01	-0.16	0.14	0.39	0.50	0.15
ADRA	-0.43	-0.55*	-0.16	0.17	0.10	0.19	0.60*	0.65*	0.35

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. d = Cohen's d between marginal means of the diagnostic groups over time; d_1 = Cohen's d between baseline means of the diagnostic groups; d_2 = Cohen's d between follow-up means of the diagnostic groups.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

Table 4.22

Main Effect and Simple Contrasts between Baseline and Follow-up Motivation Scores

Measure	Baseline vs. follow-up			
	d	d_{AN}	d_{BN}	d_{EDNOS}
RTC	-0.50***	-0.62***	-0.53*	-0.21
CCS-R-CV	0.11	-0.04	0.38	0.12
CCS-R	0.41***	0.25	0.81***	0.17
P-CED Pro	0.45***	0.25	1.03***	0.25
P-CED Con	0.41***	0.19	0.91***	0.36
ADRA	0.29**	0.17	0.42*	0.41

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities. d = Cohen's d between marginal means of time across the diagnostic groups; d_{AN} = Cohen's d between baseline and follow-up means of the AN group; AN = anorexia nervosa; d_{BN} = Cohen's d between baseline and follow-up means of the BN group; BN = bulimia nervosa; d_{EDNOS} = Cohen's d between baseline and follow-up means of the EDNOS group; EDNOS = eating disorder not otherwise specified.

In addition to total scores on measures of motivation and self-efficacy, treatment dropout rates were also compared across the three diagnostic groups. The dropout rates were 23% in AN patients, 60% in BN patients, and 20% in EDNOS patients. BN patients showed a significantly higher dropout rate than AN ($\phi = .37, p < .01$) and EDNOS patients ($\phi = .40, p < .01$). The overall effect of diagnosis on treatment dropout was medium in size (Cramer's $V = .37, p < .01$).

Patterns of Psychopathology

Eating Pathology

Baseline and follow-up subscale, global, bulimia and BMI scores of the EDE-Q 6.0 are summarized for all participants and individual diagnostic groups in Table 4.23. All EDE-Q 6.0 scores, including bulimia scores, were below the clinically significant level (4) proposed for Western populations. AN patients were significantly underweight at both baseline and follow-up, and EDNOS patients were slightly underweight at follow-up. Among the four EDE-Q 6.0 subscales, all three diagnostic groups scored the highest on the Shape Concern subscale and the lowest on the Restraint subscale at both baseline and follow-up. Scores on the Weight Concern subscale were the second highest in BN and EDNOS groups at baseline and in AN and EDNOS groups at follow-up. AN patients scored the lowest and BN patients the highest on the EDE-Q 6.0 global scale at baseline while BN patients scored the lowest and EDNOS patients the highest at follow-up. On the other two measures derived from the EDE-Q 6.0, BN patients reported the most frequent bulimic behaviors (about three times per week at baseline and once per week at follow-up) while AN patients the lowest BMI (15.11 at baseline and 16.09 at follow-up). All participants endorsed less severe ED symptoms at follow-up, with BN individuals demonstrating the greatest improvement and AN individuals the least. It was noted that, on average, the AN group gained 2.6 kg and EDNOS group lost 3.8 kg over the first month of treatment.

Table 4.23

Baseline and Follow-up EDE-Q 6.0 Scores for All Participants and Each Diagnostic Group

EDE-Q 6.0	ALL (N = 84)			AN (n = 39)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
Restraint	1.78	1.59	1.40	1.31	1.48	0.80	2.06	1.32	1.80	2.32	1.91	2.30
	1.22	1.16	1.13	1.15	1.27	0.80	1.23	0.89	1.15	1.36	1.27	1.20
Eating Concern	2.35	1.74	2.30	1.68	1.54	1.00	3.16	1.54	3.60	2.64	1.88	3.00
	1.39	1.28	1.20	1.25	1.21	1.00	1.26	1.13	1.34	1.85	1.54	1.47
Shape Concern	2.78	1.81	2.69	1.99	1.48	1.75	3.58	1.75	3.88	3.34	1.90	3.88
	1.92	1.35	1.90	1.93	1.42	1.98	1.63	1.09	1.85	2.27	1.47	2.02
Weight Concern	2.42	1.84	1.90	1.55	1.32	1.00	3.22	1.81	3.20	3.11	2.05	3.60
	1.57	1.30	1.48	1.62	1.32	1.59	1.10	0.96	1.29	2.04	1.47	1.75
Global	2.33	1.58	2.27	1.63	1.30	1.19	3.01	1.39	3.34	2.85	1.79	3.07
	1.53	1.12	1.48	1.49	1.14	1.36	1.30	0.92	1.47	1.88	1.29	1.57
Bulimia	1.39	1.35	1.10	0.83	0.96	0.60	2.56	1.39	2.20	1.00	1.05	0.80
	0.91	0.86	0.80	0.77	0.90	0.60	1.08	0.68	1.00	0.97	0.98	0.80
BMI	17.29	3.83	17.50	15.11	2.11	15.43	18.99	2.58	18.92	19.40	5.33	18.31
	17.41	2.89	17.48	16.09	2.56	16.26	19.04	2.68	18.20	17.95	2.64	17.63

Note. The upper row of each entry presents baseline means, and the lower row presents follow-up means. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified; BMI = body mass index.

Tests of overall main effects (see Table 4.24) revealed significant group differences in ED symptoms measured by EDE-Q 6.0 except for restriction ($\eta_p^2 = .05$, Kruskal-Wallis $\eta^2 = .06$, $p > .05$). Further analysis (see Table 4.25) indicated that the AN group scored significantly lower on the Eating Concern subscale and global scale ($d_s = -0.52 - -0.70$, $ps < .05$) than the other two diagnostic groups and on Shape Concern and Weight Concern subscales ($d_s = -0.64$ and -0.70 , $ps < .05$ and $.01$) than the EDNOS group. Not surprisingly, patients with BN exhibited more severe bulimic symptoms than those with AN ($d = 1.25$, $p < .001$) or EDNOS ($d = 1.00$, $p < .01$) and individuals with AN showed lower BMI than those with BN ($d = -1.37$, $p < .001$) or EDNOS ($d = -1.24$, $p < .001$). Differences between

BN and EDNOS groups were small and non-significant compared to differences between either of them and the AN group except for the differences in bulimic behaviors (see Table 4.25). Significant time effects (η_p^2 s = .16 – .37, Wilcoxon r^2 = .09 – .29, $ps < .05$ or .001) were also found on the four subscales, global scale, and bulimia measure of the EDE-Q 6.0, demonstrating moderate to substantial symptom reduction ($ds = 0.36 – 0.61$, $ps < .05$ or .001) over a one-month period (see Tables 4.24 and 4.26).

In addition to main effects, significant interaction effects between diagnosis and time were demonstrated on all EDE-Q 6.0 measures but the Restraint subscale (η_p^2 s = .09 – .30, $ps < .001$, .01 or .05). Simple contrasts between the diagnostic groups (see Table 4.25) further illustrated that AN individuals scored significantly lower than BN and EDNOS individuals on all EDE-Q 6.0 subscales and global scale at baseline except for non-significant differences in restrictive eating between AN and BN groups ($d = -0.48$, $p > .05$) and in bulimic behaviors between AN and EDNOS groups ($d = -0.15$, $p > .05$). At follow-up, most group differences in ED symptoms disappeared except that BN patients were less concerned about weight than EDNOS patients ($d = -0.74$, $p < .05$) and that patients with AN had a significantly lower BMI than those with BN ($d = -1.13$, $p < .001$) or EDNOS ($d = -0.71$, $p < .05$). Furthermore, simple contrasts between baseline and follow-up for each diagnostic group (see Table 4.26) revealed significant moderate to large improvements on all EDE-Q 6.0 subscales and global scale for patients with BN ($ds = 0.67 – 1.24$, $ps < .01$ or .001) or EDNOS ($ds = 0.49 – 0.76$, $ps < .05$ or .01), a large significant reduction in bulimic behaviors for BN patients ($d = 1.06$, $p < .001$), a small significant decrease in concern about eating ($d = 0.37$, $p < .05$), and a small significant increase in BMI ($d = -0.40$, $p < .05$) for AN patients after a month of treatment.

Table 4.24

Overall Main and Interaction Effects of Diagnosis and Time on EDE-Q 6.0 Scores

EDE-Q 6.0	Diagnosis			Time			Diagnosis x Time				
	η_p^2	95% CI		K-W η^2	η_p^2	95% CI		Wilcoxon r^2	η_p^2	95% CI	
Restraint	.05	.01	.15	.06	.16***	.08	.30	.13**	.06	.01	.17
Eating Concern	.09*	.02	.20	.11*	.33***	.19	.46	.29***	.16**	.05	.29
Shape Concern	.08*	.02	.19	.10*	.32***	.19	.46	.20***	.25***	.07	.38
Weight Concern	.09*	.02	.21	.10*	.32***	.19	.46	.18***	.30***	.09	.43
Global	.09*	.02	.21	.10*	.37***	.22	.50	.25***	.24***	.07	.38
Bulimia	.21***	.07	.35	.25***	.20***	.11	.34	.11**	.30***	.09	.43
BMI	.31***	.10	.44	.36***	.00	.00	.06	.02	.09*	.02	.20

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; BMI = body mass index. K-W $\eta^2 = H/(N - 1) = SSG/SST$. Wilcoxon $r^2 = (z/\sqrt{N})^2$.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.25

Main Effect and Simple Contrasts between Diagnostic Groups on the EDE-Q 6.0

EDE-Q 6.0	AN vs. BN			AN vs. EDNOS			BN vs. EDNOS		
	d	d_1	d_2	d	d_1	d_2	d	d_1	d_2
Restraint	-0.36	-0.48	-0.07	-0.52	-0.65*	-0.17	-0.17	-0.17	-0.11
Eating Concern	-0.59*	-0.91***	-0.01	-0.62*	-0.59*	-0.47	-0.03	0.32	-0.47
Shape Concern	-0.49	-0.96***	0.22	-0.64*	-0.81**	-0.25	-0.15	0.14	-0.48
Weight Concern	-0.45	-1.00***	0.41	-0.77**	-0.93**	-0.33	-0.32	0.07	-0.74*
Global	-0.52*	-0.94***	0.16	-0.70*	-0.84**	-0.35	-0.18	0.10	-0.51
Bulimia	-1.18***	-1.54***	-0.35	-0.21	-0.15	-0.23	0.96**	1.39***	0.12
BMI	-1.37***	-1.19***	-1.13***	-1.24***	-1.31***	-0.71*	0.14	-0.12	0.42

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; BMI = body mass index; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. d = Cohen's d between marginal means of the diagnostic groups over time; d_1 = Cohen's d between baseline means of the diagnostic groups; d_2 = Cohen's d between follow-up means of the diagnostic groups.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.26

Main Effect and Simple Contrasts between Baseline and Follow-up EDE-Q 6.0 Measures

EDE-Q 6.0	Baseline vs. follow-up			
	<i>d</i>	<i>d</i> _{AN}	<i>d</i> _{BN}	<i>d</i> _{EDNOS}
Restraint	0.36**	0.10	0.67**	0.61*
Eating Concern	0.61***	0.37*	1.12***	0.49*
Shape Concern	0.52***	0.05	1.10***	0.75**
Weight Concern	0.49***	-0.06	1.20***	0.63*
Global	0.59***	0.14	1.24***	0.76**
Bulimia	0.40***	0.07	1.06***	0.04
BMI	-0.04	-0.40*	-0.02	0.32

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; BMI = body mass index. *d* = Cohen's *d* between marginal means of time across the diagnostic groups; *d*_{AN} = Cohen's *d* between baseline and follow-up means of the AN group; AN = anorexia nervosa; *d*_{BN} = Cohen's *d* between baseline and follow-up means of the BN group; BN = bulimia nervosa; *d*_{EDNOS} = Cohen's *d* between baseline and follow-up means of the EDNOS group; EDNOS = eating disorder not otherwise specified. * *p* < .05 (2-tailed). ** *p* < .01 (2-tailed). *** *p* < .001 (2-tailed).

Depressive Symptoms

BDI-II scores are reported for the entire sample and each diagnostic group in Table 4.27. At baseline, participants with AN were mildly depressed and participants with BN or EDNOS were moderately depressed according to the cutoffs recommended by Beck et al. (1996). At follow-up, all three diagnostic groups scored below the cutoff for mild depression (14). BN and EDNOS patients obtained similar scores on the BDI-II (25.12 and 24.45) at baseline while AN and EDNOS patients exhibited similar scores (12.58 and 13.08) at follow-up. The greatest improvement in depressive symptoms over the first month of treatment was observed in BN patients, followed by EDNOS and AN patients in sequence (see Table 4.27).

Table 4.27

Baseline and Follow-up BDI-II Scores for All Participants and Each Diagnostic Group

Measure	ALL (N = 84)			AN (n = 39)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
BDI-II	21.25	12.45	.50	17.13	10.82	17.00	25.12	13.89	26.00	24.45	11.58	26.50
	11.93	10.53	11.24	12.58	9.74	11.90	10.00	10.13	10.50	13.08	12.56	12.13

Note. BDI-II = Beck Depression Inventory-II; AN = anorexia nervosa; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Tests of main and interaction effects detected a large significant main effect of time ($\eta_p^2 = .38$, Wilcoxon $r^2 = .40$, $p < .001$) and a medium significant interaction effect of diagnosis and time ($\eta_p^2 = .12$, $p < .01$) on depressive symptoms. Specifically, participants demonstrated a moderate decrease ($d = 0.68$, $p < .001$) in their depressive symptoms regardless of diagnosis. AN patients were significantly less depressed than BN and EDNOS patients at baseline with medium effect sizes ($d_s = -0.67$ and -0.61 , $p_s < .05$). No significant group differences existed at follow-up although the BN group scored slightly lower than AN ($d = -0.24$) and EDNOS ($d = -0.29$) groups. All three diagnostic groups became significantly less depressed after a month of treatment; effect sizes were small for the AN group ($d = 0.40$, $p < .05$) and large for BN ($d = 1.00$, $p < .001$) and EDNOS ($d = 0.87$, $p < .01$) groups.

Relationship between Motivation and Psychopathology

Cross-sectional relationship between motivational factors and specific ED symptoms was examined by parametric and nonparametric correlations between self-report motivation measures (i.e., CCS-R, P-CED Pro, and P-CED Con total scales) and EDE-Q 6.0 subscales (see Table 4.28). All correlations were significantly positive and ranged from medium to large in size at both baseline and follow-up. For all motivation measures, the strongest correlations were found on the Eating Concern

subscale at baseline. At follow-up, the strongest correlations were identified on the Weight Concern subscale for the CCS-R total scale, on the Restraint subscale for the P-CED Pro total scale, and on the Shape Concern subscale for the P-CED Con total scale. Across the four EDE-Q 6.0 subscales, Eating Concern subscale demonstrated the largest association with concerns about change and the other three subscales with perceived benefits of EDs at baseline. After a month of treatment, perceived benefits of EDs remained the largest contributor to restrictive eating while concerns about change explained the largest proportion of variance in eating, shape, and weight concerns. Over the study period, all correlations reduced to a slight degree except for increased correlations between the CCS-R total scale and EDE-Q 6.0 Restraint and Weight Concern subscales and between the P-CED Pro total scale and EDE-Q 6.0 Restraint subscale (see Table 4.28).

Table 4.28

Correlations between Self-Report Motivation Measures and EDE-Q 6.0 Subscales

Total scale	Restraint		Eating Concern		Shape Concern		Weight Concern	
	<i>r</i>	<i>r_s</i>	<i>r</i>	<i>r_s</i>	<i>r</i>	<i>r_s</i>	<i>r</i>	<i>r_s</i>
Baseline								
CCS-R	.43***	.56***	.59***	.66***	.55***	.58***	.47***	.51***
P-CED Pro	.52***	.60***	.59***	.62***	.59***	.58***	.52***	.53***
P-CED Con	.38***	.41***	.55***	.58***	.48***	.47***	.40***	.44***
Follow-up								
CCS-R	.54***	.50***	.40***	.47***	.57***	.48***	.58***	.53***
P-CED Pro	.61***	.56***	.36***	.39***	.51***	.39***	.53***	.45***
P-CED Con	.38***	.42***	.32**	.39***	.41***	.44***	.37***	.42***

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale.

*** $p < .001$ (2-tailed).

To further explore cross-sectional relationship between motivational factors and overall psychopathology, simple and partial correlations between self-reported motivation scores (i.e., CCS-R, P-CED Pro, and P-CED Con total scores) and symptom scores (i.e., EDE-Q 6.0 global, EDE-Q 6.0 bulimia, and BDI-II scores) were computed. Table 4.29 presents parametric and nonparametric correlations at baseline, which are similar in their values and signs. Individually, CCS-R, P-CED Pro, and P-CED Con total scores were significantly, positively correlated with EDE-Q 6.0 global, EDE-Q 6.0 bulimia, and BDI-II scores. Except for medium correlations between P-CED Pro total and BDI-II scores ($r = .33, p < .001$; $r_s = .32, p < .01$) and between the three motivation scores and EDE-Q 6.0 bulimia score ($r_s = .41 - .45, r_s = .45 - .53, ps < .001$), all other correlations were large in size. After controlling for two of the three motivation scores, the strength of correlations between the third one and symptom measures reduced to weak or moderate (see Table 4.29). Significant partial correlations between motivational factors and clinical symptoms suggested that global ED psychopathology was uniquely positively related to perceived benefits and costs of EDs, bulimic behaviors to perceived costs of EDs, and depressive symptoms to concerns about change and perceived costs of EDs. It was noted that the correlation between perceived benefits of EDs and depressive symptoms became negative after removing influence from concerns about change and perceived costs of EDs ($r = -.19, r_s = -.15, ps > .05$).

Table 4.29

Correlations between Self-Report Motivation and Symptom Measures at Baseline

Measure	$r (r^2)$	$r_s (r_s^2)$	Partial $r (r^2)$	Partial $r_s (r_s^2)$
EDE-Q 6.0 global				
CCS-R	.56*** (.32)	.62*** (.38)	.15 (.02)	.15 (.02)
P-CED Pro	.61*** (.37)	.61*** (.37)	.34** (.12)	.29** (.08)
P-CED Con	.50*** (.25)	.50*** (.25)	.35** (.12)	.31** (.10)
EDE-Q 6.0 bulimia				
CCS-R	.45*** (.20)	.53*** (.28)	.19 (.04)	.17 (.03)
P-CED Pro	.41*** (.16)	.49*** (.24)	.10 (.01)	.15 (.02)
P-CED Con	.41*** (.16)	.45*** (.20)	.27* (.07)	.26* (.07)
BDI-II				
CCS-R	.54*** (.29)	.51*** (.26)	.43*** (.18)	.31** (.09)
P-CED Pro	.33*** (.11)	.32** (.10)	-.19 (.04)	-.15 (.02)
P-CED Con	.59*** (.34)	.60*** (.36)	.50*** (.25)	.45** (.21)

Note. CCS-R = Concerns about Change Scale-Revised total; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; BDI-II = Beck Depression Inventory-II.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

After the first month of treatment, similar patterns remained for simple correlations between self-report motivation and symptom measures, with a slightly stronger correlation between perceived benefits of EDs and depressive symptoms and slightly weaker correlations between other motivation and symptom measures (see Table 4.30). In terms of partial correlations at follow-up, global eating pathology was no longer significantly related to perceived benefits of EDs ($r = .09$, $r_s = .06$, $ps > .05$) but still significantly positively related to concerns about change ($r = .33$, $r_s = .29$, $ps < .01$) and perceived costs of EDs ($r = .28$, $r_s = .29$, $ps < .01$) after controlling for the other motivational variables. No motivation measures significantly uniquely contributed to bulimic behaviors at follow-up. As

shown in Table 4.30, partial correlations between motivational factors and depressive symptoms at follow-up were similar to those at baseline with a slight decrease in the strength of relationship.

Table 4.30

Correlations between Self-Report Motivation and Symptom Measures at Follow-Up

Measure	$r (r^2)$	$r_s (r_s^2)$	Partial $r (r^2)$	Partial $r_s (r_s^2)$
EDE-Q 6.0 global				
CCS-R	.59*** (.35)	.55*** (.30)	.33** (.11)	.29** (.08)
P-CED Pro	.57*** (.32)	.53*** (.28)	.09 (.01)	.06 (.00)
P-CED Con	.42*** (.17)	.43*** (.18)	.28* (.08)	.29** (.09)
EDE-Q 6.0 bulimia				
CCS-R	.22* (.05)	.33** (.11)	-.07 (.01)	.12 (.01)
P-CED Pro	.35** (.12)	.34** (.11)	.21 (.04)	.07 (.00)
P-CED Con	.32** (.10)	.32** (.10)	.19 (.04)	.17 (.03)
BDI-II				
CCS-R	.48*** (.23)	.49*** (.24)	.34** (.11)	.31** (.10)
P-CED Pro	.43*** (.19)	.43*** (.18)	-.10 (.01)	-.09 (.01)
P-CED Con	.54*** (.29)	.54*** (.29)	.48*** (.23)	.42*** (.18)

Note. CCS-R = Concerns about Change Scale-Revised total; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; BDI-II = Beck Depression Inventory-II.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Results of multiple regression analysis exploring relationship between change in motivational factors and change in clinical symptoms are displayed in Tables 4.31 to 4.34. All three follow-up motivation measures (i.e., CCS-R, P-CED Pro, and P-CED Con) significantly positively contributed to global ED psychopathology and depressive symptoms at follow-up, with medium to large effect sizes (partial $R_s = .39 - .56$, $p_s < .001$), when holding corresponding baseline motivation and symptom scores constant (see Tables 4.31 and 4.34). Conversely, baseline motivational factors significantly

negatively predicted global ED psychopathology and depressive symptoms at follow-up when controlling for corresponding baseline symptom and follow-up motivation scores except for baseline perceived benefits of EDs (partial $R_s = .02$ and $-.21$, $p_s > .05$). As indicated in Table 4.32, perceived benefits and costs of EDs at follow-up also significantly positively contributed to follow-up bulimic behaviors after controlling for corresponding baseline measures (partial $R_s = .23$ and $.26$, $p_s < .05$). Yet, none of the baseline motivational variables significantly predicted bulimic behaviors at follow-up after effects of corresponding baseline symptom and follow-up motivation measures were removed. For participants with AN, neither baseline nor follow-up motivation measures significantly influenced follow-up BMI when baseline BMI was controlled for (see Table 4.33). The results suggested that an increase or decrease in CCS-R, P-CED Pro, and P-CED Con total scores over time would result in a corresponding increase or decrease in global eating pathology and depressive symptoms, with greater changes in motivation leading to greater changes in psychopathology. Similar positive correspondence also seemed to exist between change in perceived pros and cons of EDs and change in bulimic behaviors, but improvement in motivation for change did not appear to promote weight gain in AN patients.

According to the effect sizes shown in Tables 4.31 to 4.34, follow-up motivational factors had the largest effect on follow-up global ED psychopathology and depressive symptoms, followed by baseline symptom measures and by baseline motivational variables. The only two exceptions were larger effects of baseline eating pathology (partial $R = .52$) than follow-up perceived costs of EDs (partial $R = .39$) on follow-up eating pathology and of baseline concerns about change (partial $R = -.36$) than baseline depressive symptoms (partial $R = .27$) on follow-up depressive symptoms (see Tables

4.31 and 4.34). For bulimic behaviors and BMI of AN patients at follow-up, the largest influence came from corresponding baseline symptom measures, followed by follow-up and baseline motivational factors in sequence (see Tables 4.32 and 4.33). One exception was that baseline concerns about change showed a slightly larger impact (partial $R = -.05$) on follow-up BMI of AN patients compared to follow-up concerns about change (partial $R = .01$).

Table 4.31

Predictors of Changes in EDE-Q 6.0 Global Scores

Predictor	Follow-up EDE-Q 6.0 global					
	<i>b</i>	<i>t</i>	Partial <i>R</i>	Part R^2	R^2	<i>F</i>
CCS-R						
Baseline CCS-R	-.37	-2.07*	-.23	.03	.46	22.74***
Follow-up CCS-R	1.05	5.06***	.49	.17		
Baseline EDE-Q 6.0 global	.29	4.00***	.41	.11		
P-CED Pro						
Baseline P-CED Pro	.02	.14	.02	.00	.41	18.58***
Follow-up P-CED Pro	.62	3.75***	.39	.10		
Baseline EDE-Q 6.0 global	.24	3.03**	.32	.07		
P-CED Con						
Baseline P-CED Con	-.31	-2.07*	-.23	.03	.40	17.54***
Follow-up P-CED Con	.57	3.79***	.39	.11		
Baseline EDE-Q 6.0 global	.39	5.43***	.52	.22		

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.32

Predictors of Changes in EDE-Q 6.0 Bulimia Scores

Predictor	Follow-up EDE-Q 6.0 bulimia					
	<i>b</i>	<i>t</i>	Partial <i>R</i>	Part <i>R</i> ²	<i>R</i> ²	<i>F</i>
CCS-R						
Baseline CCS-R	-0.04	-0.21	-.02	.00	.25	8.69***
Follow-up CCS-R	0.18	0.97	.11	.01		
Baseline EDE-Q 6.0 bulimia	0.30	4.28***	.43	.17		
P-CED Pro						
Baseline P-CED Pro	-0.04	-0.35	-.04	.00	.28	10.30***
Follow-up P-CED Pro	0.28	2.06*	.23	.04		
Baseline EDE-Q 6.0 bulimia	0.27	4.11***	.42	.15		
P-CED Con						
Baseline P-CED Con	0.02	0.20	.02	.00	.30	11.19***
Follow-up P-CED Con	0.29	2.37*	.26	.05		
Baseline EDE-Q 6.0 bulimia	0.28	4.26***	.43	.16		

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale.

* $p < .05$ (2-tailed). *** $p < .001$ (2-tailed).

Table 4.33

Predictors of Changes in EDE-Q 6.0 BMI for Patients with Anorexia Nervosa

Predictor	Follow-up EDE-Q 6.0 BMI					
	<i>b</i>	<i>t</i>	Partial <i>R</i>	Part <i>R</i> ²	<i>R</i> ²	<i>F</i>
CCS-R						
Baseline CCS-R	-.24	-.31	-.05	.00	.23	3.43*
Follow-up CCS-R	.03	.03	.01	.00		
Baseline EDE-Q 6.0 BMI	.60	2.91**	.44	.19		
P-CED Pro						
Baseline P-CED Pro	.14	.26	.04	.00	.23	3.55*
Follow-up P-CED Pro	-.43	-.63	-.11	.01		
Baseline EDE-Q 6.0 BMI	.65	2.98**	.45	.19		
P-CED Con						
Baseline P-CED Con	-.02	-.04	-.01	.00	.27	4.31*
Follow-up P-CED Con	-.76	-1.26	-.21	.03		
Baseline EDE-Q 6.0 BMI	.66	3.51**	.51	.26		

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; BMI = body mass index; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed).

Table 4.34

Predictors of Changes in BDI-II Scores

Predictor	Follow-up BDI-II					
	<i>b</i>	<i>t</i>	Partial <i>R</i>	Part <i>R</i> ²	<i>R</i> ²	<i>F</i>
CCS-R						
Baseline CCS-R	-6.51	-3.48***	-.36	.10	.34	13.91***
Follow-up CCS-R	11.78	5.52***	.53	.25		
Baseline BDI-II	.23	2.54*	.27	.05		
P-CED Pro						
Baseline P-CED Pro	-2.72	-1.96	-.21	.04	.27	9.60***
Follow-up P-CED Pro	7.30	4.32***	.44	.17		
Baseline BDI-II	.22	2.54*	.27	.06		
P-CED Con						
Baseline P-CED Con	-3.77	-2.39*	-.26	.04	.38	16.16***
Follow-up P-CED Con	8.65	6.06***	.56	.29		
Baseline BDI-II	.31	3.39**	.35	.09		

Note. BDI-II = Beck Depression Inventory-II; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Summary of Study Findings

The current study was designed to investigate motivational patterns and related psychopathology in Chinese ED patients using clinical interviews and Western-developed questionnaires. A clinical sample of 84 Chinese patients seeking treatment for EDs at the research site participated in the study and completed the baseline assessment. At one-month follow-up, 28 participants had dropped out of treatment and did not return for the follow-up assessment. The treatment dropout rate was high (33.3%), which was comparable to dropout rates documented in Western ED patients (Mahon, 2000) and consistent with high resistance to change encountered by Chinese clinicians in their work with Chinese ED patients (Huang et al., 2012).

The study sample reflected typical characteristics of ED patients in terms of age, gender, comorbidities, and diagnostic crossover over time although the comorbidity rates of anxiety disorders and substance use disorders were lower than those reported in Western ED patients (Bulik, Sullivan, Carter, & Joyce, 1996; Garfinkel et al., 1995; Goldbloom, 1993; Toner, Garfinkel, & Garner, 1988). The baseline BMI of Chinese adult patients with BN (19.5) or EDNOS (18.6) was relatively low compared to that of their Western counterparts. Different from the diagnostic distribution commonly seen in Western clinical practice (Turner & Bryant-Waugh, 2004) and reported from epidemiology studies in Chinese populations (Chen & Jackson, 2008; Liao et al., 2013; Tong et al., 2014), there was an over representation of AN participants (46.4%) in this clinical sample. This overrepresentation may be attributed to the time lag between the increased prevalence of AN and BN observed in Western history, relative independence of AN from Western influence, high level of care usually required by AN

patients, and difficulty of concealing the disorder from loved ones and clinicians (Keel & Klump, 2003; Yager et al., 2006). In addition, a larger proportion of participants were treated with medication than with psychotherapy at the time of the study (59.5% vs. 44.0%) or in the past (70.2% vs. 41.7%), even for AN patients (56.4% vs. 43.6% at study enrollment and 61.5% vs. 43.6% in the past). This finding seems to support the reported predominance of pharmacological treatment for EDs in China (Ma et al., 2004), different from currently recommended practice in the United States (Yager et al., 2006).

Major findings of the study are summarized below and discussed in correspondence with the three sets of hypotheses proposed for the study. To avoid confounding effects of treatment, baseline data are used when comparing results from this study to findings from previous studies in Western ED samples.

Psychometric Properties of Study Measures

Western-developed measures used in the study demonstrated acceptable to excellent internal consistency in the current sample, suggesting that motivational and symptom constructs assessed by these measures also exist in Chinese ED patients. Except for the P-CED Con total scale, other motivation measures showed good convergent and concurrent validity. Although baseline measures of resistance to change (i.e., CCS-R-CV, CCS-R, and P-CED Pro) significantly positively predicted bulimic behaviors at follow-up, only one CCS-R subscale (i.e., Change-Unable) significantly positively contributed to treatment dropout. The unexpected positive correlations of perceived costs of EDs with concurrent concerns about change, perceived benefits of EDs, and anticipated difficulty of behavior change, dropout from treatment, and follow-up bulimic behaviors may reflect high levels of ambivalence about change and resultant difficulty engaging in treatment and behavior change. In

contrast to the finding reported by Geller (2002b), the self-rated motivation measure (i.e., CCS-R) exhibited the highest concurrent and predictive validity while researcher- (i.e., RTC) and clinician-rated (i.e., CCS-R-CV) measures demonstrated similar criterion validity.

Because of the insufficient sample size, only a principal component analysis was performed to explore the structural validity of the CCS-R. Although none of the CCS-R subscales were replicated as a single principal components, conceptually related subscales merged into several meaningful components representing similar constructs documented in Western ED samples, such as Emotion (mainly including items from Fear-Negative Affect, Loss-Disinhibition, and Loss-Hedonic subscales), Self-efficacy (mainly including items from Change-Unable, Fear-Process, Fear-Risks, and Fear-Deeper Flaw subscales), and Ego-syntonicity (mainly including items from Loss-Accomplishment, Denial-Irrationality, and Loss-Goal subscales) components, providing preliminary evidence for content validity. Further analysis using the method recommended by Fornell and Larcker (1981) demonstrated satisfactory discriminant validity but poor convergent validity of extracted principal components.

Compared to the factor solutions obtained in Western ED patients (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995), CCS-R subscales were not replicated to the same extent in the current sample. For example, the Loss-Peer Group subscale was the only CCS-R subscale loaded completely on a single principal component (i.e., Relationship) in Chinese ED patients, but the Relationship component also included significant proportions of items from Loss-Interpersonal and -Goal subscales (see Table 4.3). In contrast, the Loss-Peer Group subscale and another three subscales (i.e., Fear-Maturity, Fear-Sexuality, and Change-Unworthy) were each replicated precisely as a single factor in Western

ED patients (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995). Although subscale items assessing concerns about maturity and responsibility loaded primarily on one principal component as speculated, fear of sexuality emerged as another distinctive component in the current sample. The pattern was different from the predicted convergence of Fear-Maturity, -Responsibility, and -Sexuality subscales on the same underlying construct in Chinese ED patients but similar to what was observed in Western ED patients (Gray, 2008; Vitousek, 1997; Vitousek et al., 1995). It was also noted that concerns about unworthiness to change emerged as an underlying construct (i.e., Unworthiness component) in the current sample although the Change-Unworthy subscale was not replicated as precisely in Chinese as in Western ED patients (Gray, 2008). Overall, the composition of extracted principal components in Chinese ED patients seems to be more similar to what was observed in their Western counterparts than expected.

In the discriminant analysis, CCS-R subscales were able to accurately discriminate the majority of AN (84.6%) and BN (72.0%) patients but not EDNOS patients (40.0%) in the current sample. Subscales measuring avoidance functions (i.e., Fear-Negative Affect and -Deeper Flaw), self-efficacy concerns (i.e., Change-Unable), and ego-syntonic motivations (i.e., Denial-Irrationality, Loss-Accomplishment, Loss-Goal, and Loss-Identity) appeared to contribute the most to discriminant functions. Denial of the problem, perceived inability to change, and fear of sexuality emerged as the most discriminative feature for AN, BN, and EDNOS groups, respectively. The results seem to support the discriminative validity of CCS-R subscales and provide some additional evidence for the construct validity of the CCS-R.

Patterns of Motivation and Psychopathology

Overall, the current sample endorsed most concerns about change and costs of EDs measured by the CCS-R and P-CED except for stifled emotions and trapped feelings. Their agreement was not as strong as Western ED samples on most CCS-R and P-CED Con subscales, excluding Loss-Hedonic, Loss-Peer Group, and Con-Guilt subscales (Gale et al., 2006; Gray, 2008). Different from mixed results obtained in Western ED patients (Gale et al., 2006), Chinese ED patients disagreed with all Pro themes on the P-CED (see Table 4.14); compared to their Western counterparts, they showed stronger disapproval on all but Pro-Fitness and -Eat & Stay Slim subscales. As the current sample endorsed ego-syntonic motivations on relevant CCS-R subscales (i.e., Denial-Irrationality, Loss-Accomplishment, Loss-Goal, and Loss-Identity) but not on corresponding P-CED subscales (i.e., Pro-Special/Skilled, -Appearance, and -Fitness), this seems to suggest that Chinese ED patients are uncomfortable endorsing their drive for thinness and positive valuation of symptoms when asked explicitly. Therefore, skillful evaluation of ego-syntonic motivations may be needed in the treatment of this population.

With regard to the relevance of individual motivational factors, both similarities and differences were found between Chinese and Western ED patients. Fear of encountering difficulties in change and losing emotional avoidance strategies were among the most important motivational barriers to change and concerns about losing peer groups the least important in both Chinese and Western ED patients (Gray, 2008). Both groups also perceived consequences of EDs as the biggest cost (Gale et al., 2006). On the other hand, perceived inability to change was one of the most important concerns about change in Chinese ED patients while loss of accomplishment was a prominent concern in

Western ED patients (Gray, 2008). Avoiding sexuality also ranked more consistently as the least important reason for having an ED in Chinese than in Western patients (Gale et al., 2006; Gray, 2008). In addition, guilt for causing worry to loved ones was perceived as a more salient disadvantage of EDs by Chinese patients while preoccupation with weight and shape a more important cost by Western patients (Gale et al., 2006).

The overall motivational pattern described above seems to confirm the hypothesis that Chinese ED patients may not see their problem as a goal or an achievement or may hesitate to disclose positive valuation of EDs due to cultural differences in explicit self-esteem between Western and Eastern populations (Yamaguchi et al., 2007). Similarly, the hypothesized prominence of insufficient self-efficacy in Chinese ED patients appears to be supported by the high ranks of self-efficacy concerns among all concerns about change, which may also relate to low explicit self-esteem in this population. In addition, as predicted, emotion regulation functions (especially emotional avoidance) and guilt for adding burden to families emerged as important motivational factors in Chinese patients. Contrary to proposed hypotheses, the current sample did not perceive maintaining relationship and avoiding sexuality as important motivational barriers to recovery.

Hypothesized differences in motivational patterns between the diagnostic groups seem to be partially supported by the results. Scores on CCS-R subscales measuring ego-syntonic motivations (i.e., Denial-Irrationality, Loss-Accomplishment, Loss-Goal, and Loss-Identity) ranked among top seven concerns about change in AN patients over the study period, higher than the ranks of these CCS-R subscale scores in BN and EDNOS patients. This pattern, however, was not replicated on P-CED Pro subscales measuring ego-syntonic benefits (i.e., Pro-Special/Skilled, -Appearance, and

-Fitness), which may result from the difference between implicit and explicit self-esteem proposed in Chinese population (Cai, 2003). It is possible that low explicit self-esteem in Chinese people has prevented participants from endorsing positively phrased ego-syntonic motivations on relevant P-CED Pro subscales. In terms of emotion regulation functions, avoidance of negative emotions (i.e., Fear-Negative Affect) was ranked more important than ego-syntonic motivations and other emotion regulation functions (i.e., Loss-Hedonic and -Disinhibition) by the entire sample on the CCS-R. Across the three diagnostic groups, the emotional avoidance function was valued more highly by BN and EDNOS patients than by AN patients while functions of disinhibition and communication perceived more important by EDNOS individuals than by AN and BN individuals. On the P-CED, perceived emotional benefits (i.e., Pro-Boredom and -Communication) ranked among the most prominent pros of EDs for the entire sample and each of the three diagnostic groups.

Results from the study do not seem to support hypothesized differences in resistance levels across the three diagnostic groups of Chinese ED patients. Averaged over time, BN patients exhibited the highest level of concerns about change (both self- and clinician-rated), perceived benefits of EDs, anticipated difficulty of behavior change, and treatment dropout although AN patients showed the lowest level of researcher-rated readiness to change and self-perceived costs of EDs. EDNOS patients, on the other hand, demonstrated the lowest level of resistance to change over time on all above measures except for clinician-rated concerns about change and self-perceived costs of EDs. Among the three diagnostic groups, AN and EDNOS groups were closer in their levels of motivation for change except that AN and BN groups were more similar in researcher-rated readiness to change and self-perceived pros of EDs (see Table 4.21). Thus, BN patients appear to be the most resistant to

change and EDNOS patients the least resistant in the current study, suggesting a different pattern from what was found in Western ED patients (Casasnovas et al., 2007; Gale et al., 2006; Geller et al., 2001; Gray, 2008; Sunday et al., 1995; Vitousek et al., 1995). It was noted that BN participants in this study, as the most resistant group, perceived the highest level of both benefits and costs of EDs, which may reflect a highly ambivalent attitude toward their disorder.

When baseline and follow-up data were examined separately, the overall differences in motivation levels between the diagnostic groups resulted largely from baseline differences. At baseline, BN patients scored significantly higher than AN patients on the ADRA and EDNOS patients on the CCS-R, P-CED Pro, and ADRA, as shown in Table 4.21. After a month of treatment, no significant differences existed among three diagnostic groups although AN patients exhibited the highest level of resistance to change on four motivation measures (i.e., RTC, CCS-R, P-CED Pro, and P-CED Con) and EDNOS patients remained the least resistant on all but the P-CED Con total scale. This finding may suggest that Chinese AN patients are likely to remain resistant to change over the course of treatment although they are less resistant than BN patients at the beginning of treatment.

Over the first month of treatment, treatment resistance significantly decreased on all motivation and concurrent criterion measures except for the CCS-R-CV. Largely supportive of the proposed hypothesis, BN patients demonstrated the largest decrease while AN patients the smallest decrease in resistance to change on most measures. This finding is consistent with the slower progress in motivation for change over the course of treatment observed in Western AN patients compared to the other two diagnostic groups (Geller et al., 2005). It also helps to explain the decreased or inverted differences in motivation scores between AN and BN participants at follow-up.

In comparison with the corresponding diagnostic groups of North American ED patients who completed the CCS-R in Gray's (2008) study, Chinese AN and EDNOS patients scored lower than their respective Western counterparts on all CCS-R subscales and total scale while Chinese BN patients scored higher than their Western counterparts on 13 out of 17 CCS-R subscales and the CCS-R total scale. The difference between Chinese and Western AN patients was the largest, followed by the difference between EDNOS patients and by the difference between BN patients. Compared to a sample of British ED patients in a study on the P-CED (Gale et al., 2006), Chinese AN patients perceived lower benefits and costs of their disorder than Western AN patients while Chinese BN patients perceived higher benefits and lower costs of their disorder than Western BN patients. The differences were larger between the AN groups than between the BN groups. Thus, it appears that Chinese AN and EDNOS patients are less resistant to change and BN patients more resistant compared to their respective Western counterparts although no definite conclusions can be drawn from such comparisons.

Compared to Chinese ED patients, Chinese clinicians were more concerned that fear of losing the goal as a result of change would prevent patients from recovery. This finding may suggest that Chinese clinicians perceive drive for thinness as an important cause of EDs in China, providing further support for the previous finding in Chinese clinicians (Huang et al., 2012). In contrast with their higher level of concern about their patients' fear of losing the goal, psychiatrists put less emphasis on ego-syntonic than on emotional concerns as barriers to recovery compared to their ED patients (see Table 4.11). This discrepancy in perceptions may result from less likelihood for patients to disclose ego-syntonic than emotional concerns in front of their clinicians. In addition, psychiatrists perceived

higher levels of emotional and self-efficacy concerns in their ED patients and considered positive emotional effects of EDs as more important motivational barriers than patients themselves, indicating that Chinese clinicians may see emotional difficulties as a major cause of EDs as suggested in a previous survey (Huang et al., 2012). Similar to what was observed in Western studies (Engel & Wilms, 1986; Geller, 2002b) and consistent with the proposed hypothesis, Chinese clinicians perceived higher resistance to change in their ED patients than patients themselves on most CCS-R subscales and total scale at both baseline and follow-up.

In terms of eating pathology, shape concern emerged as the most symptomatic area while restraint the least in all three diagnostic groups over the study period. Except for BN patients, AN and EDNOS patients endorsed greater weight concern than eating concern. The current sample also reported mild bulimic behaviors at both baseline and follow-up based on the criteria indicated in the DSM-5 (APA, 2013). The BMI was abnormally low in AN participants and around the lower limit of the normal range in BN and EDNOS participant during the first month of treatment. In addition, participants indicated moderate depression at baseline and minimal depression at follow-up according to the cutoffs for Western populations (Beck et al., 1996). Before treatment, the AN group exhibited significantly less severe ED and depressive symptoms than the other two diagnostic groups on most symptom measures with only three exceptions (i.e., restrictive eating between AN and BN groups, bulimic behaviors between AN and EDNOS groups, and BMI between the AN group and the other two diagnostic groups). After a month of treatment, all aspects of eating pathology and depressive symptoms decreased substantially in BN patients and moderately in EDNOS patients except for the small non-significant decrease in bulimic behaviors among EDNOS patients. The AN group, on the

other hand, only showed small significant improvements in their eating concern, BMI, depressive symptoms. No significant group differences in clinical symptoms existed at follow-up except that individuals with AN had significantly lower BMI than those with BN or EDNOS and that individuals with EDNOS reported significantly higher weight concern than those with BN.

Baseline EDE-Q 6.0 scores obtained in AN and BN patients from this study were close to EDE 12.0 scores reported in corresponding diagnostic groups from a study conducted in Hong Kong (Lau et al., 2006) except for lower scores on the Eating Concern subscale (0.96 vs. 1.68) in fat-phobic AN patients, lower scores on Eating Concern (0.95 vs. 1.68) and Weight Concern (0.57 vs. 1.55) subscales in non-fat-phobic AN patients, and higher scores on Shape Concern (4.45 vs. 3.58) and Weight Concern (3.97 vs. 3.22) subscales in BN patients from Hong Kong. The EDE-Q profiles for AN patients suggested that restrictive eating was less prominent and eating concern more prominent in AN patients from Mainland China compared to fat-phobic and non-fat-phobic AN patients from Hong Kong and that weight concern was less a problem in non-fat-phobic AN patients from Hong Kong compared to the other two groups of AN patients (Lau et al., 2006). The relative severity of each symptom cluster in BN patients from this study was the same as in BN patients from Hong Kong (Lau et al., 2006). In terms of bulimic behaviors, AN patients from Mainland China indicated more binge eating (6.49 times per month) than fat-phobic (0.04 times per month) and non-fat-phobic (0.05 times per month) AN patients from Hong Kong (Lau et al., 2006). The frequency of binge eating was similar between BN individuals from Mainland China (17.30 times per month) and from Hong Kong (18.16 times per month). AN patients from this study reported a lower BMI (15.0) than that in fat-phobic

(16.45) and non-fat-phobic AN (16.90) patients from Hong Kong, and the same pattern was observed in BN patients from Mainland China (19.0) and from Hong Kong (22.14).

Compared to Western samples, all three diagnostic groups of Chinese ED patients showed less severe ED psychopathology than American AN patients (Wolk et al., 2005) and a level of depression comparable to psychiatric outpatients but lower than depressive outpatients from the United States (Beck et al., 1996; Steer et al., 1999). In terms of the relative severity of four symptom clusters, restrictive eating ranked lower and eating concern higher in Chinese AN patients than in their American counterparts (Wolk et al., 2005). With regard to bulimic behaviors, Chinese AN patients in this study indicated similar binge eating (6.49 vs. 8.80 times per month) but less excessive exercise (2.82 vs. 8.90 times per month), laxative use (0.26 vs. 4.10 times per month), and vomiting (2.26 vs. 11.70 times per month) than American AN patients (Wolk et al., 2005). In addition, the BMI was similar between Chinese (15.0) and American (15.5) individuals with AN (Wolk et al., 2005).

The ED symptomatology revealed in this study does not seem to support a lack of weight and shape concerns in Chinese AN patients according to the relative severity of these concerns in the ED psychopathology of AN participants although they demonstrated a lower level of these concerns than BN and EDNOS participants at baseline. An examination of diagnostic symptoms reported by AN participants during the baseline interview revealed that the majority of them acknowledged fear of weight gain (79.5%) and body-image disturbance (71.8%), further supporting the existence of this core psychopathology in Chinese AN patients.

At baseline, participants with BN exhibited greater eating pathology and depressive symptoms than those with AN as predicted, but participants with EDNOS showed a similar level of symptoms to

those with BN except for bulimic behaviors (see Table 4.25). Contrary to the predicted high level of restriction in Chinese AN patients, they appeared to be the least restrictive in eating among the three diagnostic groups. This reported low level of restriction appears implausible given the abnormally low baseline BMI (14.9) of adult patients with AN in the current sample. It is possible that AN participants may have understated their restriction to normalize their eating behavior, especially when they perceived ego-syntonic motivations as more important barriers to change than other motivational factors on the CCS-R. In terms of changes in psychopathology over time, the hypothesized greater symptom reduction was observed in BN patients, and they changed from the most to the least symptomatic over the study period. It was noted that AN patients was the only diagnostic group who showed no significant improvement in restraint and concerns about weight and shape after the first month of treatment (see Table 4.26), providing further evidence for the existence of overvaluation of thinness and its contribution to resistance to change in Chinese AN patients.

Relationship between Motivation and Psychopathology

Contrary to the predicted differential relationships of motivational factors with ego-syntonic and ego-dystonic ED symptoms, all three self-reported motivation scores (i.e., CCS-R, P-CED Pro, and P-CED Con total scores) were significantly positively associated with each EDE-Q 6.0 subscale and bulimia score at both baseline and follow-up. This pattern differs from what has been reported in Western ED patients (Gray, 2008; Serpell et al., 2004). Although no negative correlation was found between measures of resistance to change (i.e., CCS-R and P-CED Pro) and ego-dystonic symptoms (i.e., EDE-Q 6.0 Eating Concern and bulimia) and between measures of motivation for change (i.e., P-CED Con) and ego-syntonic symptoms (i.e., EDE-Q 6.0 Restraint, Shape Concern, and Weight

Concern), resistance to change showed smaller correlations with ego-dystonic than with ego-syntonic symptoms at follow-up while motivation for change demonstrated smaller correlations with ego-syntonic than with ego-dystonic symptoms at baseline. Ego-syntonic symptoms also had larger correlations with resistance to change than with motivation for change and bulimic behaviors showed larger correlations with motivation for change than with resistance to change.

Simple correlation analysis confirmed the proposed positive relationship between overall motivation and symptom measures in Chinese ED patients at both baseline and follow-up. Partial correlation analysis further revealed that perceived benefits of EDs only significantly, uniquely contributed to global ED psychopathology at baseline while concerns about change only did so at follow-up, suggesting that the former may have a major impact on ED symptom severity before treatment while the latter may play an important role during treatment. The unique positive correlations between perceived costs of EDs and clinical symptoms (except for follow-up bulimic behaviors) and between concerns about change and depressive symptoms at both time points seem to support the hypothesized contribution of clinical symptoms to motivational factors. Bulimic behaviors were not significantly positively associated with concerns about change or perceived benefits of EDs at either time point after partialling out the other two motivation measures, providing additional evidence for a larger contribution of ego-dystonic symptoms to motivation for change than to resistance to change. It was also noted that perceived benefits of EDs became non-significantly, negatively correlated with depressive symptoms after controlling for the other two motivation measures, indicating a possible contribution of perceived benefits to positive affect.

Over the study period, baseline symptoms all significantly predicted corresponding follow-up symptoms. When holding baseline motivation and symptom levels constant, a decrease in CCS-R, P-CED Pro, or P-CED Con total scores over time significantly positively correlated with a decrease in global ED psychopathology, bulimic behaviors, and depressive symptoms except that change in CCS-R did not significantly contributed to change in bulimic behaviors. When controlling for baseline symptom level and follow-up motivation level, concerns about change or perceived costs of EDs at baseline were negatively correlated with psychological symptoms (i.e., EDE-Q 6.0 global and BDI-II) at follow-up. No motivational factors significantly influenced weight gain in AN patients. These results seem to support the hypothesized correspondence between a decrease in resistance to change and an improvement in clinical symptoms (except for the BMI of AN patients) over time. Although perceived costs of EDs were speculated to enhance motivation for change, less perceived costs appeared to parallel less clinical symptoms. It is possible that higher perceived costs of EDs at baseline enhance motivation for change and thus lead to improvement in clinical symptoms, which, in turn, results in lower perceived costs at follow-up. In general, follow-up motivational factors had the largest effect on follow-up psychopathology, followed by baseline psychopathology and motivational factors in sequence. In contrast, baseline behavioral symptoms (i.e., EDE-Q 6.0 bulimia and BMI) demonstrated the largest impact on corresponding follow-up behavioral symptoms, followed by follow-up and baseline motivation measures in sequence. This pattern seems to suggest that motivational factors have more influence on psychological than on behavioral symptoms.

Possible Explanations for Observed Cultural Differences

Motivational Patterns of Individual Diagnostic Groups

The unexpected finding that Chinese AN patients were less resistant to change than Chinese BN patients at baseline is different from the well-documented ego-syntonic motivations and resultant higher resistance to change in Western AN patients compared to Western BN patients. Several possibilities may explain this unexpected low resistance to change in Chinese AN patients. One is that Chinese AN patients lack ego-syntonic motivations and core ED psychopathology documented in Western AN patients so that they have low resistance to change. Another is that Chinese AN patients can be distinguished into non-fat-phobic and fat-phobic subgroups (Lee et al., 1993) and that low resistance to change, resulting from the absence of weight and shape concerns, in the former may mask high resistance to change, usually caused by overvaluation of thinness and related ego-syntonic motivations, in the latter. The third is that Chinese AN patients may understate their motivation for AN to normalize symptoms and protect their overvaluation of thinness from clinicians. The fourth is that Chinese AN patients fail to endorse ego-syntonic motivations due to lack of insight or difficulty expressing positive valuation of their disorder. The fifth is that Chinese AN patients are resistant to change for different reasons from those described in their Western counterparts so that Western-developed measures used in the study cannot accurately capture their motivational patterns.

If the first possibility is true, Chinese patients should demonstrate larger improvements in motivation for change and clinical symptoms than BN patients over the course of treatment. This is, however, not supported by the smallest improvement observed on both motivation and symptom

measures (except for the EDE-Q 6.0 BMI) in AN participants and the largest improvement on the same measures in BN participants from this study.

To explore the second possibility, the median score on the EDE-Q 6.0 Weight Concern subscale in AN participants was used to separate them into two subgroups with low and high weight concern. Means over time on motivation and symptom measures were recalculated for these two subgroups and compared with those of BN and EDNOS groups. As shown in Table 5.1, low-weight-concern AN (LAN) patients scored lower than high-weight-concern AN (HAN), BN, and EDNOS patients while HAN patients higher than BN and EDNOS patients on almost all CCS-R subscales over the first month of treatment. A similar pattern was observed on P-CED subscales except that HAN participants still scored lower than BN participants on most P-CED Con subscales (see Table 5.2). After Chinese AN patients were separated into two subgroups with low and high weight concern, those with high weight concern became more resistant to change than Chinese patients with BN or EDNOS while those with low weight concern remained the least resistant among all Chinese ED patients in this study. It appears that Chinese HAN patients exhibit a relatively high level of resistance to change compared to other Chinese ED patients, similar to what has been observed in Western ED patients (Gale et al., 2006; Gray, 2008; Vitousek et al., 1995).

Table 5.1

CCS-R Marginal Means of the Four Patient Groups

CCS-R	LAN (<i>n</i> = 20)			HAN (<i>n</i> = 19)			BN (<i>n</i> = 25)			EDNOS (<i>n</i> = 20)		
	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>
Change-Unable	1.44	0.43	1.42	2.19	0.98	2.00	2.25	0.79	2.18	1.96	0.72	1.75
Change-Unworthy	1.29	0.35	1.22	1.76	0.84	1.42	1.56	0.60	1.25	1.41	0.53	1.19
Fear-Risks	1.27	0.29	1.17	1.94	0.90	1.58	1.87	0.74	1.70	1.54	0.67	1.31
Fear-Maturity	1.42	0.42	1.29	2.06	1.07	1.42	1.86	0.76	1.57	1.76	0.69	1.63
Fear-Sexuality	1.08	0.13	1.06	1.45	0.53	1.33	1.28	0.31	1.23	1.24	0.37	1.02
Fear-Process	1.52	0.42	1.53	2.50	1.01	2.17	2.33	0.91	2.18	2.13	0.93	1.92
Loss-Accomplishment	1.44	0.43	1.39	2.33	1.12	2.17	1.98	0.86	1.98	1.53	0.69	1.25
Loss-Hedonic	1.31	0.45	1.09	2.07	1.08	1.83	1.69	0.68	1.55	1.57	0.87	1.21
Loss-Interpersonal	1.30	0.34	1.21	1.92	0.91	1.42	1.65	0.74	1.45	1.45	0.46	1.25
Loss-Peer Group	1.14	0.20	1.06	1.51	0.85	1.08	1.36	0.57	1.17	1.19	0.37	1.00
Loss-Identity	1.43	0.35	1.36	2.15	0.84	2.17	1.87	0.83	1.56	1.55	0.67	1.41
Loss-Disinhibition	1.24	0.23	1.22	1.90	0.87	1.59	1.80	0.68	1.67	1.67	0.69	1.46
Fear-Responsibility	1.52	0.43	1.40	2.14	0.90	2.17	2.05	0.94	1.83	1.95	1.00	1.61
Fear-Negative Affect	1.31	0.34	1.19	2.23	0.96	2.25	2.41	0.96	2.29	1.99	1.15	1.49
Loss-Goal	1.38	0.35	1.39	2.27	1.11	1.92	2.05	0.81	1.81	1.57	0.69	1.33
Fear-Deeper Flaw	1.47	0.36	1.54	2.05	0.76	1.83	1.97	0.65	2.11	1.85	0.58	1.75
Denial-Irrationality	1.55	0.54	1.43	2.29	0.83	2.25	1.65	0.61	1.42	1.43	0.48	1.25
Total	1.36	0.28	1.30	2.04	0.77	1.80	1.86	0.58	1.62	1.63	0.57	1.36

Note. CCS-R = Concerns about Change Scale-Revised; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Table 5.2

P-CED Marginal Means of the Four Patient Groups

P-CED	LAN (<i>n</i> = 20)			HAN (<i>n</i> = 19)			BN (<i>n</i> = 25)			EDNOS (<i>n</i> = 20)		
	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>
Pro-Safe/Structured	-1.30	0.57	-1.40	-0.23	1.05	-0.06	-0.92	0.81	-1.13	-1.22	0.83	-1.55
Pro-Appearance	-1.19	0.72	-1.41	-0.13	0.99	0.13	-0.61	1.01	-0.79	-1.28	0.80	-1.53
Pro-Fertility/Sexuality	-1.66	0.35	-1.75	-1.22	0.87	-1.50	-1.43	0.58	-1.52	-1.51	0.66	-1.77
Pro-Special/Skilled	-1.37	0.55	-1.44	-0.34	1.16	-0.25	-0.84	0.75	-1.00	-1.13	0.81	-1.21
Pro-Fitness	-1.28	0.71	-1.32	-0.35	0.88	-0.38	-0.92	0.87	-0.95	-1.21	0.85	-1.33
Pro-Communication	-0.98	0.63	-1.00	-0.11	0.98	0.00	0.05	0.66	-0.01	-0.10	1.00	0.31
Pro-Eat & Stay Slim	-0.84	1.01	-1.08	0.35	1.08	0.50	0.09	0.93	0.22	-0.94	0.98	-0.93
Pro-Boredom	-1.16	0.81	-1.35	-0.04	1.12	0.10	-0.42	0.80	-0.40	-0.81	1.01	-0.80
Con-Trapped	-0.55	0.77	-0.69	-0.03	0.91	-0.50	0.07	0.58	0.04	-0.11	1.00	-0.09
Con-Guilt	0.91	0.75	1.20	1.34	0.53	1.40	0.90	0.66	0.96	0.57	0.85	0.90
Con-Hatred	1.13	0.80	1.26	0.85	0.81	0.92	1.35	0.50	1.44	1.07	0.94	1.25
Con-Stifled Emotions	-0.74	0.87	-0.87	-0.30	0.77	-0.25	-0.24	0.66	-0.21	-0.31	1.00	0.13
Con-Negative Self	-0.53	0.95	-0.55	-0.04	0.97	0.00	0.36	0.67	0.41	0.17	1.08	0.45
Con-Weight/Shape	-0.10	0.73	-0.11	1.02	1.47	0.80	0.55	0.84	0.66	0.12	1.28	0.20
Pro total	-1.22	0.52	-1.37	-0.26	0.83	-0.13	-0.63	0.54	-0.62	-1.02	0.68	-1.10
Con total	0.02	0.55	-0.01	0.48	0.64	0.60	0.50	0.38	0.51	0.25	0.83	0.31

Note. P-CED = Pros and Cons of Eating Disorder Scale; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

The ranks of the marginal means on selected CCS-R and P-CED subscales assessing ego-syntonic motivations, emotion regulation functions, and self-efficacy concerns are compiled for each of the four patient groups in Tables 5.3 and 5.4. Among the three sets of motivational barriers measured by the CCS-R, both LAN and HAN subgroups considered ego-syntonic concerns as the biggest barrier to recovery, followed by emotional and self-efficacy concerns in sequence, but these concerns were more important to the latter than to the former. Compared to BN and EDNOS patients, LAN and HAN patients put more emphasis on ego-syntonic motivations and less on emotion regulation

functions and self-efficacy problems as barriers to recovery, with a larger difference observed in ego-syntonic concerns between HAN patients and patients with BN or EDNOS and larger differences in emotional and self-efficacy concerns between LAN patients and patients with BN or EDNOS (see Table 5.3). Similar to what was found in all AN patients, ego-syntonic benefits assessed by the P-CED were perceived less important than emotional benefits by both LAN and HAN patients, and emotional benefits were valued more by HAN than by LAN patients. Across the four patient groups, ego-syntonic benefits were equally important to LAN, HAN, BN and EDNOS groups while emotional benefits were more valuable to HAN and EDNOS groups than to LAN and BN groups (see Table 5.4).

Overall, HAN patients put the most emphasis on the ego-syntonic goals of EDs, followed by LAN, BN, and EDNOS patients in sequence. Emotion regulation functions were the most important for individuals with EDNOS, followed by those with BN, HAN, and LAN in sequence. The prominence of self-efficacy concerns in different patient groups decreased from BN participants to EDNOS, to HAN, and to LAN participants. The relevance of ego-syntonic motivations was more similar between the LAN subgroup and the other two diagnostic groups while emotion regulation functions and self-efficacy for change more similar between the HAN subgroup and the other two diagnostic groups. Thus, Chinese HAN patients, compared to Chinese LAN patients, seem to demonstrate a motivational pattern closer to what has been described in Western AN patients.

Table 5.3

Ranks of Marginal Means on Selected CCS-R Subscales for the Four Patient Groups

CCS-R	Rank			
	LAN (<i>n</i> = 20)	HAN (<i>n</i> = 19)	BN (<i>n</i> = 25)	EDNOS (<i>n</i> = 20)
Ego-syntonicity				
Denial-Irrationality	1	3	14	14
Loss-Accomplishment	5	2	6	12
Loss-Goal	9	4	5	8
Loss-Identity	7	7	9	10
Mean rank	5.50	4.00	8.50	11.00
Emotion regulation				
Fear-Negative Affect	10	5	1	2
Loss-Hedonic	11	9	12	9
Loss-Disinhibition	15	14	11	7
Mean rank	12.00	9.33	8.00	6.00
Self-efficacy concerns				
Change-Unable	6	6	3	3
Fear-Process	2	1	2	1
Fear-Risks	14	12	8	11
Mean rank	7.33	6.33	4.33	5.00

Note. CCS-R = Concerns about Change Scale-Revised; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

Table 5.4

Ranks of Marginal Means on Selected P-CED Subscales for the Four Patient Groups

P-CED	LAN (<i>n</i> = 20)		HAN (<i>n</i> = 19)		BN (<i>n</i> = 25)		EDNOS (<i>n</i> = 20)	
	All	Pro	All	Pro	All	Pro	All	Pro
Ego-syntonic benefits								
Pro-Special/Skilled	13	7	12	6	11	5	10	4
Pro-Appearance	10	4	9	4	10	4	13	7
Pro-Fitness	11	5	13	7	12	6	11	5
Mean rank	11.33	5.33	11.33	5.67	11.00	5.00	11.33	5.33
Emotional benefits								
Pro-Boredom	9	3	6	2	9	3	8	2
Pro-Communication	8	2	8	3	7	2	5	1
Mean rank	8.50	2.50	7.00	2.50	8.00	2.50	6.50	1.50

Note. P-CED = Pros and Cons of Eating Disorder Scale; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

It appears that the second possibility is supported by a relatively high level of resistance to change compared to BN and EDNOS participants and a similar pattern of motivational factors to Western AN patients observed in HAN participants once they are separated from LAN participants. To further investigate whether the HAN subgroup in this study exhibited more similar patterns of motivation and psychopathology to Western AN patients than the LAN subgroup, baseline and follow-up scores on overall motivation and symptom measures (i.e., RTC, CCS-R-CV, CCS-R, P-CED Pro, P-CED Con, ADRA, EDE-Q 6.0 global, EDE-Q 6.0 bulimia, EDE-Q 6.0 BMI, and BDI-II) were summarized for each of the four patient groups (see Table 5.5). At both baseline and follow-up, HAN patients appeared to be the most resistant on motivation measures, followed by BN, EDNOS, and LAN patients in sequence. At baseline, BN participants scored the highest on symptom measures except for the EDE-Q 6.0 BMI, followed by EDNOS, HAN, and LAN participants in sequence except that HAN

participants reported a slightly higher frequency of bulimic behaviors. At follow-up, HAN patients became the most symptomatic except for bulimic behaviors, followed by EDNOS, BN, and LAN patients in sequence.

Table 5.5

Baseline and Follow-up Scores on Overall Motivation and Symptom Measures

Measure	LAN (n = 20)			HAN (n = 19)			BN (n = 25)			EDNOS (n = 20)		
	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn	M	SD	Mdn
RTC	5.93	1.49	6.67	5.23	1.35	5.91	5.91	1.18	6.00	6.47	0.52	6.67
	6.64	0.49	6.82	5.86	1.42	6.33	6.28	0.68	6.50	6.56	0.50	6.67
CCS-R-CV	1.74	0.60	1.63	2.46	0.76	2.43	2.36	0.51	2.17	2.15	0.49	2.17
	1.84	0.78	1.58	2.41	0.85	2.11	2.15	0.74	2.11	2.07	0.53	2.11
CCS-R	1.35	0.34	1.22	2.19	0.79	2.10	2.12	0.81	1.89	1.67	0.62	1.50
	1.37	0.32	1.21	1.90	0.86	1.51	1.60	0.47	1.59	1.60	0.61	1.32
P-CED Pro	-1.20	0.75	-1.42	-0.09	0.84	0.39	-0.27	0.77	-0.33	-0.93	0.89	-1.15
	-1.25	0.57	-1.18	-0.43	0.95	-0.51	-0.99	0.49	-1.01	-1.12	0.67	-1.17
P-CED Con	0.09	0.73	0.03	0.54	0.64	0.53	0.82	0.55	0.92	0.43	1.05	0.55
	-0.05	0.64	0.01	0.41	0.81	0.34	0.18	0.48	0.17	0.07	0.90	0.15
ADRA	2.42	1.32	2.52	3.89	1.48	3.81	4.00	1.68	3.81	2.97	1.50	2.96
	2.39	1.32	2.25	3.40	1.65	3.23	3.11	1.20	3.12	2.61	1.39	2.62
EDE-Q 6.0 global	0.68	0.38	0.67	2.64	1.16	2.64	3.01	1.39	3.34	2.85	1.79	3.07
	1.06	0.74	1.13	1.94	1.32	1.64	1.30	0.92	1.47	1.88	1.29	1.57
EDE-Q 6.0 bulimia	0.54	0.80	0.20	1.14	1.04	1.00	2.56	1.39	2.20	1.00	1.05	0.80
	0.63	0.57	0.50	0.93	1.16	0.80	1.08	0.68	1.00	0.97	0.98	0.80
EDE-Q 6.0 BMI	14.67	2.18	14.71	15.57	1.98	15.82	18.99	2.58	18.92	19.40	5.33	18.31
	16.45	2.69	16.62	15.70	2.41	15.62	19.04	2.68	18.20	17.95	2.64	17.63
BDI-II	14.95	12.43	12.00	19.42	8.57	20.00	25.12	13.89	26.00	24.45	11.58	26.50
	11.59	9.78	10.39	13.63	9.86	13.00	10.00	10.13	10.50	13.08	12.56	12.13

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified.

A 4x2 mixed-design ANOVA analysis was conducted to further examine how LAN, HAN, BN, and EDNOS groups were different from each other on overall motivation and symptom measures and how their motivation and symptoms changed over time. Table 5.6 presents main and interaction effects of patient group and time from omnibus tests. The four patient groups were significantly different in motivation for change and ED symptoms over time with medium to large effect sizes ($\eta_p^2 = .10 - .31$ Kruskal-Wallis $\eta^2 = .11 - .36$, $ps < .05, .01, \text{ or } .001$). Except for the CCS-R-CV total scale and EDE-Q 6.0 BMI, other measures showed significant medium to large changes over the first month of treatment across the four patient groups ($\eta_p^2 = .07 - .33$, Wilcoxon $r^2 = .10 - .40$, $ps < .05, .01, \text{ or } .001$). In addition, significant medium to large interaction effects ($\eta_p^2 = .11 - .31$, $ps < .05, .01, \text{ or } .001$) were detected on two motivation (i.e., CCS-R and P-CED Pro) and four symptom (i.e., EDE-Q 6.0 global, EDE-Q 6.0 bulimia, EDE-Q 6.0 BMI, and BDI-II) measures.

Table 5.6

Main and Interaction Effects of Patient Group and Time on Motivation and Symptom Scores

Measure	Patient group			Time			Patient group x Time		
	η_p^2	95% CI	K-W η^2	η_p^2	95% CI	Wilcoxon r^2	η_p^2	95% CI	
RTC	.13*	.02 .24	.13*	.22***	.12 .36	.26***	.07	.01 .17	
CCS-R-CV	.14**	.03 .26	.12*	.01	.00 .09	.03	.03	.00 .11	
CCS-R	.17**	.03 .29	.17**	.15***	.08 .29	.16***	.15**	.03 .27	
P-CED Pro	.25***	.05 .37	.23***	.16***	.09 .31	.17***	.11*	.02 .23	
P-CED Con	.10*	.02 .20	.11*	.14**	.07 .28	.18***	.07	.01 .17	
ADRA	.16**	.02 .28	.17**	.07*	.04 .20	.10**	.04	.00 .12	
EDE-Q 6.0 global	.26***	.05 .38	.30***	.30***	.18 .44	.25***	.31***	.07 .44	
EDE-Q 6.0 bulimia	.24***	.05 .37	.28***	.14***	.08 .28	.11**	.31***	.07 .43	
EDE-Q 6.0 BMI	.31***	.07 .43	.36***	.00	.00 .06	.02	.12*	.02 .23	
BDI-II	.05	.00 .13	.04	.33***	.19 .46	.40***	.12*	.02 .24	

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of

Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II. K-W $\eta^2 = H/(N - 1) = SSG/SST$. Wilcoxon $r^2 = (z/\sqrt{N})^2$.
* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Further exploration of group differences over time indicated significantly higher resistance to change in HAN than in LAN patients on all motivation measures with large effect sizes except that the former perceived significantly more costs of EDs than the latter ($d = 0.75, p < .05$). Although the HAN subgroup reported more severe clinical symptoms (except for the EDE-Q 6.0 BMI) than the LAN subgroup over time ($ds = 0.35 - 1.37$), only the difference in global ED psychopathology was significant between the two subgroups ($d = 1.37, p < .05$). Relative to BN participants, LAN participants scored significantly lower on all measures of resistance to change, the measure of perceived costs of EDs, and measures of ED symptoms with large effect sizes ($ds = -0.78 - -1.45, ps < .05, .01, \text{ or } .001$); HAN participants, on the other hand, showed non-significantly higher levels of resistance to change and global ED psychopathology ($ds = 0.08 - 0.59, ps > .05$), significantly less bulimic behaviors ($d = -0.92, p < .01$), and significantly lower BMI ($d = -1.35, p < .001$). A similar pattern was observed when LAN and HAN patients were compared with EDNOS patients except that the differences between LAN and EDNOS patients became smaller and non-significant on motivation and bulimia measures while the differences between HAN and EDNOS patients became larger and significant on most motivation measures and smaller and negligible on symptom measures (see Table 5.7). It was noted that both LAN and HAN subgroups had significant lower BMI ($ds = -1.21 - -1.38, ps < .001$) and non-significantly less depression ($ds = -0.11 - -0.59, ps > .05$) than BN and EDNOS groups.

As shown in Tables 5.8 and 5.9, separate examination of baseline and follow-up differences between the four patient groups indicated that baseline group differences contributed more to the overall group differences discussed above except for baseline differences between HAN and BN patients on motivation measures. Although some baseline and follow-up group differences were different from overall group differences in direction, none of them were statistically significant (see Tables 5.7 to 5.9). It was noted that the LAN subgroup reported a lower baseline BMI ($d = -0.27$, $p > .05$) and a higher follow-up BMI ($d = 0.28$, $p > .05$) than the HAN subgroup although the differences were not significant. Comparing baseline and follow-up group differences, differences between LAN and the other three patient groups and between HAN and EDNOS groups were larger on baseline motivation and symptom measures while differences between HAN and BN groups were larger on baseline symptom and follow-up motivation measures.

Table 5.7

Main Effect Contrasts between Patient Groups on Motivation and Symptom Measures

Measure	LAN vs. HAN	LAN vs. BN	HAN vs. BN	LAN vs. EDNOS	HAN vs. EDNOS
	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
RTC	0.79*	0.20	-0.59	-0.25	-1.04**
CCS-R-CV	-1.10***	-0.79**	0.30	-0.55	0.55
CCS-R	-1.19***	-0.87**	0.32	-0.48	0.71*
P-CED Pro	-1.49***	-0.92**	0.57	-0.31	1.18***
P-CED Con	-0.75*	-0.78*	-0.03	-0.38	0.37
ADRA	-1.03**	-0.95**	0.08	-0.32	0.71*
EDE-Q 6.0 global	-1.37***	-1.24***	0.13	-1.44***	-0.07
EDE-Q 6.0 bulimia	-0.52	-1.45***	-0.92**	-0.47	0.05
EDE-Q 6.0 BMI	-0.03	-1.38***	-1.35***	-1.24***	-1.21***
BDI-II	-0.35	-0.46	-0.11	-0.59	-0.24

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total

scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. d = Cohen's d between marginal means of the patient groups over time.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 5.8

Simple Contrasts between Patient Groups on Baseline Motivation and Symptom Measures

Measure	LAN vs. HAN	LAN vs. BN	HAN vs. BN	LAN vs. EDNOS	HAN vs. EDNOS
	d_1	d_1	d_1	d_1	d_1
RTC	0.59	0.02	-0.57	-0.45	-1.05**
CCS-R-CV	-1.21***	-1.05***	0.16	-0.68*	0.53
CCS-R	-1.24***	-1.14***	0.10	-0.48	0.76*
P-CED Pro	-1.38***	-1.15***	0.22	-0.34	1.04**
P-CED Con	-0.59	-0.96**	-0.37	-0.45	0.14
ADRA	-0.97**	-1.05***	-0.07	-0.37	0.61
EDE-Q 6.0 global	-1.52***	-1.80***	-0.28	-1.68***	-0.16
EDE-Q 6.0 bulimia	-0.54	-1.81***	-1.28***	-0.41	0.12
EDE-Q 6.0 BMI	-0.27	-1.32***	-1.04***	-1.44***	-1.17***
BDI-II	-0.37	-0.85**	-0.48	-0.79*	-0.42

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. d_1 = Cohen's d between baseline means of the patient groups.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 5.9

Simple Contrasts between Patient Groups on Follow-up Motivation and Symptom Measures

Measure	LAN vs. HAN	LAN vs. BN	HAN vs. BN	LAN vs. EDNOS	HAN vs. EDNOS
	d_2	d_2	d_2	d_2	d_2
RTC	0.92**	0.43	-0.50	0.09	-0.83*
CCS-R-CV	-0.79*	-0.43	0.36	-0.33	0.46
CCS-R	-0.90**	-0.40	0.51	-0.39	0.52
P-CED Pro	-1.21***	-0.38	0.82**	-0.18	1.02**
P-CED Con	-0.66*	-0.33	0.33	-0.17	0.48
ADRA	-0.73*	-0.52	0.21	-0.16	0.58
EDE-Q 6.0 global	-0.82*	-0.23	0.59	-0.76*	0.06
EDE-Q 6.0 bulimia	-0.35	-0.52	-0.17	-0.40	-0.05
EDE-Q 6.0 BMI	0.28	-0.99**	-1.27***	-0.57	-0.86**
BDI-II	-0.19	0.15	0.34	-0.14	0.05

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II; LAN = anorexia nervosa patients with low weight concern; HAN = anorexia nervosa patients with high weight concern; BN = bulimia nervosa; EDNOS = eating disorder not otherwise specified. d_2 = Cohen's d between follow-up means of the patient groups.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Table 5.10 presents the main and simple effects of time on overall motivation and psychopathology for the entire sample and each of the four patient groups. Except for clinician-rated concerns about change and self-perceived cost of EDs, significant small to moderate improvements were found on all other motivation and symptom measures ($d_s = 0.29 - 0.68$, $p_s < .01$ or $.001$) for the entire sample. Among the four patient groups, the BN group demonstrated the largest improvement in motivation for change over time, followed by HAN and EDNOS groups in sequence. Except for the

EDE-Q 6.0 BMI, BN patients also showed the largest improvement in clinical symptoms after the first month of treatment, followed by EDNOS and HAN patients in sequence except that HAN patients had a larger improvement in bulimic behaviors than EDNOS patients (see Table 5.10). The LAN subgroup, in contrast, reported no significant improvement in their motivation for change and a small significant increase in their global ED psychopathology ($d = 0.48, p < .05$) over the first month of treatment although they exhibited a significantly higher BMI ($d = 0.58, p < .05$) at follow-up.

Table 5.10

Main Effect and Simple Contrasts between Baseline and Follow-up Scores on Motivation and

Symptom Measures

Measure	Baseline vs. follow-up				
	d	d_{LAN}	d_{HAN}	d_{BN}	d_{EDNOS}
RTC	-0.50***	-0.54*	-0.76**	-0.53*	-0.21
CCS-R-CV	0.11	-0.15	0.06	0.38	0.12
CCS-R	0.41***	-0.06	0.48	0.81***	0.17
P-CED Pro	0.45***	0.06	0.49*	1.03***	0.25
P-CED Con	0.41***	0.18	0.19	0.91***	0.36
ADRA	0.29**	0.02	0.50*	0.42*	0.41
EDE-Q 6.0 global	0.59***	-0.48*	0.69*	1.24***	0.76**
EDE-Q 6.0 bulimia	0.40***	-0.10	0.27	1.06***	0.04
EDE-Q 6.0 BMI	-0.04	-0.58*	-0.13	-0.02	0.32
BDI-II	0.68***	0.24	0.79**	1.00***	0.87**

Note. RTC = Readiness to Change Scale; CCS-R-CV = Concerns about Change Scale-Revised Clinician Version; CCS-R = Concerns about Change Scale-Revised; P-CED Pro = Pros and Cons of Eating Disorder Scale Pro total scale; P-CED Con = Pros and Cons of Eating Disorder Scale Con total scale; ADRA = Anticipated Difficulty of Recovery Activities; EDE-Q 6.0 global = Eating Disorder Examination Questionnaire 6.0 global scale; EDE-Q 6.0 bulimia = Eating Disorder Examination Questionnaire 6.0 bulimia measure; EDE-Q 6.0 BMI = Eating Disorder Examination Questionnaire 6.0 body mass index; BDI-II = Beck Depression Inventory-II. d = Cohen's d between marginal means of time across the patient groups; d_{LAN} = Cohen's d between baseline and follow-up means of the low-weight-concern AN subgroup; d_{HAN} = Cohen's d between baseline and follow-up means of high-weight-concern AN subgroup; AN = anorexia nervosa; d_{BN} = Cohen's d between baseline and

follow-up means of the BN group; BN = bulimia nervosa; d_{EDNOS} = Cohen's d between baseline and follow-up means of the EDNOS group; EDNOS = eating disorder not otherwise specified.

* $p < .05$ (2-tailed). ** $p < .01$ (2-tailed). *** $p < .001$ (2-tailed).

Overall, the HAN subgroup in this study demonstrated the highest level of resistance among all ED participants over the study period, especially after a month of treatment. This subgroup also improved less in psychological symptoms than BN and EDNOS groups, less in bulimic behaviors than the BN group, and less in BMI than the LAN subgroup, making it the most symptomatic group at follow-up. In addition, this subgroup also valued ego-syntonic motivations more than the other three patient groups and perceived emotional and self-efficacy concerns as more important barriers to recovery compared to the LAN subgroup. Thus, HAN patients seem to be more similar than different from Western AN patients in their motivational patterns and ED symptoms.

The LAN subgroup, on the other hand, was the least resistant and symptomatic (except for the EDE-Q 6.0 BMI) among all participants in this study at both baseline and follow-up. Although LAN patients showed significant weight gain after the first month of treatment, they also demonstrated the least, if any, improvement in motivation and symptoms and a significant increase in global ED psychopathology at follow-up. Specifically, they reported increases in restrictive eating, concerns about eating, shape and weight, and bulimic behaviors after a month of treatment (See Table 5.11), among which the increase in weight concern was significant with a medium effect size ($d = 0.52$, $p < .05$). In addition, ego-syntonic motivations were still regarded as more important barriers to change in this subgroup than in BN and EDNOS groups. Therefore, the LAN subgroup may not be completely different from Western AN patients in terms of perceived importance of ego-syntonic motivations and observed difficulty to change despite the reported low levels of resistance to change

and clinical psychopathology. Their increased ED psychopathology at follow-up may result from significant weight gain or increased insight after the first month of treatment.

Table 5.11

Patterns of EDE-Q 6.0 Subscale and Bulimia Scores in LAN Patients

EDE-Q 6.0	Baseline			Follow-Up			Change
	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>d</i>
Restraint	0.45	0.48	0.20	0.87	1.09	0.58	-0.35
Eating Concern	0.66	0.55	0.50	0.83	0.54	0.80	-0.25
Shape Concern	0.95	0.69	0.75	1.40	0.99	1.65	-0.40
Weight Concern	0.65	0.32	0.60	1.13	0.84	1.45	-0.52*
Bulimia	0.54	0.80	0.20	0.63	0.57	0.50	-0.10

Note. EDE-Q 6.0 = Eating Disorder Examination Questionnaire 6.0; LAN = low-weight-concern anorexia nervosa

* $p < .05$ (2-tailed).

In summary, there seem to be two distinctive subgroups in Chinese AN patients and the subgroup with high weight concern is very similar to typical Western AN patients. The subgroup with low weight concern, however, does not appear to completely lack fat phobia as suggested by Lee et al. (1993) although the existence of this subgroup may contribute to untypical patterns of motivation and psychopathology documented in Chinese AN patients. As suggested by later studies in AN patients from Hong Kong (Lee et al., 2001; Ngai et al., 2000), fat phobia can present as one of the reasons for restriction in non-fat-phobic AN patients and presence of fat phobia can change over the course of illness. To further evaluate whether the observed low levels of resistance to change and ED psychopathology in the LAN subgroup are due to lack of fat phobia or problem with self-report, DSM-IV-TR diagnostic symptoms collected by the research psychiatrist at baseline were examined for the two AN subgroups. The majority of both LAN and HAN subgroups endorsed fear of weight gain

(70.0% vs. 89.5%) and body-image distortion (75.0% vs. 68.4%) during the baseline interview and chi-square tests revealed no significant differences between the two subgroups. As a result, problem with self-report rather than lack of weight and shape concerns may better explain the untypical patterns of resistance to change and clinical psychopathology exhibited by LAN patients in this study, which is related to the last three possibilities proposed above.

If the third possibility is true for the LAN subgroup, some discrepancy would be expected between self-report symptoms and observed behaviors. For example, they may drop out of treatment or actively resist behavior change while reporting improvement in psychological symptoms, or behaviorally comply with weight regain but refuse to challenge their overvaluation of thinness. To explore the behavioral compliance with treatment, dropout rates, weight gain, and reduction in bulimic behaviors over the first month of treatment were compared between LAN and HAN patients. Compared to the HAN subgroup, the LAN subgroup had a higher dropout rate (35.0% vs. 10.5%, $\phi = .29$, $p > .05$), more weight gain ($d = 0.58$, $p < .05$ vs. $d = 0.13$, $p > .05$), and increased instead of decreased bulimic behaviors ($d = 0.10$, $p > .05$ vs. $d = -0.27$, $p > .05$). LAN participants also demonstrated a small significant increase ($d = 0.48$, $p < .05$) while HAN participants a moderate significant decrease ($d = -0.69$, $p < .05$) in global ED psychopathology. Except for the substantial weight gain (4.73 kg) in the LAN subgroup, other symptom indicators suggested that this subgroup was no less resistant to change than the HAN subgroup although the former endorsed lower levels of resistance to change and ED symptoms than the latter at both baseline and follow-up. It should be noted that the follow-up BMI was not measured by the research psychiatrist but reported by participants on the EDE-Q 6.0 although there was no significant difference between measured and

self-reported BMI at baseline except that HAN patients reported a significantly higher BMI on the EDE-Q 6.0 than what was measured during the baseline interview ($d = .49, p < .05$). Thus, the substantial weight gain in LAN patients, if reported accurately, may have resulted from the wish to leave the treatment program as early as possible to avoid changing overvaluation of thinness but inevitably led to increased ED psychopathology, especially weight concern, due to this overvaluation.

The fourth possibility was explored by examining the relative importance of ego-syntonic motivations and symptoms to the LAN subgroup and comparing endorsement of ego-syntonic motivations phrased differently on corresponding CCS-R and P-CED Pro subscales in this subgroup. In spite of the low scores obtained on measures of resistance to change and clinical symptoms, LAN patients put more emphasis on ego-syntonic concerns (i.e., CCS-R Denial-Irrationality, Loss-Accomplishment, Loss-Goal, and Loss-Identity) than on other concerns about change over the study period (see Table 5.3) and reported more severe ego-syntonic (i.e., EDE-Q 6.0 Restraint, Weight Concern, and Shape Concern) than ego-dystonic (i.e., EDE-Q 6.0 Eating Concern and bulimia) symptoms when their weight increased substantially at follow-up (see Table 5.11). The increases in ego-syntonic symptoms also exceeded those in ego-dystonic symptoms after a month of treatment. In addition, baseline scores on EDE-Q 6.0 Shape Concern and Weight Concern subscales were among the highest as well (see Table 5.11). All this seems to suggest that the LAN subgroup is less likely to lack insight into their overvaluation of thinness and related ego-syntonic motivations but more likely to feel uncomfortable endorsing the ego-syntonicity of their disorder strongly. The inconsistent agreement with positively and negatively phrased ego-syntonic motivations on corresponding P-CED Pro and CCS-R subscales (See Tables 5.1 to 5.4) further supported the possible difficulty for Chinese

ED patients to express drive for thinness and positive valuation of symptoms. This difficulty in self-disclosure may or may not associate with an intentional understatement of resistance and symptoms to prevent further intervention from clinicians.

The last possibility is related to the validity of Western-developed motivation measures in Chinese ED patients. Given that motivation measures translated for this study have demonstrated adequate reliability and, with the exception of the P-CED Con total scale, acceptable validity in the current sample, it is not likely that these measures have failed to include important reasons for resistance to change in Chinese ED patients. The findings from this study that both LAN and HAN subgroups perceived ego-syntonic concerns as more important than other concerns about change in their recovery and that HAN participants became the most resistant to change among all participants once they were separated from LAN participants also makes this possibility less likely.

Taken it together, the unexpected low resistance to change observed in Chinese AN patients at baseline is likely to result from the existence of two distinctive AN subgroups with low and high weight concern, respectively. The HAN subgroup seems to have typical patterns of motivation and psychopathology observed in Western AN patients, which may have been masked by low levels of resistance and symptoms endorsed by the LAN subgroup in the current study. The LAN subgroup, however, does not appear to lack overvaluation of thinness and related ego-syntonic motivations, nor does this subgroup change easily during the course of treatment. Rather, this subgroup may understate their resistance and symptoms and behaviorally comply with weight gain to leave the treatment program.

Levels of Motivation and Symptoms

Chinese ED patients in the current study obtained relatively low scores on self-report measures of motivation (i.e., CCS-R and P-CED subscales and total scales) and ED psychopathology (i.e., EDE-Q 6.0 subscales and global scale) compared to Western ED patients except that Chinese BN patients scored higher than their Western counterparts on most CCS-R and P-CED Pro subscales and total scales at baseline. This finding seems to suggest that Chinese ED patients are less resistance to change (except for BN patients) and symptomatic than Western ED patients and several explanations may account for this observed cultural difference. First, Chinese ED patients are less concerned about weight and shape so that they have lower resistance to change and ED symptoms compared to their Western counterparts. Without direct comparisons between the two populations in a cross-cultural study, it is hard to evaluate the validity of this explanation. Several other findings from this study, however, do not seem to support this explanation. For example, the majority of AN patients endorsed fear of weight gain (79.5%) and body-image disturbance (71.8%) and BN patients overvaluation of weight and shape (88.0%) in their baseline interviews with the research psychiatrist. Participants in this study also demonstrated a similar dropout rate from treatment to what was found in Western ED samples (33.3% vs. 30%). In addition, Chinese HAN and Western AN patients (Wolk et al., 2005) reported comparable BMI (15.3 vs. 15.5) and binge eating frequency (2.2 vs. 2.2 times per week) although Chinese LAN patients indicated lower BMI (14.7) and binge eating frequency (1.1 times per week). Chinese BN patients endorsed higher levels of concerns about change and perceived benefits of EDs, a lower level of perceived costs of EDs, and frequent binge eating (4.3 times per week) and vomiting (3.7 times per week). Chinese EDNOS patients indicated comparable

binge eating (2.3 vs. 2.2 times per week) and excessive exercise (1.5 vs. 2.2 times per week) to Western AN patients (Wolk et al., 2005). Thus, Chinese ED patients seem to be concerned about weight and shape and, on behavioral measures, as resistant and symptomatic as their Western counterparts.

Second, Chinese ED patients may have underreported resistance to change and clinical symptoms and therefore scored lower on the measures used in the study. This tendency to underreport may be associated with the stigmatization of psychopathology, respect for authority, emphasis on modesty, or fear of rejection from family in Chinese culture. This cultural difference in self-disclosure between Chinese and Western individuals appears to be supported by different endorsement of ego-syntonic motivations on relevant CCS-R and P-CED Pro subscales. The documented lower explicit self-esteem in Chinese compared to North Americans (Yamaguchi et al., 2007) also provides some support for the cultural difference in self-disclosure. In addition, the understatement may be intentional to prevent outside intervention, which seems to be supported by the pattern found in the LAN subgroup discussed above but not by the improvement of both psychological and behavioral symptoms observed in the other three patient groups over the study period.

Third, Chinese ED patients may attend less to cognitive symptoms of their disorders compared to Western ED patients. Therefore, they may not be aware of or able to articulate underlying motivation and psychopathology as well as their Western counterparts. The relatively high importance of ego-syntonic motivations and symptoms for both LAN and HAN patients compared to other motivational factors and clinical symptoms, relatively high levels of resistance to change

expressed by the HAN subgroup over the study period, and increased ED psychopathology in LAN patients after significant weight gain seem to weaken this explanation.

Limitations

There are several limitations to the current study that may threaten its internal or external validity. First, convenience sampling was used to recruit participants for the study. Thus, the current sample may only represent ED patients commonly seen at a tertiary psychiatric hospital in a major city of China. For example, the sample may represent the subgroup with higher levels of symptoms in Chinese ED patients given the level of care provided by the research institution. The sample may also receive more influence from Western culture as a result of living in one of the most developed city in China. The sampling method also resulted in differences in sample sizes and participant characteristics (i.e., age, BMI, ED history, and previous ED treatment) between the diagnostic groups, which may bias the results of group comparisons. Specifically, large discrepancies in group sample sizes may affect the homogeneity of variance and reduce the power of statistical tests. Significant differences in participant characteristics between the diagnostic groups may confound the effects of diagnosis on motivational factors and clinical symptoms.

Second, the sample size of the study was insufficient to detect a medium effect in a 3x2 or 4x2 mixed-design ANOVA or correlation analysis. Due to the limited statistical power, Cohen's (1988) conventions for effect sizes, in addition to statistical significance, were used to interpret the results. For the same reason, Bonferroni correction was not used to adjust the significance level in multiple hypothesis testing, thus increasing the risk of Type I error. In addition, the planned factor analysis of the CCS-R was unable to be conducted because of the small sample size.

Third, the attrition rate in the study was high (33.3 %) although typical for studies with ED patients. Comparisons between participants who dropped out and who did not revealed no significant differences in participant characteristics or baseline measures except that BN participants had a significantly higher dropout rate than AN and EDNOS participants. Even though Little's MCAR tests suggested that data were missing completely at random and single imputation was used to replace missing values, bias in results may still be introduced by unequal attrition across the three diagnostic groups and imputed data for dropouts.

Fourth, Western-developed measures used in the study, with the exception of BDI-II, had not been translated and validated in Chinese population prior to this investigation. Although data from the current study provided preliminary evidence for the reliability and validity of these measures in Chinese ED patients, linguistic and cultural equivalence between Chinese and English versions of study measures may not be well maintained even with best efforts in translation. Except for treatment dropout, other criterion measures (i.e., concurrent ADRA and follow-up EDE-Q 6.0 bulimia) were based on self-report, which may compromise an accurate evaluation of the criterion validity. Data from the study also suggested poor convergent and criterion validity of the P-CED Con total scale and limited ability of all motivation measures to predict treatment dropout except for the CCS-R subscale measuring inability to change. In addition, the evaluation of the structural validity of the CCS-R was compromised by inability to conduct a reliable factor analysis.

Fifth, the follow-up period of the study was too short to investigate longitudinal changes in motivational patterns and related psychopathology. The primary concern about a longer follow-up period was attrition of participants given the documented high dropout rates for this patient population,

which turned out to be true in this study as well. Even with the short follow-up period, all study measures, except for the CCS-R-CV, were able to detect significant effects of time on motivation and symptoms, demonstrating their sensitivity to change in measured variables. Thus, these measures may be used to track treatment progress in clinical settings.

Sixth, the study design had limited ability to examine the causal relationship between motivation for change and clinical outcomes. Although a decrease in resistance to change did correspond to an improvement in clinical symptoms over time in the current study, no causal relationship could be established through the regression analysis as both changes were measured over the same period. If a third time point were added to collect data on the same set of measures, it would allow causal inference by using time series analysis.

Seventh, lack of a Western comparison group in the study precluded empirical investigation of cultural differences between Chinese and Western ED patients documented in the literature. Although the results from the current study were compared to those reported in Western studies on the same measures, no definite conclusion about cultural differences could be drawn from such comparisons. The current study is only the first step to examine possible impact of Chinese culture on motivational patterns and related psychopathology in ED patients. Future studies including both Chinese and Western participants may better address cultural universals and particulars regarding motivation for change and symptom presentation in ED patients.

Conclusions

Findings from the study suggest that Western-developed measures appear to be applicable to Chinese ED patients and can be used in clinical practice for both intake and progress assessments.

Prominent motivational barriers to change identified in Chinese ED patients include lack of self-efficacy, emotion regulation functions of EDs, and ego-syntonic motivations for symptoms, which are not very different from those documented in their Western counterparts. Similar to Western clinicians, Chinese clinicians appear to perceive a higher level of concerns about change in their ED patients than patients themselves. They also seem to consider emotion regulation functions as more important and ego-syntonic motivations as less important barriers to change compared to their ED patients. Like Western ED patients, Chinese ED patients appear to perceive more costs than benefits of EDs, especially the consequences of EDs and guilt for loved ones. They also seem to have significant weight and shape concerns and experience mild to moderate depression. At baseline, Chinese BN patients are found to be more resistant and symptomatic than AN patients, with Chinese EDNOS patients demonstrating similar levels of treatment resistance to AN and clinical symptoms to BN patients, respectively. At follow-up, no significant differences in motivation and symptoms are detected between the three diagnostic groups. When examined separately, Chinese AN patients with high weight concern appear to be the most resistant to change among all ED patients at both baseline and follow-up. Chinese AN patients with low weight concern, on the other hand, seem to show the least improvement over time among all participants in this study. Improvement in motivation for change and clinical psychopathology are observed in HAN, BN and EDNOS patients but not in LAN patients over the first month of treatment, with greater improvement found in BN patients than in HAN and EDNOS patients. Finally, a positive cross-sectional relationship and correspondence in changes over time are found between motivational factors (i.e., concerns about change and perceived benefits

and costs of EDs) and clinical symptoms except for the BMI of AN patients (i.e., global ED psychopathology, bulimic behaviors, and depressive symptoms).

Overall, there seem to be more similarities than differences in motivational patterns and related psychopathology between Chinese and Western ED patients, especially when Chinese AN patients with low and high weight concern are examined separately. One notable difference is that Chinese EDs patients endorse a lower level of treatment resistance (except for BN patients) and eating pathology (except for the BMI and binge eating) than their Western counterparts, which probably results from a cultural difference in self-disclosure or an intentional understatement to prevent intervention. In addition, reducing treatment resistance may help improve clinical outcomes except for weight gain in patients with AN. Future studies using a cross-cultural design may help further elucidate cultural universals and particulars in motivational patterns and related psychopathology. A time series design may also help better evaluate the causal relationship between motivation for change and clinical outcomes.

Implications

Findings from the current study may have several implications for clinical work with Chinese ED patients. In terms of assessment, resistance to change should be evaluated routinely and carefully to better understand patients, engage them in treatment, and prevent premature dropout, especially for AN and BN patients. Western-developed measures validated in the study can be used to identify specific motivational barriers to change, evaluate levels of resistance and psychopathology, and track changes in motivation and symptoms over time. Similar motivational barriers and facilitators as those identified in their Western counterparts may apply to Chinese ED patients and

should be assessed carefully, such as lack of self-efficacy, hatred of consequences, and guilt for loved ones in all three diagnostic groups, use of EDs for emotion regulation in BN and EDNOS patients, and ego-syntonic motivations for symptoms in AN patients. The core psychopathology of EDs (i.e., weight and shape concerns) should also be skillfully evaluated and addressed, including AN patients with low weight concern. When inquiring about drive for thinness and positive valuation of EDs, clinicians may need to carefully phrase the questions to facilitate disclosure and elicit accurate information. In addition, underrepresentation of BN and EDNOS patients in clinical practice, if not solely attributable to the time lag between the development of AN and other EDs, may indicate a need for greater awareness and more screening of such conditions to provide appropriate diagnosis and timely treatment.

With regard to treatment, identifying and addressing important motivational barriers to change for Chinese ED patients, such as insufficient self-efficacy, emotion regulation functions, and ego-syntonic motivations, may help improve motivation for change. Particularly, helping patients to increase confidence in their ability to change may facilitate treatment retention. Given the positive correspondence in changes over time between resistance to change and clinical symptoms, efforts to reduce resistance may lead to better outcomes. Because perceived costs of EDs seem to contribute positively to concurrent symptoms and symptom changes over time, addressing them may also help improve clinical outcomes. In addition, more time and efforts seem to be needed to effectively reduce treatment resistance and improve clinical outcomes in AN patients, especially those with low weight concern, as it appears more difficult for them to change over the course of treatment.

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