

MAEVE HINDS BSc (Hons) MSc

**EXPLORING THE RELATIONSHIPS BETWEEN SELF-CRITICISM AND
PERFECTIONISM WITHIN DIABETES-RELATED DISTRESS AND
MANAGEMENT IN A TYPE 1 DIABETES POPULATION**

Section A: What do we know about the Relationship between Self-Criticism and Chronic
Health Conditions? A Systematic Review

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Section B: Exploring the Relationships between Self-Criticism and Perfectionism within
Diabetes-Related Distress and Management in a Type 1 Diabetes Population

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I dedicate this research to Rory and Karen, both who have lived and are living with type 1 diabetes and have inspired my hope to create a greater holistic care-system for those living with type 1 diabetes. Thank you to all the participants. This project would not have been possible without you.

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Major Research Project Portfolio Summary

Section A: People with a chronic health condition (CHC) are at a greater risk of depression, which can interact with their medical condition and decrease quality of life. Self-criticism correlates with depression and may be a factor contributing to poorer outcomes for those with a CHC. This narrative literature review, based on a systematic search, explored, and critiqued 10 papers examining what is known about the relationship with self-criticism and CHCs. The review highlighted that specific antecedent or triggering event that causes the CHC which predisposes the individual to self-criticism is yet to be identified in the current literature, associated with adjustment, symptoms, coping, emotional responses, and functioning and social perceptions amongst those with a CHC. The question remains as to whether self-criticism impacts directly on physiology or if it acts as a mediator of depressive symptoms in relation to one's CHC.

Section B: The aim of this descriptive study was to develop a greater understanding into the levels of self-criticism in adults with Type 1 Diabetes (T1D), and how this interacts with different types of perfectionism and impacts upon Diabetes-Related Distress (DRD) and diabetes self-management. The findings indicate that maladaptive perfectionism may be an important factor to consider when supporting an individual experiencing DRD and/or struggling with confidence in their diabetes self-management. The study also indicates that the hated-self form of self-criticism may be a more prominent factor in certain forms of DRD. Findings were considered alongside limitations as well as clinical and research implications, such as the need for future research to focus on systemic support experiences of the individual, family and medical systems in the treatment and care of T1D.

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**Section A: What do we know about the Relationship between Self-Criticism and
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Abstract

Purpose: The impact of a chronic health conditions (CHC) can determine an individual's ability to reach their goals. Self-criticism is a transdiagnostic construct that has also been found to interfere with goal progress. The aim of this review was to identify and synthesise studies to explore what is known about the relationship between self-criticism and health-related outcomes in CHCs in terms of their functioning, symptoms, self-management, and adjustment, and distress-experiences.

Methods: A systematic literature search of four online databases yielded ten quantitative studies that met inclusion criteria. Studies were reviewed using quality assessment tools and key methodological concerns were discussed. Studies were synthesised using quantitative synthesis procedures.

Results: Across CHCs self-criticism was found to correlate with higher pain symptoms, maladaptive coping methods and greater levels of distress, both towards the self and social relationships. Self-criticism also seemed to play a part in individuals' social functioning and adjustment, with studies reporting correlational evidence that self-criticism negatively impacts participant use of social support and their satisfaction with social relationships.

Conclusions: This review uncovered outcomes in relation to symptoms, functioning, distress, and adjustment associated with self-criticism. Self-management itself was not focused on in any of the studies included in this review. Considering that individuals with a CHC usually depend on self-management to maintain the best possible health outcomes, future research

should focus on the impact of self-criticism on CHC self-management and whether it interferes with goal attainment and responses to perceived failure.

Keywords: Chronic Illness, Self-Criticism, Illness Management, Health-Related Outcomes, Adjustment and Functioning

Background

Chronic Health Conditions

Chronic health conditions (CHC) generally cannot be cured, only controlled (Moss-Morris, 2013). The onset of a CHC can be a life-changing event, resulting in a lifelong process of adapting to significant physical, psychological, social, and environmental changes (Bishop, 2005) and can impact the individual's ability to reach their goals, as symptoms like fatigue or pain can potentially limit one's capacity to achieve their goals (Molnar, et al., 2016).

As a result, people living with a CHC often must develop strategies to manage the symptoms, treatment, and physical and psychosocial consequences of the CHC, altering their habitual coping strategies as a necessary means to maintain optimal well-being (Barlow, 2002; De Ridder et al., 2008).

There are several ways of conceptualising CHCs (Meyerowitz et al., 1983) and multiple ways of conceptualising CHCs, which has resulted in a large degree of definition variation amongst medical, public health, academic, and policy-development communities (Bernell et al., 2016). In this review, a CHC is defined as a condition that persists over time and becomes a part of a person's everyday life. This follows Thrall's (2005) suggestion, "*Although the literature does not support a single uniform definition for chronic disease, recurrent themes include the non-self-limited nature, the association with persistent and recurring health problems, and a duration measured in months and years, not days and weeks*" (Thrall, 2005, p.9). Dependent on the extent to which the condition impacts an individual's functioning (occupational, physical and/or social), psychological adjustment may also be necessary to cope with accompanying distress (Graham et al., 2016). Coping, when living with a CHC, can be divided into general and CHC-related adaptive tasks (Moss-Morris, 2013; Moos et al., 1984). General tasks include maintaining social relationships, sustaining emotional balance,

developing a new-found self-image, and preparing for a future of uncertainty (White et al., 2018). CHC-related tasks include the management of symptoms and treatment, as well as preserving relationships with healthcare staff (Moss-Morris, 2013). On top of any biomedical understanding of a CHC, the range of features that make up the illness experience means that adjustment and functioning in the face of a CHC is a multifaceted process driven by numerous components (Moss-Morris, 2013; Pollin et al., 1994; Sperry, 2006; Stanton, et al., 2007).

Emotional Wellbeing in CHC

Wellbeing has been described in many ways throughout the literature (Campbell et al., 2022), with early definitions proposing that wellbeing is positive affect being experienced over negative affect (Bradburn, 1969) and others including life satisfaction as an important aspect of wellbeing (Diener et al., 1997). The World Health Organization defines wellbeing as the “individual’s perception of their position in life in context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns” (WHO, 1995). In general, most definitions of subjective wellbeing include three dimensions: positive affect, negative affect, and life satisfaction (Conceição et al., 2008; Diener et al., 1997; Headey et al., 1991; Campbell et al., 2022).

Wellbeing can be influenced by concepts such as autonomy, environmental control, personal growth, positive social relationships, life purpose, self-acceptance (Ryff et al., 1996) and social-connectedness and self-connection (Campbell et al., 2022; Klussman et al., 2021). Social connectedness can be defined as “the experience of belonging and relatedness between people” (Van Bel, et al., 2009), while self-connectedness is the degree to which a person is attuned to an essential inner self, accepts that self, and aligns their behaviour with that inner self (Klussman et al., 2022). Increased social connectedness can decrease all-cause mortality and

prevent illness (Berkman et al., 1979; Stewart-Brown, 1998), and social connectedness is also correlated with higher subjective health and wellbeing (Jose, et al., 2012; Klussman, et al., 2021). Self-connection has been found to be central to wellbeing because it provides people with a sense of consistency between internal desires and external behaviours (Klussman et al., 2022).

These concepts can be restricted following the diagnosis of a CHC as physical health also plays a major role in maintenance of subjective wellbeing. Greater health status has been previously correlated with reductions in perceived stress (Warttig et al., 2013) and greater mental wellbeing (Farivar, et al., 2007).

Considering the interconnectedness of physical health and wellbeing, it is important to consider this idea in the context of a CHC. The limitations that a CHC can place on an individual can affect how well they can live autonomously, relate, and feel like they belong amongst peers, and meet their goals and aspirations.

Self-to-Self Relating

Several theoretical models emphasise how the relationship with the self is formed through interpersonal experiences, and the nature of these experiences is key to how an individual learns to regulate themselves (Werner et al., 2019). An example from Bowlby (1980) theorises that parents may act in a dominant manner, punishing their child for mistakes, with the use of threats and attacks to regulate and correct the behaviour of the child. This can create a dominant-inferior relationship between the parent and child, which may then be internalised by the child to regulate their behaviour. People who internalise a dominant and inferior way of regulating their behaviour may say that self-attacking and punishment are aimed at correcting their behaviour (Gilbert et al., 2004). Although self-attacking is usually

triggered when the individual feels as though they have failed an important task, or if things go wrong, an alternative response to failure may be self-compassion (Gilbert, 2000; Kohut, 1971), Self-compassion is the propensity to soothe oneself with kindness and non-judgemental understanding in times of difficulty and suffering (Neff, 2003; Gilbert, 2009) and is thought to act as a form of resilience towards self-criticism (Whelton, 2000). It is believed that a child adopts these self-reassuring responses partly from how caring and non-shaming parental reactions at times of failure and disappointment (Gilbert et al., 2004). It can be suggested that people adopt these various orientations in self-to-self forms of relating (Gilbert, 2000), with some using self-criticism as an attempt to correct their behaviour or because they have an active hatred for the self (Gilbert et al., 2004), and others are more resilient toward self-criticism through active self-compassion.

Self-Criticism

While self-criticism can be thought of as a form of self-to-self relating (Gilbert, 2000), it lacks a clear definition due to its heterogeneous nature (Loew et al., 2020).

Based on the idea that the competencies that evolved for social role formation are often recruited into self-evaluation, self-criticism may be used to try to correct their behaviour; or because the individual has an active dislike of, or hatred for themselves (Strong, 1999). In this review, self-criticism is described as a dynamic process that involves a more dominant part of the 'self' that engages in monitoring, judging, and attacking a more inferior part of the self, resulting in the inferior 'self' experiencing feelings of worthlessness, failure, and guilt (Whelton et al., 2005; Blatt et al., 1992)

Self-criticism and its subsequent feelings of worthlessness are one of the most prevalent symptoms for developing and maintaining psychopathology (Warren, et al., 2016). It has been positively correlated with depression, anxiety, and stress (Iancu et al., 2015; Castilho et

al., 2015; Priel et al., 2000; Zhang et al., 2019). The intensity at which an individual experiences self-criticism has been found to have an interactive relationship with the severity of depressive feelings (Luyten et al., 2007) and higher rates of recurrence of low moods (Hawley et al., 2014; Mongrain et al., 2006).

Furthermore, Abi-Habib et al. (2013) have identified that those who engage in self-criticism can be competitive and hostile and struggle to control anger. This may lead to conflicts in interpersonal relationships as well as anger often being directed towards the self in the form of self-criticism (Abi-Habib et al., 2013).

Self-Compassion

Self-criticism is inversely associated with self-compassion (Zhang et al., 2019). Greater levels of self-compassion have been associated with reduced negative mental health symptoms, with meta-analyses reporting significant relationships between higher levels of self-compassion and lower levels of depression, anxiety, and stress in adults (MacBeth et al., 2012) and better overall psychological well-being (Zessin et al., 2015). When comparing individuals with low self-compassion and high self-compassion, those with higher levels of self-compassion reported greater physical well-being in several areas, including physical fitness (Arts-de Jong et al., 2018), reduced illness symptoms (Hall et al., 2013), low pain intensity (Allen, et al., 2012), and adaptive physiological responses to stress (Breines et al., 2014). Self-compassion may impact physical health by relieving stress (Homan et al., 2017) and encouraging resilience (Neff et al., 2007), eliciting adaptive emotions and coping (Allen et al., 2010; Sirois, et al., 2015), and participation in behaviour that promotes health (Sirois et al., 2016; Phillips et al., 2019).

Managing a Chronic Health Condition

CHCs are one of the leading causes of death globally (Lee et al., 2020), but research has found that the mortality rate of CHCs may be reduced through prevention (Halpin et al., 2010) via lifestyle changes (Reeves et al., 2005). Health behaviours and lifestyle are, however, recognised as individual experiences and thus differ according to multiple sociodemographic characteristics (Kang et al., 2016). While CHC management programs are systematic approaches to support patient navigation through the healthcare system and improve quality of care (Ofman et al., 2004), successful management of one's CHC is dependent on the individual, who will manage their CHC in their own time, outside of the healthcare system (Newman et al., 2004). Therefore, active self-management and interventions supporting patients in the acquisition of skills and techniques to learn to live with their CHC are key components in managing a chronic condition (Nolte et al., 2013). Despite extensive research focusing on health behaviour change interventions for CHC, findings suggest that intensive efforts are required to help initiate and maintain lifestyle changes within chronically ill populations (Newsom et al., 2012) with rates of nonadherence to chronic illness treatment regimens reported to be as high as 50% to 80% (Middleton et al., 2013).

Self-Criticism and Managing a Chronic Health Condition

People with a CHC are 2 to 3 times more likely to develop depression (Abbott et al., 2015) and typically experience anxiety amongst other negative emotions (De Ridder et al., 2008). Gaynes et al. (2002) research findings demonstrated that depression is associated with reductions in one's quality of life and that depression can interact with medical conditions to further decrease quality of life. Furthermore, depression and anxiety have been found to be related to a reduction in adherence to medical treatments and experiences of a greater burden

from the CHC symptoms (Herring et al., 2012). As self-criticism has previously been found to correlate with different psychopathologies and in particular, depression (Luyten et al., 2007; Hawley et al., 2014; Mongrain et al., 2006), self-criticism may well be a factor contributing to poorer outcomes for those with a CHC, due to the challenges to the self that are presented by the CHC.

Rationale and Aims

The literature in this area requires clarity as to what the current understanding of the relationship between self-criticism and CHCs and would benefit from compiling the research within a systematic manner. The purpose of this systematic review was to understand what is known about the relationship between self-criticism and health-related outcomes in CHCs. This review aimed to address the question: What is known about the relationship between self-criticism and the distress, functioning, symptoms, self-management, and adjustment of individuals with a CHC?

Methods

Design

A quantitative systematic review was conducted as the research question asked, “What do we know about the relationship between self-criticism and CHCs?”. While qualitative research usually generates a rich dataset, they are difficult to generalise to wider contexts (Lam, 2015). The research team thus agreed that the objective nature of quantitative studies would appropriately answer this question as the results of these studies are usually generalisable to larger populations (Gunnell, 2016). The research question seeks to summarise current knowledge of the relationship between self-criticism and CHCs. Papers using quantitative research methodologies were chosen for review rather than qualitative research methods to maximise the potential generalisability of the results.

The review was conducted in line with Grant et al. (2009) definition of a systematic review, “seeking to systematically search for, appraise and synthesise research evidence, often adhering to guidelines on the conduct of a review” (p. 95). This review followed Grant et al. (2009) recommendations by first completing an exhaustive, comprehensive search. For studies to be eligible for the review, they needed to meet criteria set out by the PICO framework. The review then completed a quality assessment which was presented in a narrative manner with tabular accompaniment (Grant et al. 2009). The review follows Grant et al. (2009) by then reporting what is known and the recommendations for practice and what remains unknown, the uncertainty around findings and the recommendations for future research. The design and implementation of the systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA; Moher et al., 2009; Page et al., 2020) (Appendix 1).

Study Eligibility

Participants

For the review to address the appropriate population, it was imperative that clear parameters were applied to the participants of the studies included. Participants needed to have a diagnosis of a CHC, that required self-management. Consideration of the terminology variation of CHC within academic literature (Bernell et al., 2016) led to conversations amongst the research team about how the search should be conducted. These discussions led to the agreement of non-specific search terms (Chronic Health/Chronic Illness*/Chronic Disease*) to allow for all potential chronic health populations to be identified as well as specific prevalent CHCs.

The inclusion of specific CHCs was determined via the World Health Organisation's (WHO) (WHO, 2008) incidence reports and guidance (National Institute for Health and Care Excellence (NICE) 2009; NHS Digital, 2019), following review and scrutiny by the research team as to what was appropriate to include, including previous systematic reviews focusing on CHCs (Moran, 2020). The CHCs that were identified following database searches were included if they required an element of self-management, defined as the behaviours carried out by an individual to manage their symptoms, treatment routines, physical and psychosocial consequences, and/or lifestyle changes inherent in living with a CHC to maintain optimal health (Glasgow et al., 2003; Rijken et al., 2008; Moran, 2020).

As the review intended to investigate functioning and self-management within CHCs, study participants needed to be adults (18+) and not living within a care facility (e.g., care home, hospital) to be independently managing their CHC. As self-criticism has been extensively linked with psychiatric diagnoses (Warren et al., 2016), the research team agreed that participants with a primary psychiatric diagnosis would be excluded from the study.

Interventions

As the research question aimed to uncover what is known about the relationship between self-criticism and CHCs, the review required exposure to self-criticism within a CHC population. Measurement of this exposure will range from screening tests to therapeutic interventions to gain thorough insight into self-criticism its relationship with participant functioning, symptoms, distress, and adjustment in CHC self-management. To ensure the review captured the different elements which may impact CHC self-management, correlational, causal-comparative, and experimental study designs were included in the inclusion criteria.

Comparator

The inclusion of different CHCs was used to compare how self-criticism interacted across different diagnoses. No limiters were put on the types of CHC included in the review as the to investigate the effects of self-criticism across CHCs and in and of itself meant the researchers could compare if self-criticism impacted some CHCs more than others.

Outcomes

Study outcomes considered participant functioning, distress, symptoms, adjustment, and self-management in the context of self-criticism. Studies that measured the social aspects of CHCs were organised into social functioning and social adjustment categories. The WHO International Classification of Functioning (ICF) (WHO, 2007) was used to define social functioning. Social functioning is the individual's ability to establish and sustain social relationships, with little indication of fulfilment from them. Social adjustment was defined as "psychological processes in response to chronic disease and its associated treatment" (Dekker et al., 2018, p.119) for this review. This includes cognitive and emotional responses and behavioural responses. Behavioural responses include coping strategies, like social support

(Hoyt & Stanton, 2018). Thus, social aspects were grouped into functioning (support provision) or adjustment (satisfaction with support) (Moran, 2020).

See Table 1 for full inclusion and exclusion criteria as recommended by Grant et al (2009).

Procedure

Information Sources

Scoping electronic searches were conducted in September 2022, with a final search of CINAHL, EMBASE, Medline and PsychINFO databases using the search terms and limits outlined below. These databases were selected to access literature across disciplines that contain medical and psychological therapy research. Only English language sources were included due to the limited resources available in the context of a DCLinPsy thesis. No date limits were applied.

Search Terms

Through previous scoping searches, self-criticism was identified as its own construct. Under different database limitations, search terms varied slightly. Titles and abstracts were searched using the below search terms to identify relevant papers:

Self-Criticism OR Self-Critical

AND

Chronic Health OR Chronic Illness* OR Chronic Disease* OR Fatigue syndrome OR
 Chronic OR Chronic Pain OR Chronic Fatigue Syndrome OR Crohn's OR CFS OR
 Inflammatory bowel OR Myalgic Encephalomyelitis OR Heart OR ME OR Asthma* OR
 Fibromyalgia OR Diabet* OR Chronic Obstructive Pulmonary Disease OR COPD OR
 Epilep* OR Irritable Bowel OR Cystic Fibrosis OR Multiple Sclerosis OR Cardiac OR
 Coronary OR ulcerative colitis

Table 1 Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Participants were defined as adults over the age of 18.	Participants from a non-clinical population, or those with a primary psychiatric diagnosis.
Articles published in the English language.	Participants were under the age of 18.
Participants had received a diagnosis of a chronic health condition.	Qualitative or Mixed-Method studies.
Use of empirically validated measures looking at outcomes associated with a chronic health condition e.g., management, symptoms, distress, adjustment, or functioning.	Not published in the English language.
Measured self-criticism's relationship with outcomes.	Inpatient populations.
Quantitative design (Correlational, Causal-comparative, Experimental)	Not peer reviewed.

Search Strategy

Titles, abstracts, and full texts of sources were screened to determine their relevance. Studies meeting the inclusion and exclusion criteria below were included in the review.

Articles identified from database searches were screened to remove duplicates using the citation manager, RefWorks. Articles were then assessed at the title and abstract level to identify appropriate papers. Relevant abstracts were examined at the complete-text level against eligibility criteria. Relevant complete-text papers were included and underwent data extraction. Full-text papers included in the review also underwent forwards and backward citations to identify other suitable studies not identified in the database search through viewing citation searches on Google Scholar and screening reference lists of included articles.

Study Selection and Data Extraction

The search strategy and study selection process were informed by the four-phase flow diagram from the PRISMA guidelines (Moher et al., 2009). Four databases were searched by the lead researcher using the defined search terms and results were transferred to RefWorks Citation Manager. Following the exclusion of duplicates, titles and abstracts were assessed against eligibility criteria. The lead researcher then assessed each study's complete text, and exclusion reasons were documented (Figure 1). Studies which met the eligibility criteria following assessment of the complete text underwent data extraction. The data that was extracted included the date of publication and the country in which the study was conducted. Data regarding the study's aims, CHC population, participant demographics, measures,

methods, and results on the role of self-criticism in symptoms, management, functioning, and adjustment were also extracted.

Quality Assessment

Quality assessment is used to systematically assess research papers and to judge the reliability of the study being presented in the paper, and aids to assess the worth and relevance of the study (Young et al., 2009; AXIS, 2016). Identified studies were organised based on their design. The design of the studies included in the review were Randomised Control Trials (RCTs), Cohort studies and Cross-Sectional Studies. This resulted in the use of two different quality assurance tools to ensure the different methodologies were robustly assessed.

The Critical Appraisal Skills Programme (CASP) tools were used to assess the quality of Randomised Control Trials (RCTs) and Cohort studies. CASP tools were chosen as they are commonly used to assess the quality of health research and support succinct critical appraisal of evidence (Nadelson et al., 2014). CASP did not have a specific tool to assess cross-sectional studies and so the Appraisal Tool for Cross-Sectional Studies (AXIS) (Downes et al., 2016) tool was used to ensure that the quality assessment of included cross-sectional studies was rigorous. The AXIS tool is designed to address issues that are often apparent in cross-sectional studies and is recommended to aid systemic interpretation and quality assessment (AXIS, 2016; Ma et al., 2020).

As per Grant et al. (2009), studies that did not meet the criteria of the quality assurance tool were considered to contribute to a risk of bias and would potentially decrease the quality of the research.

Results

Identified and Included Studies

The PRISMA flow diagram (Moher et al., 2009) below (Figure 1) displays the preliminary search of four databases, including the number of sources removed during the screening process in line with the inclusion and exclusion criteria. 10 appropriate papers were identified following a complete text assessment and included in the review. Table 1 shows study characteristics for each of the final articles included.

Figure 1. PRISMA diagram of flowchart search strategy (Page et al., 2020)

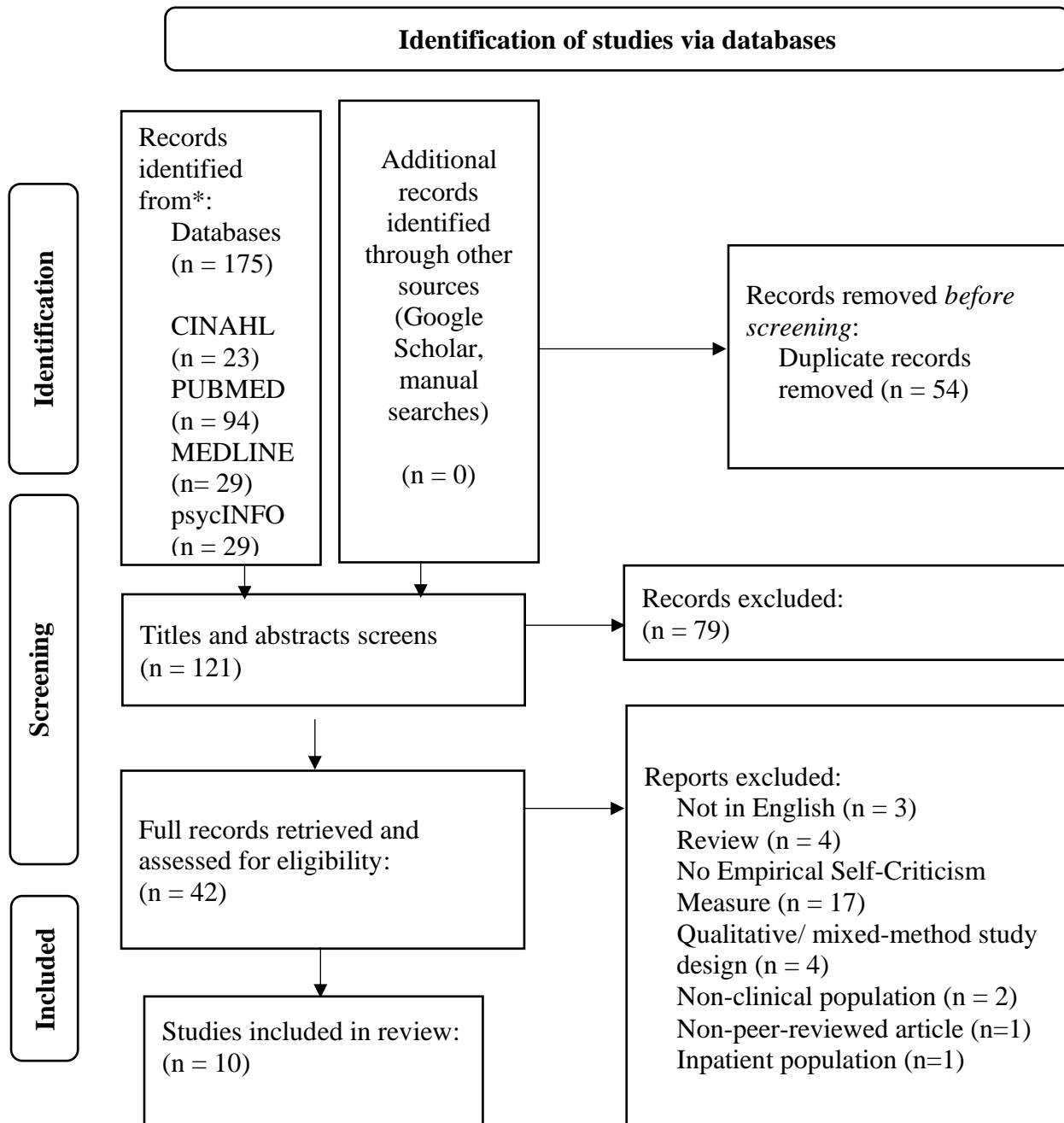


Table 2. Study Characteristics and Rating

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Blalock et al. (1995) USA	<p>Aims: To examine coping strategies among adults with Osteoarthritis.</p> <p>Design: Cohort, quantitative design using regression-based analysis.</p>	<p>300 adults aged 50 and over with a diagnosis of osteoarthritis.</p> <p>Convenience sample recruited using a variety of methods.</p> <p>N= 249 women, mean age 68.1 years.</p>	<p>Tobin, Holroyd, Reynolds & Wigal (1989) The Coping Strategies Inventory (CSI)</p> <p>Self-criticism 9-item subscale</p>	<p>Adjustment: Watson, Clark & Tellegen (1988) Positive and Negative Affect Schedule (PANAS) Radloff (1977) Centre for Epidemiologic Studied in Depression Scale (CES-D)</p> <p>Functioning: Meenan, Mason, Anderson, Kazis (1989) Arthritis Impact Measurement Scales</p>	<p>Adjustment and Self-Criticism: Self-criticism varied across problems areas (social relationships, household activities, leisure activities, pain management) and used more frequently for social relationship problems. Higher levels of self-criticism and social withdrawal were predictive of greater psychological distress, problems involving interpersonal relationships.</p>	GOOD

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Dhokia, et al. (2020) UK	<p>Aims: A pilot trial of an online compassionate mind training intervention for people with concerns about analgesic dependence, to assess the acceptability of the intervention and obtain initial evidence about its effectiveness in reducing self-criticism, impulsivity and analgesic use and increase self-reassurance.</p> <p>Design: Randomized-controlled trial, using multivariate analysis of variance and analysis of covariance.</p>	<p>73 (38 CMT, 35 RM) adults with self-reported chronic pain (rheumatoid arthritis, fibromyalgia, and back pain)</p> <p>25 (34.2%) males and 48 (65.8%) females aged 23 to 66 years (mean age 45.53 years).</p> <p>Recruitment took place via Internet forums and social media platforms related to pain..</p>	Forms of Self-Criticizing and Self-Reassuring Scale (Hempel, Miles, & Irons, 2004).	<p>Adjustment: Participants asked how many of prescription painkillers they used daily during the last month and how often they used analgesics for longer and at higher doses than recommended. Leeds Dependence Questionnaire, a 10-item measure of substance dependence (Raistrick et al., 1994).</p> <p>Personality: Urgency, Perseverance, Premeditation, Sensation Seeking-Positive urgency (UPPS-P) (Whiteside & Lynam, 2009).</p> <p>Participants also completed a behavioural impulsivity measure developed for the study and based closely on the delay discounting paradigm (Lane, Cherek, Pietras, & Tcheremissine, 2003).</p> <p>Symptoms: Participants self-rated pain frequency using an 11-point scale ranging from 0 (<i>not frequent at all</i>) to 10 (<i>very frequent</i>) and pain intensity using a 11-point scale ranging from 0 (<i>no pain</i>) to 10 (<i>extreme pain</i>; Cleeland & Ryan, 1994).</p>	<p>Adjustment: The intervention reduced aspects of self-criticism, impulsivity, and analgesic use as predicted, and the reductions in analgesic dependence, hated self (a type of self-criticism) negative urgency and lack of perseverance were maintained from postintervention to follow-up.</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Dunkley et al. (2012) Canada	<p>Aims: To illuminate self-criticism and personal standards dimensions of perfectionism and dependency as specific cognitive-personality vulnerability factors that might contribute to a better understanding of numerous psychosocial problem areas that are relevant to coronary artery disease (CAD).</p> <p>Design: Cross-sectional, quantitative design, using multivariate analysis of variance and analysis of covariance.</p>	<p>193 patients who underwent coronary angiography and were diagnosed with clinically significant CAD.</p> <p>Participants were 93 men and 30 women with a mean age of 66.38 (SD = 9.72).</p>	The 48-item McGill Revision of the Depressive Experiences Questionnaire (MDEQ; Santor, Zuroff, & Fielding, 1997)	<p>Personality: Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) Type D Scale (DS; Denollet, 1998)</p> <p>Adjustment: 4-item scales COPE Inventory (dispositional version) (Carver, Scheier, & Weintraub, 1989). Four items from the Social Support Survey (SSS) (Sherbourne & Stewart, 1991) Buss and Warren's (2000) 15-item Aggression Questionnaire (AQ) Short Form. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) List of worries found (Tallis, Eysenck & Mathews 1992) Worry as predictor of CAD Questionnaire (Kubzansky et al., 1997)</p> <p>Functioning: Sub-component of 10 items from the Medical Outcomes Study 36-item Short Form Health Survey (SF-36; Ware & Sherbourne, 1992).</p>	<p>Self-criticism and Personality: Self-criticism showed moderate to strong correlations with personality vulnerability and psychosocial maladjustment.</p> <p>Adjustment and Self-Criticism: Self-criticism was related to aggression/anger/hostility.</p>	GOOD

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Geller et al. (2021) Israel	<p>Aims: To develop an explanatory model for the effect of endometriosis on women's psychological distress.</p> <p>Design: Cross-sectional design, quantitative, using mediational analysis.</p>	<p>247 Women with Endometriosis (self-reported and not corroborated by medical records). (73 endometriosis only, 62 endometriosis and an additional chronic illness)</p> <p>Recruited via internet forums/ convenience sample and completed survey electronically. Aged 20–49 ($M = 31.3$) Control group: 112 healthy peers.</p>	<p>Self-criticism (DEQ-SC) is a 23-item subscale of the Depressive Experiences Questionnaire (DEQ).</p>	<p>Symptoms: Rate their endometriosis-related pain levels in the past month on a 7-point scale ranging from 1 (no pain) to 7 (unbearable pain).</p> <p>Adjustment: Body Appreciation Scale-2 (BAS-2) (Hebrew translation): 10-item measure that assesses acceptance of one's body, respect and care for one's body, and protection of one's body from unrealistic beauty standards.</p> <p>Distress: Patient Health Questionnaire (PHQ-9). Generalized Anxiety Disorder Scale (GAD-7)</p>	<p>Distress: Higher levels of depression and anxiety among women suffering from endometriosis than control group.</p> <p>Adjustment and Self-Criticism: Endometriosis participants with an additional CHC had poorer body image and greater self-criticism than control group. A mediation model found the endometriosis and additional CHC group differed from the control group in anxiety through two indirect paths: poorer body image and higher self-criticism. Three indirect paths found through body image, self-criticism, and pain intensity.</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Kausar et al. (2022) UK	<p>Aims: To explore the relationships between quality of life, negative emotional states (depression, anxiety, and stress), self-compassion, and self-criticism</p> <p>To explore the moderating effects of self-compassion and self-criticism on the relationship between quality of life and negative emotional states within an adult cystic fibrosis population.</p> <p>Design: Cross-sectional, quantitative design, using moderation-based analysis.</p>	<p>114 adults with cystic fibrosis</p> <p>Recruitment took place at two regional adult cystic fibrosis Centres using a purposeful sampling method.</p> <p>Participants included 58 Males and 56 Female with the age ranging from 18-70 (Mean: 32.36).</p>	<p>The Functions of Self-Criticising/Attacking Scale (FSCS) (Gilbert et al., 2004).</p>	<p>Adjustment: The Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) Self-Compassion: The Self-Compassion Scale (SCS; Neff, 2003a).</p> <p>Functioning: The Cystic Fibrosis Quality of Life Scale (CFQoL; Gee et al. (2000)).</p>	<p>Adjustment and Self-Criticism: Associations were found between increased levels of self-criticism with higher levels of negative emotional states and quality of life.</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Kempke et al. (2013) Belgium	<p>Aims: To discover whether self-critical perfectionism predicted fatigue and pain.</p> <p>Design: Cross-sectional, quantitative design, using multi-level regression analysis.</p>	<p>90 patients with chronic fatigue syndrome.</p> <p>Participants: women (n=84, 93.3%), average age of 41.74 years (S.D.=8.66, range 18–59 years).</p>	<p>Self-criticism subscale of Depressive Experiences Questionnaire (DEQ; Blatt et al. 1976).</p>	<p>Symptoms: Visual Analogue Scale used to rate their average fatigue and pain levels for the day (0 = no pain/not at all fatigued – 100 = extremely fatigued/extreme pain).</p>	<p>Symptoms and Self-Criticism: Self-critical perfectionism predicted daily fatigue and pain levels over 14 days, even after controlling for demographic characteristics and mood.</p>	GOOD

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Rudich et al. (2008) Israel	<p>Aims: To assess factors that influence pain specialists' estimate of expected prognosis in response to chronic pain management.</p> <p>Design: Cross-sectional, quantitative study, using principal component analysis.</p>	64 patients who had continuous pain for at least 3 months.	6-items of the self-criticism subscale of the Depressive Experiences Questionnaire (DEQ).	<p>Symptoms: Self-reported pain (McGill Pain Questionnaire, SF-MPQ)</p> <p>Physician report of the extent the physician believes the treatment at the pain clinic will reduce the pain intensity.</p> <p>Functioning: Physician report of the extent that the patient will return to function in a manner like their function before the chronic pain symptoms.</p> <p>Adjustment: Centre of Epidemiological Studies-Depression Scale (CES-D).</p>	<p>Functioning: Self-criticism was found to be an independent predictor of physician's pessimism regarding prognosis.</p> <p>Symptoms and Distress: Patient's level of depression and self-reported pain correlated with the level of self-criticism. Yet, these 2 variables did not significantly affect physician prediction of prognosis.</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Trindade et al. (2019) Portugal	<p>Aims: To analyse whether self-criticism exacerbates the relationships of depression symptoms with Irritable Bowel Disease symptomatology and chronic-illness related shame.</p> <p>Design: Cross-sectional, quantitative study, using correlational and moderation analyses.</p>	53 Irritable Bowel Disease patients.	Forms of Self-Criticising/Attacking & Self-Reassuring Scale (Gilbert et al., 2004; Portuguese version by Castilho, Pinto-Gouveia, & Duarte, 2015).	<p>Adjustment: Depression Anxiety and Stress Scale (Lovibond & Lovibond, 1995; Portuguese validation by Pais-Ribeiro, Honrado, & Leal, 2004)</p> <p>Chronic Illness-related Shame Scale (Trindade, Ferreira, & Pinto-Gouveia, 2017a).</p>	<p>Adjustment: Correlational findings suggest that self-criticism (inadequate self) moderated the association between depression symptoms with Irritable Bowel Disease symptomatology and illness shame.</p> <p>For the same level of these variables (medium or high), higher feelings of inadequacy towards the self are associated with higher levels of depression.</p> <p>This exacerbation effect is stronger when Irritable Bowel Disease symptomatology and chronic illness-related shame are more intense.</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Hyphantis, et al. (2013) Greece	<p>Aims: To compare the potential associations of personality traits, hostility features and defence mechanisms with somatic symptom severity</p> <p>Design: Cross-sectional quantitative survey, using hierarchal multivariate analysis.</p>	810 participants with at least one established, long-term medical condition.	Hostility and Direction of Hostility Questionnaire (HDHQ) (Caine, Foulds & Hope, 1967) subscale: measuring intropunitive manifestations of hostility (self-criticism and delusional guilt).	<p>Symptoms: Greek standardised version of the Symptom Distress Checklist (SCL-90-R) Donias, Karastergiou & Manos, 1991) Adjustment: Aggression–Hostility</p>	<p>Symptoms: More self-criticism was one of the variables most closely and independently associated with somatic symptom severity.</p> <p>Higher somatic symptom severity was also associated with more “introverted” features (self-sacrificing defence style and self-criticism).</p>	FAIR

Table 2. Continued

Authors, date, and country	Study aims and design	Chronic Health Population	Empirical Measure	Outcome Measures	Results	Quality Rating
Tzitzikos, et al. (2019) Greece	<p>Aims: To examine if there is an association between hostility and Chronic Obstructive Pulmonary Disease</p> <p>To investigate consistency across subgroups of Chronic Obstructive Pulmonary Disease patients</p> <p>To clarify the role of individual factors and psychological parameters in Chronic Obstructive Pulmonary Disease development and aggravation.</p> <p>Design: Cross-sectional, quantitative design, using correlational analysis.</p>	203 people with a diagnosis of Chronic Obstructive Pulmonary Disease.	The Hostility and Direction of Hostility Questionnaire (HDHQ) (Caine, Foulds & Hope, 1967) sub-scales: Self Criticism and Delusional Guilt refer to intrusive hostility and concern self-criticism.	<p>Demographic information: Socioeconomic status, Chronic Obstructive Pulmonary Disease grade and smoking habits were collected.</p>	<p>Adjustment: There was a statistically significant difference in self-criticism and intrusive hostility.</p> <p>Symptoms: Patients with severe Chronic Obstructive Pulmonary Disease show statistically significant differences compared to those with mild Chronic Obstructive Pulmonary Disease in the areas of self-criticism and overall hostility.</p>	FAIR

Overview of Study Characteristics

The research strategy outlined above produced a total of 10 papers which met the review's inclusion criteria. Eight studies were cross-sectional quantitative design, one was longitudinal, and one was a prospective randomised-control trial. Two studies included in the review focused on chronic pain (Rudich et al., 2008; Dhokia et al., 2020). The other studies included in the review focused on a variety of CHCs, with most focusing on a specific CHC. One study considered multiple health conditions in comparison to a control group without CHC. CHCs included in the review were: chronic obstructive pulmonary disease; glaucoma; rheumatoid arthritis; osteoarthritis; coronary artery disease; endometriosis; cystic fibrosis; chronic fatigue syndrome/ myalgic encephalomyelitis; inflammatory bowel disease; systemic lupus erythematosus; systemic sclerosis; primary Sjogren's syndrome; end-stage renal disease; and diabetes mellitus. The studies were conducted in various settings, which included hospital clinics (7), social media forums (2) and multiple settings (1). All ten studies included in the review used client self-report measures. Three of these used additional outcome measures rated objectively, one study measured physical functioning and another study measured behavioural impulsivity. One studied used the additional measure of physician report.

All studies included in the review used an empirical measure of self-criticism. The Depressive Experiences Questionnaire (DEQ, Blatt et al. 1976) includes a subscale focusing on self-criticism and was the most common measure of self-criticism (4 studies). Other studies also used specific questionnaire subscales to measure self-criticism, which included the Hostility and Direction of Hostility Questionnaire (HDHQ, Caine et al., 1967) (2 studies) and The Coping Strategies Inventory (CSI, Tobin et al., 1989) (1 study). The Forms of Self-

Criticising/Attacking & Self-Reassuring Scale (FSCS, Gilbert et al., 2004) was the second most used (3 studies), and only scale to measure self-criticism as an entire construct.

Some studies used other outcome measures that were not in the review's inclusion criteria.

This includes Self-Critical Perfectionism (Depressive Experiences Questionnaire (DEQ; Blatt et al. 1976), the Type-D Scale (Denollet, 2005; Dunkley et al., 2012), the Zuckerman–Kuhlman Personality Questionnaire (Zuckerman, 2002, in Hyphantis et al., 2002) and the Depression Anxiety Stress Scale (Parkitny et al., 2010, in Trindade et al., 2019; Kauser et al. 2022). As these outcome measures did not meet inclusion criteria, data relating to these areas were not extracted unless a specified link to self-criticism and this review's outcomes were made.

Adjustment and symptoms were the most studied outcomes. Adjustment, which included coping strategies and quality of life, was found in six studies (Blalock et al., 1995; Dhokia et al., 2020; Dunkley et al., 2012; Geller et al., 2021; Trindade et al., 2019; Tzitzikos et al., 2019) and symptoms, such as pain and fatigue, being measured in five studies (Kempke et al., 2013; Rudich et al., 2008; Trindade et al., 2019; Hyphantis et al., 2002; Tzitzikos et al., 2019). Functioning included social functioning (Geller et al., 2021; Kauser et al., 2022; Trindade et al., 2019) and distress measures focused on mood and hostility (Tzitzikos et al., 2019; Hyphantis et al., 2013; Dunkley et al., 2012)

Quality Assessment

The reason for assessing the quality of each study was to examine the confidence of the review findings and judging the overall strength of evidence provided by research articles (Seo et al., 2012) to provide best available evidence. The studies that were included in this review had Cross-sectional and Randomised-Control-Trials designs. Critical Appraisal Skills

Programme (CASP) tools for Randomised Control Trials (RCTs) and Cohort studies. The Appraisal Tool for Cross-Sectional Studies (AXIS) were used to assess the quality of the studies.

Study quality was considered within the context of each study. Studies were then grouped to identify themes which distinguished the level of quality. Results of the CASP and AXIS quality assessment tools can be found in Table 2, Table 3, and Table 4.

Table 3. Results of RCT CASP Quality Assessment

Authors and date	Clearly focused research question?	Participant randomisation?	Were all participants accounted for?	Was the study blind? Who was blind?	Similar groups at the start of RCT?	Did each study group receive the same level of care?	Comprehensive report of intervention effects?	Was precision of effect reported?	Benefits outweigh costs?	Applicable results to population?	Would the intervention provide greater value than existing interventions?	Summary
Dhokia, et al. (2020)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	GOOD

Key: ✓ Yes (item adequately addressed); ✗ No (item not adequately addressed); ✓✗ Item partially addressed; CD Cannot determine (description in study unclear); NS Not stated; NA Not applicable

Clear method section?	✓	✓	✓ X	✓	✓	✓	✓	✓
Basic data described?	✓	✓	✓	✓	✓	✓	✓	✓
Response rate?	62.50%	92.40%	74.60%	71%	68.40%	63.40%	72.60%	63.73%
Information about non responders?	✓	✓ X	✓ X	X	✓ X	✓	✓	✓
Results internally consistent?	✓	✓	✓	✓	✓	✓	✓	✓
Are all results reported?	✓	✓	✓	✓	✓	✓	✓	✓
Is the conclusion justified by results?	✓	✓	✓	✓	✓	✓	✓	✓
Limitations discussed?	✓	✓	✓	✓	✓	✓	✓	✓
Is declaration of interests noted?	✓	X	✓	✓	✓	✓	✓	✓
Ethical approval or consent attained?	✓	✓	✓	✓	✓	✓	✓	✓
Summary	GOOD	FAIR	FAIR	FAIR	FAIR	FAIR	FAIR	GOOD

Key: ✓ Yes (item adequately addressed); **X** No (item not adequately addressed); ✓**X** Item partially addressed; CD Cannot determine

(description in study unclear); NS Not stated; NA Not applicable

Table 5. Results of Cohort CASP Quality Assessment

Authors name and date	Blalock et al. (1995)
Is there a clearly focused issue addressed?	✓
Acceptable recruitment?	✓
Accurate exposure measure to minimise bias?	✓
Accurate outcome measure to minimise bias?	✓ X
Confounding factors identified?	✓
Confounding factors in the design/analysis accounted for?	✓
Was the follow up of subjects long and complete enough?	✓
What are the results?	Self-criticism was used more frequently for social-relationship and predictive of greater psychological distress.
How precise are the results?	✓ X
Do you believe the results?	✓
Can the result be applied to the population?	✓
Do the results of this study fit with other available evidence?	✓

What are the implications of this study for practice?

Good

Key: ✓ Yes (item adequately addressed); ✗ No (item not adequately addressed); ✓✗ Item partially addressed; CD Cannot determine (description in study unclear); NS Not stated; NA Not applicable

Quality Appraisal Summary

The quality assessment overall suggests that most studies included in the review were of “fair” quality. Studies rated fair included those that focused on irritable bowel disease, cystic fibrosis, chronic pain, endometriosis, and chronic obstructive pulmonary disease. Their “fair” rating indicates that their results can be held with some confidence. Results from studies that were rated “good” presented the least risk of variables that would bias the study’s results. Studies rated as “good” included in this review focused on chronic pain, osteoarthritis, and coronary artery disease as well as one study which looked at multiple chronic health conditions.

Six studies were rated as “fair” (Geller et al., 2021; Tzitzikos et al., 2019; Kauser et al., 2022; Trindade et al., 2019; Rudich et al., 2008; Hyphantis et al., 2013). All studies addressed a focused research question targeting a defined population and defined inclusion and/or exclusion criteria. Most studies recruited participants via clinical settings and/or had a CHC diagnosis supported by a medical specialist or validated tools. One study recruited participants via an online support forum/convenience sample and therefore relied on self-report diagnoses. The validation of participants’ CHC diagnosis and defined exclusion/inclusion criteria indicated the study to be of better quality as it ensured that the impact of self-criticism was truly focused on the target CHC population. All but one study rated “fair” recruited participants from a setting where they had been receiving treatment, with some involving senior clinicians requesting participation. While this supported the validation of participant CHC, these recruitment settings may have created subject bias because of the clinician’s presence.

Four studies were rated as “good” (Blalock et al., 1995; Dunkley et al., 2012; Kempke et al., 2013; Dhokia et al., 2020). Cross-sectional studies rated as “good” quality (Dunkley et al., 2012; Kempke et al., 2013) addressed the CASP tool items adequately, providing justification for the sample size and providing information on non-responders.

Blalock et al. (1995) was the only longitudinal study to be included in this review, receiving a quality rating of “good”. The study met quality assessment criteria sufficiently, including assessing coping strategies at the beginning of the study to ensure a baseline of participant coping strategies was established.

Dhokia et al. (2020) was the only randomised-control trial study to be included in this review. The study was rated “good” quality, as it met quality assessment criteria adequately.

All studies provided evidence of psychometric properties that had independent and dependent variable measures, but the quality between studies varied. Studies that reported additional evidence of psychometric properties, like the reliability and validity of the measures used, were rated as greater quality.

Some studies referenced psychometrics based on previous evidence but did not provide evidence for the reliability of the measures used in their study (Blalock et al., 1995; Kempke et al., 2013) while other studies only referenced internal consistency of measures based on their sample (Geller et al., 2021; Dhokia et al., 2020; Trindade et al., 2019; Hyphantis et al., 2013).

Four studies referenced psychometric properties based on previous research, as well as within their study (Kausser et al., 2022; Dunkley et al., 2012; Rudich et al., 2008; Tzitzikos et al., 2019).

Synthesis of Results

Reported Findings

In terms of the question posed by the review, the studies included in this review addressed 4 categories: Symptoms, Adjustment, Social Functioning and Distress. The actual impact presented by most studies was difficult to assess due to the correlational nature of the studies included.

Symptoms

Two studies explored the influence of self-criticism on CHC symptoms. Kempke et al. (2013) and Rudich et al. (2008) conducted separate cross-sectional studies which reported that self-criticism was related to patients reporting of higher pain symptoms across chronic fatigue and chronic pain CHCs. Rudich et al. (2008) further reported that patient self-criticism was found to be an independent predictor for physicians' predictions of poorer health prognosis amongst patients experiencing chronic pain (Rudich et al., 2008). While these two studies provide support that self-criticism interacts with symptoms across different CHCs and were rated good to fair in the quality assessment, these results should be interpreted with caution due to the correlational nature of their study design.

Adjustment

Five studies included in this review reported on the impacts of self-criticism on adjustment to a CHC, which included 1 RCT and 4 cross-sectional studies. Synthesis of results included in this review suggests that self-criticism was linked with maladaptive coping methods towards both the internal and external self-perceptions as well as medical relationships.

Self-Perceptions

Tzitzikos et al. (2019) cross-sectional study identified a correlation between self-criticism and intrusive hostility that was experienced within a clinical population of adults with Chronic Obstructive Pulmonary Disease. Additionally, Geller et al. (2021) reported that self-criticism was related to poorer body self-image in people who had Endometriosis. However, the justification for the sample size could not be determined and both studies failed to address an appropriately representative sample and selection process, meaning there is the possibility that these findings may not be applicable to the specified clinical populations. Trindade et al. (2019) further reported results from their cross-sectional study that self-criticism moderated the relationship between depression symptoms and disease pathology and shame in adults with Irritable Bowel Disease. Supporting these study reports, Kauser et al. (2012) cross-sectional study in adults with Cystic Fibrosis found associations with self-criticism and client negative emotional states. Trindade et al. (2019) and Kauser et al. (2012) failed to provide sufficient information regarding non-responders which reduced the quality of the studies. All the forementioned cross-sectional studies were rated as fair, meaning they did not meet all the conditions of the CASP quality assessment tool. These results should be interpreted with caution, particularly due to their cross-sectional nature.

Dhokia et al. (2020) RCT whereby participants who had self-reported chronic pain were taught Compassionate Mind Training (CMT) online found when self-criticism levels were reduced, impulsivity and analgesic use and dependence were also reduced.

This study was rated as a good level of quality as its findings were comprehensive and can be applied to their specified clinical population, it had a clearly focused research question, and met the requirements of their quality assessment tool.

Medical Perceptions

Rudich et al. (2008) cross-sectional study reported that self-criticism was correlated with physician's predictions of poorer prognosis in adults experiencing chronic pain. However, the justification for 64 participants could not be determined and whether the sample was representative of the population was not adequately considered within the study. This brings to question as to whether the study was adequately powered to observe significant correlations between self-criticism, pain symptoms and physician prognosis. The study also failed to provide adequate information about non-responders which decreased the study's quality rating.

Social Functioning

Two studies included in this review reported on the impacts of self-criticism on social functioning within a CHC population. This included 1 cohort study and 1 cross-sectional studies.

Dunkley et al. (2012) cross-sectional study identified a correlational relationship between self-criticism and aggression, anger, and support dissatisfaction within an adult coronary artery disease population. Blalock et al. (1995) cohort study reported that self-criticism was also found to be more frequently used for social relationship problems in people with osteoarthritis, including social withdrawal. Both studies were rated as a good level of quality as they met the requirements of their quality assessment tool.

Distress

Six studies (1 cohort, 5 cross-sectional) highlighted associations between distress and self-criticism across different CHC populations. Associations were found between increased levels of self-criticism to be predictive of greater psychological distress in adults with

osteoarthritis (Blalock et al., 1995); depressive symptoms in adults with coronary artery disease and chronic pain (Dunkley et al. 2012; Rudich et al., 2008); feelings of failure in people with endometriosis (Geller et al., 2021); negative emotional states amongst adults with cystic fibrosis (Kauser et al., 2022) and illness-related shame in an irritable bowel disease population (Trindade et al., 2019). A variety of distress measures had been used across studies, which gave insight into the different elements of distress experienced across CHC populations.

Discussion

This systematic review aimed to contribute to the understanding of the impact of self-criticism on functioning, symptoms, distress, and management in people living with a CHC. Based on the search strategy, ten articles were included. This section addresses what is known and recommendations for practice, as well as; what remains unknown, uncertainty around findings and recommendations for future research, in line with Grant et al. (2009).

The findings indicated that self-criticism had a negative impact on people across a range of conditions (chronic obstructive pulmonary disease, irritable bowel syndrome, chronic fatigue, endometriosis, chronic pain, coronary artery disease, and osteoarthritis). Results from this review suggest that increased levels of self-criticism were connected to exacerbated symptoms across different CHCs, particularly pain and in turn, contributed to poor adjustment and greater distress. Self-criticism also seemed to play a part in an individual's social functioning and adjustment, with studies reporting correlational evidence that self-criticism negatively impacted participant use of social support and their satisfaction with social relationships. These results seem to align with previous research that self-criticism is a transdiagnostic construct which interferes with the individual on multiple levels, in different domains (Werner et al., 2019).

Previous research found self-criticism to be inversely correlated with self-compassion (Zhang et al., 2019). Dhokia et al. (2020) reported findings that compassion-based interventions can reduce self-criticism as well as reduce maladaptive use of analgesics among chronic pain patients. Chronic pain affects around 20% of the population (Park et al., 2010) and painkillers, including opioids, are one of the management recommendations for long-term

pain (Højsted et al., 2007). Dependence on and misuse of analgesics among people with chronic pain is well-documented (Højsted et al., 2007), with opioid abuse being described as a national epidemic in the United States (Kandil et al., 2017). Therefore, the reduction of self-criticism could potentially prevent and/or protect individuals from developing and/or further engaging in maladaptive coping such as harmful drug use.

Additionally, self-criticism was found to be related to negative consequences for both interpersonal and professional relationships (Rudich et al., 2008; Blalock et al., 1995). This finding aligns with previous research findings that suggest higher self-criticism is related to greater difficulty in establishing and maintaining satisfactory social relationships (Loew et al., 2020) and therapeutic alliance (Whelton et al., 2007; Kannan et al., 2013; Loew et al., 2020). There has been extensive research highlighting the protective effects and health benefits of fulfilling relationships, including the finding that social ties reduce mortality risk among adults with medical conditions (Umberson et al., 2010). This further indicates the importance of reducing levels of self-criticism in people with CHCs.

Some studies found dimensions of maladaptive perfectionism, where greater self-criticism was present, to correlate with reduced functioning and psychosocial maladjustment in CHC populations (Dunkley et al., 2012; Kempke et al., 2013). The quality of these studies was rated as 'good', which suggests the results are reliable. Perfectionism can be broadly considered to be a personality characteristic that reflects the compulsive pursuit of exceedingly high standards and a tendency to engage in excessively critical evaluations of one's behaviour (Frost et al., 1990, Hewitt et al., 1991). There has been evidence to suggest that perfectionism may consist of multidimensional factors. These factors have been identified as adaptive perfectionism, which involves setting and striving towards high

standards for the self; and maladaptive perfectionism, which involves chronic self-criticism and concern with external criticism (Dunkley et al., 2000; Stoeber et al., 2006; Terry-Short et al., 1995). Adaptive perfectionism could thus be considered as a positive motivator in meeting one's goals, while maladaptive perfectionism may increase the chances of distress or susceptibility to criticism when experiencing failure (Moran, 2020). Previous research aligns with findings in this review that suggest that perfectionism has an impact on symptoms (Molnar et al., 2016). CHC symptoms can be perceived as stressful in part because of their unpredictability, which may, in turn, impact everyday functioning and lead to additional stress and symptom exacerbation (Moran, 2020).

Considering the importance of stringent condition management amongst those with a CHC, further understanding of the role that different forms of perfectionism may play in the relationship between self-criticism and CHCs is called for.

This review uncovered outcomes concerning symptoms, functioning, distress, and adjustment associated with self-criticism. While these outcomes may impact self-management, self-management itself was not focused on in any of the studies included in this review.

Considering that individuals with a CHC usually depend on self-management to maintain the best possible health outcomes (Newman et al., 2004), it would be useful to understand the impact of self-criticism on CHC self-management and whether it interferes with goal attainment and responses to perceived failure. Previous research has found that self-criticism has been significantly associated with diminished goal progress and limiting goal pursuit across academic, social, and health-related goals (Powers et al., 2007).

Strengths and Limitations

To the author's knowledge, this is the first review to scrutinise what is known about the impact of self-criticism on physical and psychological health-related outcomes amongst people with a CHC. This review had explicit inclusion and exclusion criteria alongside clear descriptions of outcomes. This was a particular strength of the review as it provided a well-defined focus. The review included a range of CHCs, and while this could be understood as a strength, the individual nature of CHCs may have compromised the applicability of the findings. It must also be recognised that not every CHC was included in this review, which may affect its applicability to all CHC populations.

This review included CHCs which need optimal self-management to avoid harmful consequences, such as death or severe physical problems (coronary artery disease, chronic obstructive pulmonary disease) as well as conditions where poor self-management can impact functioning and distress (chronic fatigue syndrome, irritable bowel syndrome). Each CHC is unique in how the individual must manage their symptoms as well as the consequences because of poor self-management. While self-criticism is associated with poorer outcomes (Powers et al., 2007), the magnitude of the consequence of poor self-management may cause the individual to engage in greater levels of self-criticism as an attempt to avoid catastrophic outcomes.

The studies in this review all included validated measures of self-criticism, which increased the reliability that self-criticism was being measured and associations could be made. A small number of the papers that were included in this review were subjected to independent checking for eligibility and quality ratings. The agreement between the reviewer and the author of the paper added greater inter-rater reliability to the review.

The quality assessment conducted in this review is not without limitations. While cohort and RCT studies were included in the review, most of the studies were cross-sectional. While it can be assumed that self-criticism impacts an individual's functioning, adjustment, distress, symptoms and self-management, causal inferences cannot be drawn due to the correlational design of the studies reviewed. Thus, third variables may be the actual reason for the relationship between self-criticism and CHC outcomes. However, the correlations reported in this review provide important insight into the different ways that self-criticism may impact outcomes across CHCs.

Quality assessment is reliant on the reviewer's judgement as to whether the items are sufficiently addressed, which may cause bias. To reduce this bias, the review used blind inter-rater assessment of a small number of papers to improve reliability. The review used more than one quality assessment tool, meaning study quality was not assessed consistently across different designs. This would have contributed to the reduction of reliability of the review's quality assessment and could have been improved by using a quality assessment tool that had elements to assess all study designs that were included in this review.

The search of online databases provided a relatively small number of returns. This may be due to the quantitative design of the review, which may reflect that further quantitative research in this field is required, but ultimately reduces the validity of the review. The review may have benefitted from searching additional databases to increase the likelihood that more studies were included. Due to the design of this systematic review, rich data from qualitative studies are also missing from this review. However, the inclusion of qualitative studies may have provided the review with insight into the relationship with self-criticism and the aspects of functioning, distress, adjustment, symptoms, and self-management in CHCs.

A further limitation of the study is the lack of a clear and consistent definition of self-criticism. This meant that different empirical measures of self-criticism were used across

studies and a consistent understanding of the impact of self-criticism across CHCs was not able to be developed. For example, some empirical measures differentiated between subtypes within self-criticism based on previous research that the quality of an individual's mental representations of themselves and others may impact how they use self-criticism (Bender & Skodol, 2015; Köhling et al., 2015). While three studies included in this review that used the Functions of Self-Criticising/Attacking Scale (Gilbert et al., 2004), which reliably measures the subtypes of self-criticism (Loew et al., 2020), most studies included in the review did not discriminate between the two subtypes of self-criticism, or they did not use a measure which reliably assessed these subtypes. This may contribute to a reduction in the reliability and validity of this review to demonstrate an understanding of how self-criticism interacts with CHCs. Future researchers are advised to identify and focus on a specific self-criticism measure, such as the Functions of Self-Criticising/Attacking Scale (Gilbert et al., 2004), to reliably assess self-criticism across different CHCs.

Despite in-depth discussions amongst the research team regarding the search strategy due to the terminology variation of CHC within academic literature (Bernell et al., 2016); there remains the possibility that these search terms did not sufficiently cover academic literature focusing on self-criticism and CHC. With that in mind, there is the possibility to speculate on the review's applicability in understanding the relationship between CHCs and self-criticism. An example of this is the lack of inclusion of a paper specifically focused on type 1 diabetes. Type 1 diabetes is a health condition that requires life-long, intricate, and precise self-management. While this review includes studies that focused on conditions like coronary artery disease or chronic obstructive pulmonary disease (Dunkley et al., 2012; Tzitzikos et al., 2019), which require optimal self-management; the understanding more about the intricacies of self-management in a CHC like type 1 diabetes may have provided further understanding into the relationship with CHCs and self-criticism.

Theoretical Implications

Findings from this review appear to be supportive of previous research findings of the transdiagnostic nature of self-criticism but do not provide a well-defined theoretical framework to explain how self-criticism influences health-related outcomes. The Therapeutic interventions, Habit and routine, Relational-social factors, Individual differences, Values and beliefs and Emotional factors (THRIVE; Wolpert et al., 2014) framework was used by White and colleagues (2018) to consider internal and external predictors of coping with chronic illness. Much of the findings from this review appear to align with White et al. (2018) findings using the THRIVE framework. Psychological interventions that focus on the appropriate way of regulating and expressing emotions or the development of more flexible responses have been associated with higher reported quality of life, improved health status, decreased depression, and better self-management (White et al., 2018). In this review, evidence of compassion-based interventions reduced self-criticism and reduced maladaptive coping (Rudich et al., 2008) as well as providing evidence of the presence of self-criticism when a lower quality of life was reported (Blalock et al., 1995; Kauser et al., 2022). White et al. (2018) reported findings that individuals who engage in appropriate self-care behaviours exhibit fewer symptoms, better physical functioning, and improved psychological adjustment, with these forms of self-management being fostered through patient empowerment. The findings in this review suggest that self-criticism may be a factor that gets in the way of appropriate self-care behaviours, based on reports of reduced functioning, poor adjustment, and exacerbation of symptoms in the presence of greater self-criticism (Blalock et al., 1995; Geller et al., 2021; Kauser et al., 2022; Kempke et al., 2013; Hyphantis et al., 2013; Tzitikos et al., 2019). White et al. (2018) acknowledge the importance of empowerment for better client coping, while self-criticism has been widely reported to increase feelings of powerlessness (Whelton et al., 2005; Shahar et al., 2015).

White et al. (2018) also used the THRIVE framework to uncover the importance of social support as a buffer against the negative effects of stress in chronic illness. This review highlights how self-criticism correlates with dissatisfaction with social support and social relationship problems, which were particularly likely to elicit maladaptive coping strategies (Dunkley et al., 2012; Blalock et al., 1995).

The THRIVE framework used by White et al. (2018) helped the researchers to notice that successful adaptation to a CHC is more strictly related to patient personality than to the severity of the CHC itself. Personality differences that relate to using oppositional coping styles were linked to less positive physical, cognitive, emotional, and behavioural outcomes. Individuals who exhibited higher levels of self-esteem and acceptance were more likely to experience more positive psychological well-being and better quality of life, as well as reduced psychological distress (White et al., 2018). The results of this review were consistent with White et al (2018), finding that self-criticism was linked to aggression, anger, and hostility as well as negative affectivity and psychosocial maladjustment in CHCs (Dunkley et al., 2012; Tzitkios et al., 2019) and associated with less self-acceptance (Geller et al., 2021).

While the THRIVE framework (2014) used by White et al. (2018) allowed the findings of this review to be successfully compared with previous findings, there remains the question as to whether this framework can completely encompass the findings of this review. While the THRIVE framework (2014) considers: therapeutic interventions, habit and routine, relational-social factors, individual differences, values and beliefs and emotional factors – there remains space to consider the antecedents before the onset of a CHC. Livneh's (2001) Conceptual Psychosocial Adaption to the Chronic Illness and Disability framework considers the triggering events and their contextual variables in relation to CHC, which are not explicitly considered within the THRIVE framework (2014). The different CHCs included in this

review may have been caused by genetic or hereditary dispositions, conditions present at birth, accidents or injuries, infections and diseases or conditions associated with the ageing process (Livneh, 2001). The review's finding that self-criticism can be present across a range of CHCs that have differing triggering events suggest its presence is not directly linked to a specific antecedent in the onset of a CHC. Furthermore, when considering contextual variables, this review provides evidence of self-criticism across different populations, ages, and settings.

The theory has been advanced by findings in this review by highlighting that self-criticism, when present, has a relationship with how an individual manages their CHC. The review also highlights that a specific antecedent or triggering event that causes the CHC which predisposes the individual to self-criticism is yet to be identified in the current literature.

Despite this report's recognition of the relationship between self-criticism and negative impacts on CHC management, there are still questions regarding the interaction and impact of self-criticism on those with a CHC that remain. Future researchers would benefit from a more consistent construct of self-criticism. A consistent definition would contribute to robustness in research findings, while also supporting a uniform form of measurement, improving replicability and applicability. The area also requires more longitudinal research to demonstrate a well-defined causal relationship between the impacts of self-criticism on CHCs.

Future researchers may be interested in further exploring self-criticism in CHCs which require intricate management such as type 1 diabetes, or in comparing levels of self-criticism in CHCs which had different triggering events. It is also recommended that future researchers

endeavour to contribute research that has a longitudinal design to improve the understanding of self-criticism in CHC over a period.

Clinical Implications

A CHC diagnosis can affect an individual's goals and hopes they had for their future, those with greater levels of self-criticism may find that it is even more difficult to achieve these as a result.

When working clinically with CHC populations, patients should be assessed for self-critical responses in the early stages of diagnosis and treatment for their CHC to determine if they may need additional support in developing greater resilience to self-critical narratives. This may act as a protective and/or preventative method of supporting the patient with different aspects of their CHC.

Professionals must consider that there may be evidence of self-criticism when clients are struggling with different aspects of their CHC. Exploration of self-criticism alongside client self-management or functioning may open opportunities for the client to access compassion-based interventions and/or peer support to potentially reduce the negative impacts of self-criticism and develop supportive coping systems.

Conclusions

Supporting clients with a CHC who experience self-criticism may be extremely beneficial for both the client and the healthcare system. The findings of this review highlight, however, that further investigation is needed to comprehend the role that self-criticism has in its interaction with CHCs. With studies reporting poor coping, client distress and decreased functioning amongst those with a CHC; the question remains as to whether self-criticism impacts directly on physiology or if it acts as a mediator of distress symptoms concerning one's CHC.

Associations between self-criticism and CHC need to be better understood to improve the effectiveness of interventions that are used to promote more helpful health behaviours.

Registration and Protocol

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Conflict of Interest

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Appendices

Appendix 1: PRISMA Checklist (Page et al., 2020)

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MAEVE HINDS BSc (Hons) MSc

**Section B: Exploring the Relationships between Self-Criticism and Perfectionism within
Diabetes-Related Distress and Management in a Type 1 Diabetes Population**

Word Count: 7953 (470)

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ Church
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SALOMONS INSTITUTE

CANTERBURY CHRIST CHURCH UNIVERSITY

Abstract

Objectives: People with Type 1 Diabetes have described feeling under pressure to be ‘perfect’ in their management of their glucose levels and can feel as though they have failed when this has not been achieved. Self-criticism is a transdiagnostic construct that has been consistently considered in models of perfectionism. This study aimed to provide greater clarity on how, if at all, adaptive and maladaptive perfectionism mediate the relationship between diabetes-related distress/diabetes management and self-criticism.

Design: Data was collected using a 20-minute online questionnaire. The study used mediational design. Perfectionism (Maladaptive & Adaptive, Mediator Variable) and was measured to attempt to explain the relationship between the Diabetes-Related Distress/Confidence in diabetes Management (Dependent Variable) and Self-Criticism (Independent Variable).

Method: 182 adults with Type 1 Diabetes were recruited via social media and online platforms to participate in a 20-minute online survey.

Results: Adaptive perfectionism did not correlate or mediate any relationship with inadequate-self or hating-self forms of self-criticism, Diabetes-Related Distress, or confidence in Diabetes self-management. Maladaptive perfectionism mediated the relationship between inadequate-self forms of self-criticism and powerlessness, hypoglycaemia distress, negative social perceptions, and friends and family distress and confidence in diabetes self-management. Maladaptive perfectionism mediated the relationship with hated-self forms of self-criticism and powerlessness, management distress, hypoglycaemia distress, diabetes related negative social perceptions, eating distress, friends

and family diabetes-related-distress, physician distress and confidence in diabetes self-management.

Conclusions: Maladaptive perfectionism may be an important factor to consider when supporting an individual experiencing Diabetes-Related Distress and/or struggling with confidence in their diabetes self-management. The study also indicates that the hated-self form of self-criticism may be a more prominent factor in certain forms of Diabetes-Related Distress, which may help to inform interventions developed for people with Type 1 Diabetes.

Key words: Type 1 Diabetes; Perfectionism; Self-Criticism; Diabetes-related Distress and Diabetes Management

Background

Type 1 Diabetes and Diabetes-Related Distress

Type 1 Diabetes (T1D) is a lifelong auto-immune condition where an individual's body glucose levels are unregulated as the pancreas is unable to produce the hormone insulin (Diabetes UK, 2017). As a result, the individual must manage complex and demanding tasks surrounding their diet, activity levels, glucose monitoring and insulin routines (Moran, 2020). The intricacy of T1D management, alongside the potential for debilitating health complications and social stigma (Diabetes and Mental Health, All Party Parliamentary Group for Diabetes, 2015) may be contributing factors to the findings that people with diabetes were twice as likely to experience depression (Anderson et al., 2001) and a diabetes-specific type of emotional distress, named Diabetes-Related Distress (DRD) (Fisher et al., 2014).

DRD can be defined as the individual's concerns about self-management of diabetes, perception of support, emotional burden, and access to adequate health care (Fisher et al., 2008). DRD is distinct from clinical depression due to its specific relation to negative perceptions of diabetes (Fisher et al., 2010; Van Bastelaar et al., 2010). It is related to sadness, anger, and "burnout" connected to diabetes management (Fisher et al., 2007).

Individuals experiencing DRD may feel overwhelmed by the goal of constant monitoring and management of preventative health behaviours (Fisher et al., 2015; Halliday et al., 2020), with greater DRD levels being associated with reduced self-management and glycaemic control (Strandberg et al., 2014; Bernstein et al., 2013).

Psychosocial barriers consistently related to both DRD, and inadequate diabetes self-management are low self-efficacy (King et al., 2010), external locus of control, and low social support (Sarkar et al., 2006).

While self-efficacy is the ease or difficulty one feels in undertaking a certain behaviour, locus of control measures the extent to which a behaviour is under the individual's control versus an external agency (Azien, 2002). High self-efficacy has been positively associated with diabetes self-management (Krichbaum et al., 2003; Sarkar et al., 2006) while low self-efficacy has been associated with greater DRD (Moran, 2020). Increased distress has been observed in people who feel that others are in control of their diabetes management rather than within themselves (Hernandez-Tejada et al., 2012).

Social support has been identified as a potentially powerful influence for people with diabetes. When the type and degree of support are perceived as truly supportive by the person with diabetes, rather than nagging or controlling, it can be instrumental in the process of diabetes care (Rosland et al., 2012; Tol et al., 2011). Conversely, when social interactions are not deemed supportive by the person with diabetes, personal relationships can become strained and interactions with healthcare professionals may be challenging, and contribute to elevated DRD (Polonsky et al., 2005).

The link between emotional and behavioural aspects related to T1D remains unclear and concerning to researchers and clinicians. Previous research highlights the importance of correctly diagnosing DRD to help patients develop strategies aimed at more efficient management of T1D in clinical practice (Fisher et al., 2007; Fisher et al., 2015). High levels of DRD have been recorded as a common experience for adults with T1D (Lustman et al., 2000; Fisher et al., 2007), with the prevalence of DRD reportedly as high as 42% (Fisher et al., 2016).

Cognitive Emotion Regulation Strategies

Cognitive emotion regulation strategies describe the cognitive responses to emotion-eliciting events that consciously or unconsciously attempt to adjust the extent and/or type of individual emotional experience or the event itself. Cognitive emotional regulation strategies can be protective against as well as contributory in the aetiology and maintenance of clinical disorders. The ability to reappraise situations and engagement in problem-solving have been identified as adaptive strategies; while maladaptive appraisal, low problem-solving orientation or poor problem-solving skills have been associated with depression and anxiety (Aldao et al., 2010). In the context of chronic illness, emotional distress can be determined as an expected response to patient perceptions of health threats balanced against an appraisal of available coping resources (Fisher et al., 2014; Gross, 1998).

How an individual appraises their environmental circumstances may influence their experiences of depressive symptoms, levels of optimism and interpersonal relationships (Garnefski et al., 2001). When considering this in a T1D population, the individual's type of appraisal has been linked with DRD (reduced or elevated), self-management (healthier or poorer) and glycaemic control (greater or reduced) in individuals with T1D (Fisher et al., 2010). While a positive appraisal of circumstances tends to produce positive emotional responses, such as gratitude and decreases negative emotions like anger or guilt (Gross et al., 2003); a negative appraisal can intensify or maintain negative emotions (Garnefski et al., 2006).

Self-Criticism

Self-criticism is a type of negative self-appraisal that has been found to correlate with depressive symptoms (Dinger et al., 2015; Ehret et al., 2015; Straccamore et al., 2017) and interference with goal progress (Powers et al., 2007). It can be defined as "*a self-evaluative process in which people scrutinize and negatively judge different aspects of themselves, such as their personality traits, appearance and performance*" (Shahar et al., 2015, p.1). It is thought to be experienced universally but is individual in its form, severity, and consequences (Whelton et al., 2002).

Self-criticism has been identified as a cognitive correlate of the emotional experience of shame (Gilbert et al., 2006). It is characterised by negative self-appraisals, feelings of unworthiness and the fear of criticism for failing to meet standards (Blatt, 2004; Blatt et al., 1992; Warren et al., 2016). Self-criticism has been frequently correlated with high levels of stress, more negative affect, and reduced self-efficacy (Mongrain et al., 1995; Stoeber et al., 2008). Self-critical people hold negative beliefs about themselves that can surface at different points in their lives or are maintained consistently across time (Kannan et al., 2013).

Self-critical people focus on avoiding failure rather than taking effective steps to meet their goals (Powers et al., 2007) and struggle with conscientiousness, which may contribute to disorganisation, less persistence, or reduced commitment to goal achievement and problem-solving (Dunkley et al., 2006; Dunkley et al., 2003).

Self-Criticism and Perfectionism

Perfectionism is a multidimensional construct that has been conceptualised in a variety of ways (Enns et al., 2002) but is commonly conceived of as a personality style often associated with setting extremely high standards which are accompanied by excessively critical self-evaluations, expressed in overconcern for mistakes and uncertainty regarding actions and beliefs (Flett et al., 2002; Pacht, 1984; Frost et al., 1990). Self-criticism has been consistently considered in models of perfectionism (Luthar et al., 1995; Hewitt et al., 1991).

The Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) is often used to measure perfectionism. Factor analytic studies of the FMPS alone or in combination with other perfectionism scales have consistently found two dimensions (Cox et al., 2002, Frost et al., 1993). One dimension has been regularly associated with setting high standards and striving toward those goals. In this study, this dimension will be referred to as “adaptive perfectionism”. The other dimension is characterised by being overly critical of one’s behaviour and concerned about others’ criticism (Dunkley et al., 2006). In this study, this dimension is referred to as “maladaptive perfectionism”.

Adaptive perfectionists are considered to have high levels of “perfectionistic strivings” and low levels of “perfectionistic concerns”. “Perfectionist strivings” are associated with greater self-efficacy; conscientiousness; adaptive coping; and increased well-being (Stoeber et al., 2011; Stoeber et al., 2008). “Perfectionistic concerns” have been linked with rumination and self-critical appraisal (Beiling et al., 2004; Enns et al., 2001; Rheume et al., 2000).

Maladaptive perfectionists have been found to show high levels of both “perfectionistic strivings” and “perfectionistic concerns” (Stoeber et al., 2011). While adaptive and maladaptive perfectionists both have higher loci of control than non-perfectionists,

maladaptive perfectionists have been found to have higher levels of external locus of control than adaptive perfectionists (Lo et al., 2013)

Research suggests that discrepancies in one's compliance with personal standards may result in adaptive perfectionists engaging in strategies seen in maladaptive perfectionists, such as rumination, which can increase and maintain perceived distress and negative affect (Frost et al., 1993; Wei et al., 2004; Stöber et al., 2001). This is because maladaptive strategies are ineffective in dealing with negative affect, intensify negative thinking, and contribute to impairments in problem-solving (Nolen-Hoeksema, 2008). Castro et al. (2017) found that there was no significant association between maladaptive perfectionists and adaptive strategies, including positive refocusing, positive reappraisal and acceptance.

However, findings around the impact of the types of perfectionism on emotional regulation are inconsistent. Recent studies offer evidence that both dimensions of perfectionism are linked with greater psychological distress (Smith et al., 2016; Smith et al., 2017) and many researchers hold strong doubts that perfectionism can be positive, healthy, or functional, let alone adaptive (Flett et al., 2002; Flett et al., 2005; Greenspon, 2000; Benson, 2003).

Self-Criticism and Perfectionism in Type 1 Diabetes

People with T1D have described feeling pressure to be 'perfect' in their glucose management and can feel as though they have failed when this has not been achieved (Abdoli et al., 2019; Fisher et al., 2015; Pyatak et al., 2013; Rankin et al., 2012; Sparud-Lundin et al., 2010).

Concerns about achieving standards may lead to an increased fear of failure, leading to unhelpful behaviours such as repetitive checking of performance (excessive blood glucose monitoring) or avoidance to escape the risk of failure (not monitoring blood glucose levels) (Moran, 2020). Adaptive perfectionism has been associated with increased engagement in

preventative health behaviours (Kawamura et al., 2004), while maladaptive perfectionism has been associated with negative psychological functioning, which may stop the individual from engaging in preventative health behaviours (Blatt, 1995; Chang, 2003; Flett et al., 2002; Shafran et al., 2001).

While perfectionism has been previously associated with distress in chronic health conditions (Deary et al., 2010; Kempke et al., 2011; Kempke et al., 2013), further exploration is needed into the relationship of the different dimensions of perfectionism with the management of T1D and the distress associated with T1D. Fisher et al. (2014) highlight widespread inconsistencies that question the understanding of the underlying relationship between depression and diabetes. The diagnosis of clinical depression is symptom-based and without reference to source or content (Fisher et al., 2014). In the context of T1D, this may overlook important factors when addressing the emotional distress experienced by individuals struggling with diabetes (Fisher et al., 2014). Previous claims that there is a greater likelihood for people with T1D to experience depression (Anderson et al., 2001) may have underappreciated the role of DRD (Fisher et al., 2014). Considering the importance of maintaining high standards of self-management in T1D, theoretically, there may be evidence to imply that perfectionism is connected to DRD; however, empirical evidence for the connection between perfectionism and DRD is still in its infancy and focuses predominately on the association with perfectionism specifically in eating disorder pathology (Powers et al., 2017). Therefore, perfectionism in a T1D population must be examined to see if it contributes to DRD and diabetes management.

Rationale, Aims and Hypotheses

Considering the research described above, there is a rationale to explore the impact of self-criticism and perfectionism on DRD and diabetes management. Specifically, this study aims

to provide greater clarity on how, if at all, adaptive and maladaptive perfectionism mediate the relationship between DRD/diabetes management and self-criticism. The current study recognises the differences in treatment and care provided in different countries and thus focuses on individuals who have used the UK NHS service. Understanding the relationship between these factors may provide a greater understanding of T1D self-management and may help to inform the development of tailored strategies aimed at reducing DRD and contributing to healthier T1D management. To the author's knowledge, these relationships have not yet been examined in the literature in this context.

Considering previous research, three specific hypotheses were proposed:

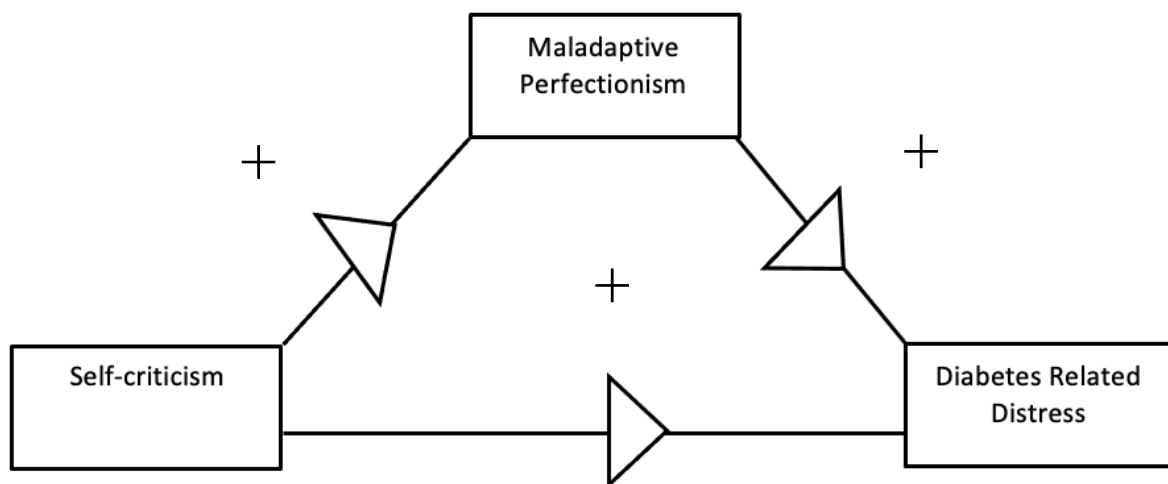
1. Adaptive Perfectionism will negatively correlate with self-criticism; negatively correlate with DRD; and positively correlate with confidence in diabetes management.
2. Maladaptive Perfectionism will positively correlate with self-criticism; positively correlate with DRD; and negatively correlate with confidence in diabetes management.
3. Self-criticism will positively correlate with DRD and negatively correlate with confidence in diabetes management.

From these hypotheses, the researchers proposed four specific research questions:

1. Will the relationship between self-criticism and DRD be statistically mediated by maladaptive perfectionism? (Figure 1)
2. Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by maladaptive perfectionism? (Figure 2)

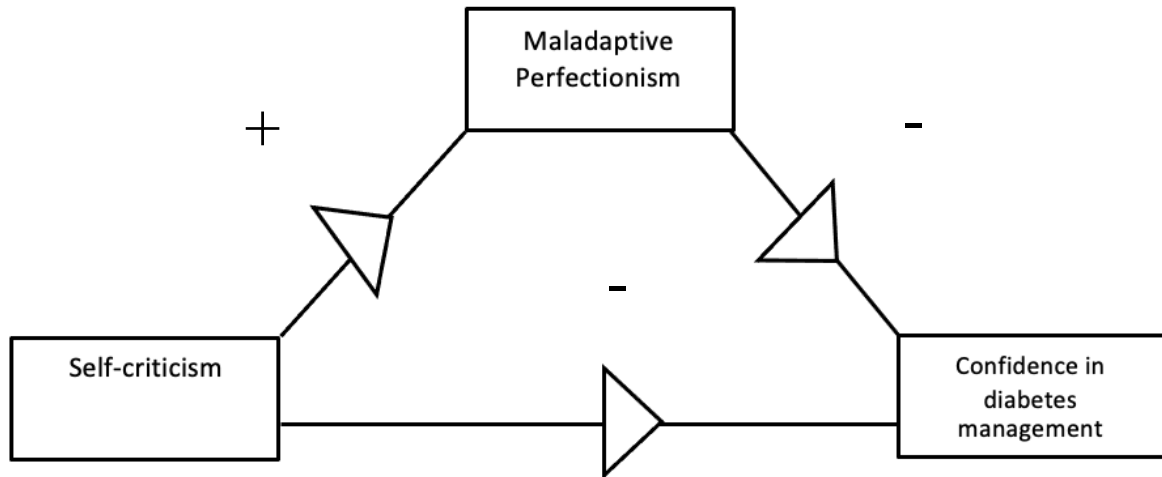
3. Will the relationship between self-criticism and DRD be statistically mediated by adaptive perfectionism? (Figure 3)
4. Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by adaptive perfectionism? (Figure 4)

Figure 1. Model of Maladaptive Perfectionism as a Mediator Between Self-Criticism and Diabetes-related-distress



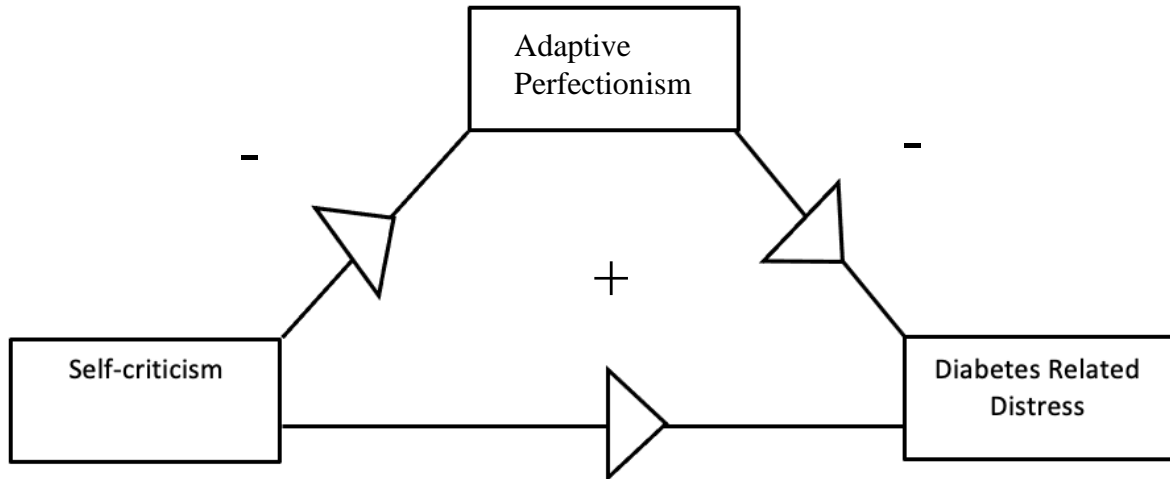
Note. Conceptual model depicts a direct relationship between self-criticism and DRD. The model also shows an indirect effect between self-criticism on DRD through maladaptive perfectionism. Plus and minus symbols indicate positive or negative relationship, respectively.

Figure 2. Model of Maladaptive Perfectionism as a Mediator Between Self-Criticism and Confidence in Diabetes Management



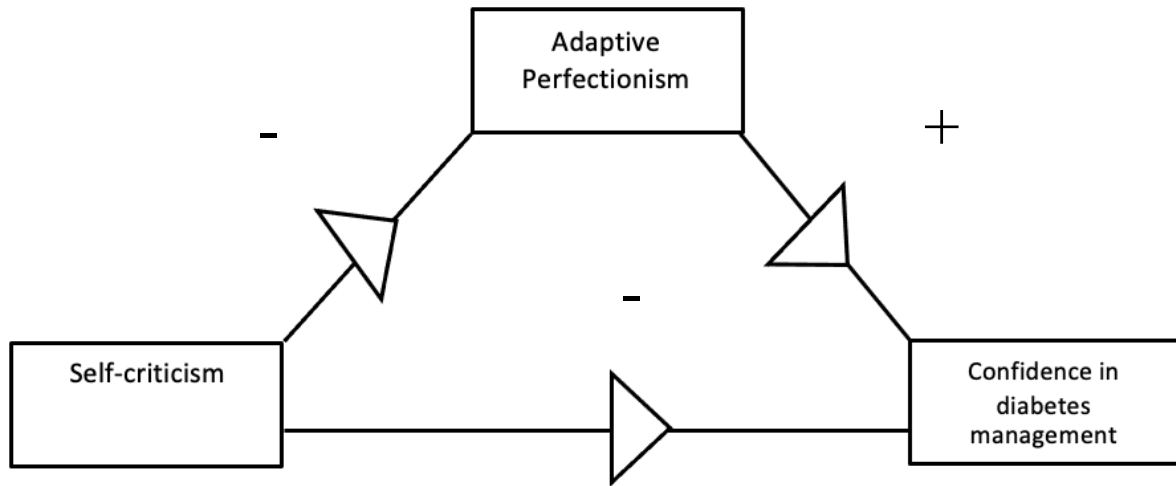
Note. Conceptual model depicts a direct relationship between self-criticism and DRD. The model also shows an indirect effect between self-criticism on confidence in diabetes management through maladaptive perfectionism. Plus and minus symbols indicate positive or negative relationship, respectively.

Figure 3. Model of Adaptive Perfectionism as a Mediator Between Self-Criticism and Diabetes-related-distress



Note. Conceptual model depicts a direct relationship between self-criticism and DRD. The model also shows an indirect effect between self-criticism on DRD through adaptive perfectionism. Plus and minus symbols indicate positive or negative relationship, respectively.

Figure 4. Model of Adaptive Perfectionism as a Mediator Between Self-Criticism and Confidence in Diabetes Management



Note. Conceptual model depicts a direct relationship between self-criticism and DRD. The model also shows an indirect effect between self-criticism on confidence in diabetes management through adaptive perfectionism. Plus and minus symbols indicate positive or negative relationship, respectively.

Method

Design

The study used a mediational design (Preacher et al., 2008). Perfectionism (Maladaptive & Adaptive) as the Mediator Variable (MV) was used to attempt to explain the relationship between the Dependent Variable (DV; DRD/Confidence in Diabetes Management) and the Independent Variable (IV; Self-Criticism). Preacher et al. (2008) method was chosen as it is an analysis strategy for testing mediation hypotheses. There are two paths to the DV (DRD/confidence in diabetes management): the IV (self-criticism) must predict the DV (DRD/confidence in diabetes management) and the IV must predict the mediator (Maladaptive Perfectionism; Adaptive Perfectionism). This was tested through mediational analyses demonstrated in Figure 1, Figure 2, Figure 3, and Figure 4.

Ethical Approval

This study received full ethical approval from The Salomon's Ethics Panel, Salomon's Institute for Applied Psychology, Canterbury Christ Church University (Reference Number: V:\075\Ethics\2020-21) (Appendix 1). The committee were aware that the study planned to recruit participants using national charities and social media. All participants provided informed consent (Appendix 2). Participants were provided with the lead researcher's contact details should they have any specific queries or concerns about the study (Appendix 2). The well-being of participants was ensured by providing information on sources of support that could be accessed online and over the telephone (Appendix 3). An end-of-study report was provided to the ethics panel in April 2023 (Appendix 4).

Service-User Involvement

In designing this study, the information sheet, consent form and debriefing information were submitted to the Expert by Experience panel, comprising of individuals with lived experience of chronic health conditions and/or mental health issues, for consultation. The panel, which consisted of two experts by experience, met with the lead researcher online for a one-off meeting to discuss the study. The panel then provided the lead researcher with written suggestions and feedback of amendments that would increase the study's accessibility. The feedback from the panel was used to adapt and adjust the resources and recruitment procedures (Appendix 5).

Measures

Diabetes-related Distress Scale in Type 1 Diabetes (T1-DDS; Fisher et al., 2015)

(Appendix 8)

The T1-DDS is a 28-item self-report measure of DRD for adults with type 1 diabetes. The measure has seven subscales, identified as sources of distress:

- **Powerlessness (P):** A broad sense of feeling discouraged about diabetes.
- **Management Distress (MD):** Disappointment with their self-care efforts.
- **Hypoglycaemia Distress (HD):** Concerns about hypoglycaemic events.
- **Negative Social Perception Distress (NSP):** Concerns about the possible negative judgments of others.
- **Eating Distress (ED):** Concerns that their eating is out of control.
- **Physician Distress (PD):** Disappointment with their current health care professionals.
- **Friend/Family Distress (FFD):** A perception that there is too much focus on diabetes amongst their loved ones.

All seven subscales have good internal consistency in the current sample: P ($\alpha = .85$), MD ($\alpha = .75$), HD ($\alpha = .79$), NSP ($\alpha = .87$), ED ($\alpha = .75$), PD ($\alpha = .87$) and FFD ($\alpha = .84$). All seven subscales had a Cronbach's alpha power rating of over .750. Responses are rated on a Likert scale from 1 = a slight problem to 6 = a very serious problem. Subscale scores can be calculated by calculating mean scores across items in each subscale, and a total score ($\alpha = .92$) based on the mean of the seven subscales. Higher scores indicate higher levels of DRD. In this study, subscales rather than the total score were used in the data analysis.

Frost Multi-dimensional Perfectionism Scale (FMPS; Frost et al., 1990)

(Appendix 9)

The FMPS is a 35-item multidimensional measure of perfectionism originally consisting of the following six subscales: Concern Over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts About Actions (DA), and Organization (O). Respondents are asked to rate items across a 5-point Likert-type scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". The validity and reliability of the FMPS have been well demonstrated (Cox et al., 2002).

To create maladaptive and adaptive perfectionism scales, the methodology of Harris et al. (2008) was followed. The subscales were first standardized to Z-scores, this was because each of the scales had different numbers of items and distributions. Z-scores of the CM and DA scales were averaged to create the maladaptive perfectionism scale and Z-scores of the PS and O scales were averaged for the adaptive perfectionism scale. The PC and PE scales were not included in this analysis as they assess the developmental antecedents to beliefs and perceptions about one's parents rather than the individual's perfectionism (Enns et al., 2005). Internal consistencies as measured by Cronbach's alpha for this study were rated as good

(CM ($\alpha = .905$), DA ($\alpha = .758$), PS ($\alpha = .832$), O ($\alpha = .875$), maladaptive perfectionism ($\alpha = .903$), adaptive perfectionism ($\alpha = .854$)).

Forms of Self-Criticising/Attacking & Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) (Appendix 10)

The FSCRS was developed to explore different ways people treat themselves when things go wrong, measuring tendencies to be self-critical and/or self-reassuring when perceiving setbacks/failures. Items derived from clinical practice are based on thoughts depressed patients presented about their self-criticism and ability to self-reassure. Factor analysis suggested one factor of self-reassurance, and two different factors of self-criticism (one focused on feeling inadequate, and another one related to a more self-hating and contemptuous feeling toward the self). Two subscales were used in this study as they represent maladaptive forms of self-to-self relating: (i) the subscale Inadequate Self (IS) which measures the desire to correct or improve certain aspects of the self; and (ii) the subscale Hated Self (HS), which measures self-criticism arising from the desire to hurt, persecute, and attack the self. Responses were rated on a Likert scale from 0 = “Not at all like me” to 4 = “Extremely like me”. Higher scores indicated a greater sense of inadequacy (score 0–36) and self-hate (score 0–20) (Sommers-Spijkerman et al., 2018). Multiple studies indicate that the FSCRS has good internal consistency and construct validity (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013). These studies concluded that a three-factor model, wherein each form of self-to-self relating represents an independent factor, shows an acceptable fit. (Sommers-Spijkerman et al., 2018). In the current sample, HS ($\alpha = .74$) and IS ($\alpha = .87$) forms of self-criticism displayed good levels of internal consistency.

Perceived Diabetes Self-Management Scale (PDSMS; Wallston et al., 2007)

(Appendix 11)

The PDSMS is an 8-item diabetes-specific adaptation of the Perceived Medical-Condition Self-Management Scale (PMCSMS) which was made diabetes-specific by replacing the word “condition” with “diabetes” in each item. The PMCSMS was adapted from the PHCS (Smith et al. 1995), an instrument that has been reliable and valid in numerous investigations (e.g., Arnold et al. 2005; Samuel-Hodge et al. 2002). The responses for the PDSMS items range from 1 = “Strongly Disagree” to 5 = “Strongly Agree.” Four of the items (1, 2, 6, & 7) are worded such that high agreement signifies low self-efficacy or perceived competence. These four items are reverse scored before being added to the other four items. The total PDSMS score can range from 8 to 40, with higher scores indicating more confidence in self-managing one’s diabetes (Wallston et al., 2007). Cronbach’s alpha for the current sample ($\alpha = .92$) indicated good internal consistency.

Participants

Sampling Strategy

The research was advertised online via a recruitment poster (Appendix 6) through the social media platform, Twitter, and national charity online forums (Diabetes UK, JDRF) (Appendix 7).

Following discussions with the research team, the inclusion criteria for the study were:

1. To be aged at least 18 years old.
2. Diagnosed with T1D.
3. Diagnosed with T1D for over 12 months.

4. Self-managing their diabetes care, using insulin for glycaemic control.
5. Have used the UK NHS.

Participants were not eligible for the study if they:

1. Were under the age of 18 years old.
2. Had a diagnosis of Type 2 Diabetes.
3. Had a current diagnosis of an eating disorder.
4. Had not made use of the UK NHS.
5. Had a diagnosis of or were experiencing significant mental health issues.

Participants who had received a diagnosis of an eating disorder were excluded as the relationship between perfectionism and eating disorder pathology has been well-established within the literature (Dahlenburg et al., 2019; Treasure et al., 2015; Caglar-Nazali et al., 2014). Similarly, there have been multiple studies which have established the link between self-criticism and significant mental health issues (Dinger et al., 2015; Ehret et al., 2015; Straccamore et al., 2017; Iancu et al., 2015; Kingston et al., 2016; Pinto-Gouveia et al., 2013). Researchers agreed to only include participants who had made use of the NHS due to the inconsistency of T1D healthcare provision globally. Participants also needed to be managing their own diabetes independently, as this study focused on self-to-self relating, rather than carers perspectives. Considering that children and adolescents may require more support or prompts from their care providers, the researchers decided to only include people over the age of 18 and to exclude anyone under the age of 18 from the study.

Participant Sample

Demographic data was collected before the participant completed the questionnaire and was used to understand what participants did or did not meet inclusion criteria. 307 participants

completed the online questionnaire. Following closure of the questionnaire, demographic information was used to identify which participants would be included in or excluded from the study. Out of 307 participants, data for $N = 125$ participants were removed as they did not meet the inclusion criteria. Participants who disclosed that they had not used the NHS, had a diagnosis of a mental health disorder or an eating disorder were excluded from the study. The final sample results in $N = 182$ participants. See Table 1 for a breakdown of participant demographics. Participants had on average (mean) been diagnosed with T1D for 20.38 years ($SD = 12.74$). Most participants managed their blood glucose levels by a combination of finger prick testing and flash glucose monitoring ($N = 69, 37.9\%$) or flash glucose monitoring only ($N = 51, 28\%$).

Procedure

Participants were recruited online via social media and diabetes charities online forums to complete an online survey, which included the above-described measures and the collection of demographic information. Participants were incentivised through a prize draw specified in the information sheet as the opportunity to win a £100 Amazon voucher (Appendix 2).

Prior to the completion of the questionnaire, participants were asked to provide demographic information which informed the researcher as to whether the participant met inclusion criteria. Participants who provided information that did not meet inclusion criteria or met exclusion criteria, were excluded from the study (Appendix 5b). Care was taken to keep participant contact details of those who entered the draw separate from study data to ensure anonymity. Participants who provided contact information to receive an end-of-study report received the report in April 2023 (Appendix 4).

Data Analysis

Descriptive and Correlation Analyses

The Statistics Package for the Social Sciences (SPSS) software version 29 was used to conduct descriptive and correlational analyses. Descriptive statistics were used to explore the sample demographics and its internal reliability (Cronbach's alpha). Pearson's correlation analyses were conducted to explore relationships between forms of self-criticism, DRD, confidence in diabetes management and adaptive and maladaptive forms of perfectionism. These addressed Hypothesis 1, 2 and 3.

Mediation

Hayes' (2018) bootstrapping approach to mediation analysis, using PROCESS SPSS Macro v. 3.4. This approach to data analysis is more robust against deviations from the normal distribution and frequently more powerful than alternative methods (Fritz et al., 2007). As bootstrapping is not reliant on assumptions regarding sample distribution there is no requirement for tests for homogeneity of variance, multicollinearity, outliers and 74 deviations from a normal distribution (Hayes, 2018). This approach produces a confidence interval for indirect pathways. Several simple mediations (demonstrated by Figures 1, 2, 3 and 4) were performed using single multiple mediations to the author's knowledge, these variables have not been investigated together in this way before.

Model 4 (Hayes, 2017) was used to conduct the mediation analysis:

- Research question 1, "*Will the relationship between self-criticism and DRD be statistically mediated by maladaptive perfectionism?*", the HS and IS of self-criticism (FSCRS) score was the independent variable (IV), and P, MD, HD, NSP, ED, PD and FFD (T1-DDS) scores were the dependent variable (DV), with the maladaptive perfectionism (FMPS) score entered as the mediating variable (MV).

- Research question 2, “*Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by maladaptive perfectionism?*”, the HS and IS of self-criticism (FSCRS) score was the IV and the confidence in diabetes self-management (PDSMS) score was the DV, with the maladaptive perfectionism score entered as the MV (FMPS).
- Research question 3, “*Will the relationship between self-criticism and DRD be statistically mediated by adaptive perfectionism?*” the HS and IS of self-criticism (FSCRS) score was the IV, and P, MD, HD, NSP, ED, PD and FFD (T1-DDS) scores score was the DV, with the adaptive perfectionism (FMPS) score entered as the MV.
- Research question 4, “*Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by adaptive perfectionism?*”, the HS and IS of self-criticism (FSCRS) score was the IV and the confidence in diabetes self-management (PDSMS) score was the DV, with the adaptive perfectionism score entered as the MV (FMPS).

Five thousand bootstrap samples were generated, and bias-corrected 95% confidence intervals were calculated. Unstandardised regression coefficients were reported as Hayes (2018, p. 519) suggests a preference for this metric in comparison to standardised regression coefficients. For hypothesis testing, the researchers used the path coefficient associated with a causal link in the model (b or c), t-value, significance level ($p < 0.05$) and indicator of Cohen’s effect (f-squared) with size as 0.02, 0.15, and 0.35 for small, medium, and large effect sizes (Cohen, 1992).

Sample Size Calculation

According to Fritz et al. (2007), the required sample size to detect mediated effect for .8 Power using bias-corrected bootstrapping with Medium Large (ML) condition is $N = 53$. A

target of 71 participants who met the criteria was set in the case that effects were smaller than estimated. The mediation analysis was not dependent on a priori power calculation due to the bootstrapping approach used (Hayes, 2018).

Results

Demographic Information

Participant demographic information is displayed in Table 1.

Table 1. Participant Demographics

Baseline characteristic	N	Percentages	Mean	Standard Deviation
Gender				
Female	130	71.4%		
Male	52	28.6%		
Age categories				
			40.35	11.94
18-21	42	23.1%		
22-30	53	29.1%		
31-40	45	24.7%		
41-50	31	17%		
51-60	9	5%		
61-70	2	1.1%		
Ethnicity				
White British	157	86.2%		
White Irish	12	6.5%		

White Other	9	5%
Black African	1	0.6%
Indian	2	1.1%
Other (non-specified)	1	0.6%
Education		

GCSEs or equivalent	13	7.1%
A-Levels of equivalent	19	10.5%
Undergraduate	64	35.2%
Trade/Technical/Vocational Training	11	6%
Postgraduate	73	40.1%
PhD	2	1.1%
Employment		

Full-time employed	111	61%
Part-time employed	29	16%
Full-time student	9	5%
Unemployed	2	1.1%
Self-employed	15	8%
Other (non-specified)	9	5%
Long term sick	1	0.6%
Retired	6	3.3%

Descriptive Statistics

Means, standard deviations (SD) and Cronbach's alphas for all variables are displayed in Table 2. All variables were above the minimum acceptable level for Cronbach's alpha ($\alpha = 0.70$) (Bland et al., 1997).

Preliminary Analyses

Hayes (2022, p.125) recommends using percentile bootstrap confidence intervals for inference about indirect effects, as this approach represents a good compromise between power and validity (Hayes et al., 2013), without relying on normality, multicollinearity, and homoscedasticity assumptions.

Correlation Analyses

Pearson's correlation analyses were conducted to investigate relationships between all the variables. Table 2 shows two-tailed Pearson's correlation coefficients between all variables. There were no significant bivariate correlations for adaptive perfectionism. There were significant relationships between all forms of DRD, the two forms of self-criticism and confidence in diabetes management. Maladaptive perfectionism had significant positive relationships with all variables measured, apart from scores measuring confidence in diabetes management. Strong negative correlations were observed between confidence in diabetes management and all forms of DRD, the two forms of self-criticism and maladaptive perfectionism.

Table 2. Descriptive Statistics and Pearson's Correlation

	Mean	S.D.	PDMS	HS	IS	P	MD	HD	NSP	ED	PD	FFD	MP	AP
PDMS	26.28	6.74	-	-	-	-	-	-	-	-	-	-	-	-
HS	3.62	3.533	-	-	-	-	-	-	-	-	-	-	-	-
IS	15.79	7.703	.466**	-	-	-	-	-	-	-	-	-	-	-
P	3.59	1.43	.530**	.702**	-	-	-	-	-	-	-	-	-	-
MD	2.28	1.094	.637**	.453**	.630**	-	-	-	-	-	-	-	-	-
HD	2.28	1.094	.686**	.390**	.434**	.631**	-	-	-	-	-	-	-	-
HD	2.47	1.295	.234**	.352**	.333**	.513**	.257**	-	-	-	-	-	-	-
NSP	2.25	1.374	.348**	.354**	.326**	.411**	.303**	.387**	-	-	-	-	-	-
ED	2.73	1.266	.479**	.420**	.444**	.524**	.514**	.305**	.252**	-	-	-	-	-
PD	2.67	1.487	.449**	.387**	.426**	.480**	.448**	.391**	.387**	.459**	-	-	-	-
FFD	1.96	1.191	.273**	.213**	.245**	.319**	.301**	.245**	.421**	.183*	.221**	-	-	-
MP	-0.0000005	0.88004102	.450**	.472**	.669**	.524**	.332**	.395**	.409**	.401**	.313**	.331**	-	-
AP	0.0000002	0.80672916	0.030	0.042	0.137	0.092	0.079	0.112	0.015	0.051	0.078	0.098	.246**	-

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Key. PDMS: Perceived Diabetes Self-Management Scale. HS: Hating Self. IS: Inadequate Self. P: Powerlessness. MD: Management Distress. HD: Hypoglycaemia Distress. NSP: Negative Social Perceptions. ED: Eating Distress. PD: Physician Distress. FFD: Friends and Family Distress. MP: Maladaptive Perfectionism. AP: Adaptive Perfectionism

Mediation Analyses

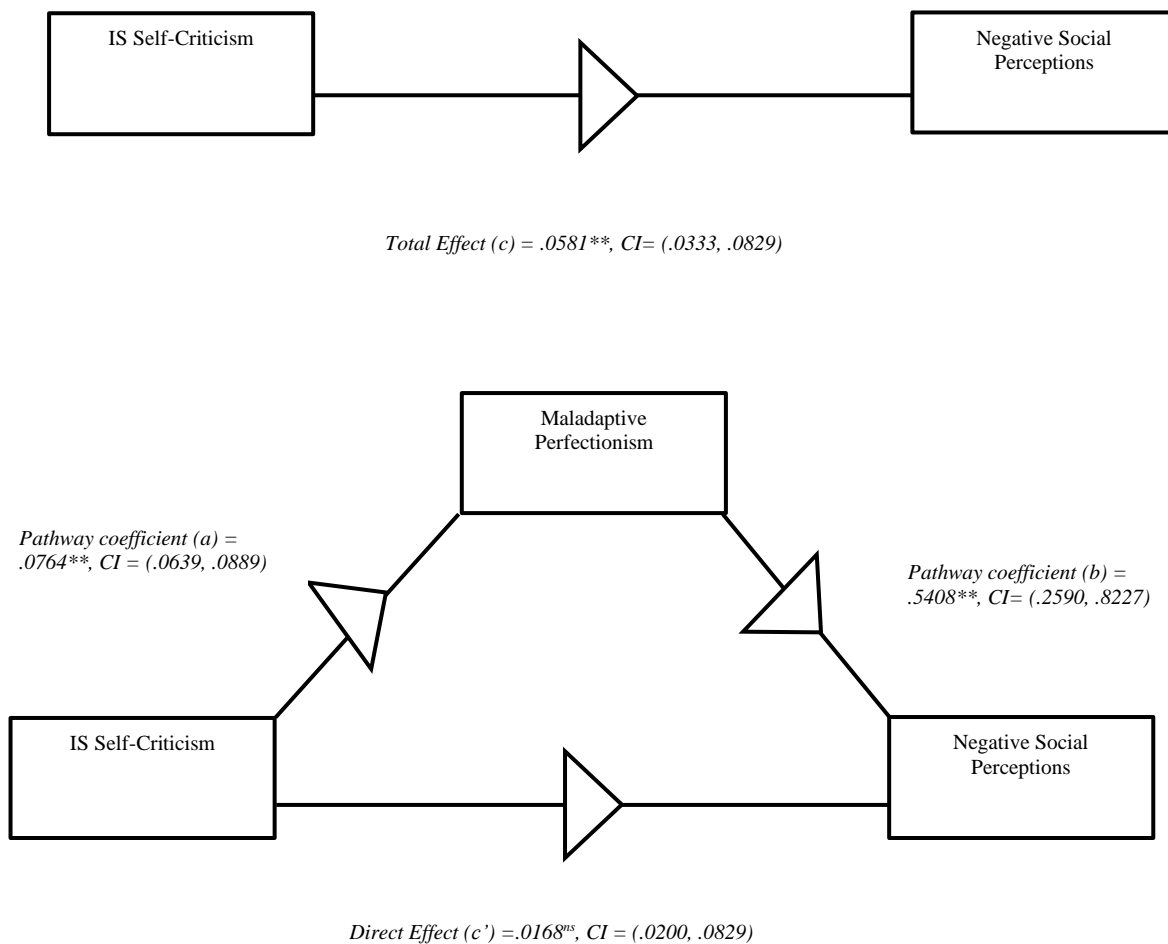
Given that self-criticism, DRD and confidence in diabetes management were significantly correlated with maladaptive perfectionism, Hayes' (2018) Macro Process via bootstrapping method was used to consider if maladaptive perfectionism had a mediational effect when the indirect effect (IE) of self-criticism on DRD and the bias-corrected 95% confidence interval around the IE from 5000 bootstrap re-samples. IE was accepted as statistically significant only if its bias-corrected 95% confidence interval excluded zero.

The standard terminology from the mediation literature of total, direct and indirect effects (Hayes, 2013) is used throughout this study. The word "effect" is meant in the statistical sense, as per the mediation literature, and should not be taken to imply causation. All mediation analyses can be found in Appendix 12-43.

Research Question 1: Will the relationship between self-criticism and diabetes-related distress be statistically mediated by maladaptive perfectionism?

From a simple mediation analysis, maladaptive perfectionism was significantly associated with negative social perceptions through IS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely positive (0.0333, 0.0829) (Figure 5).

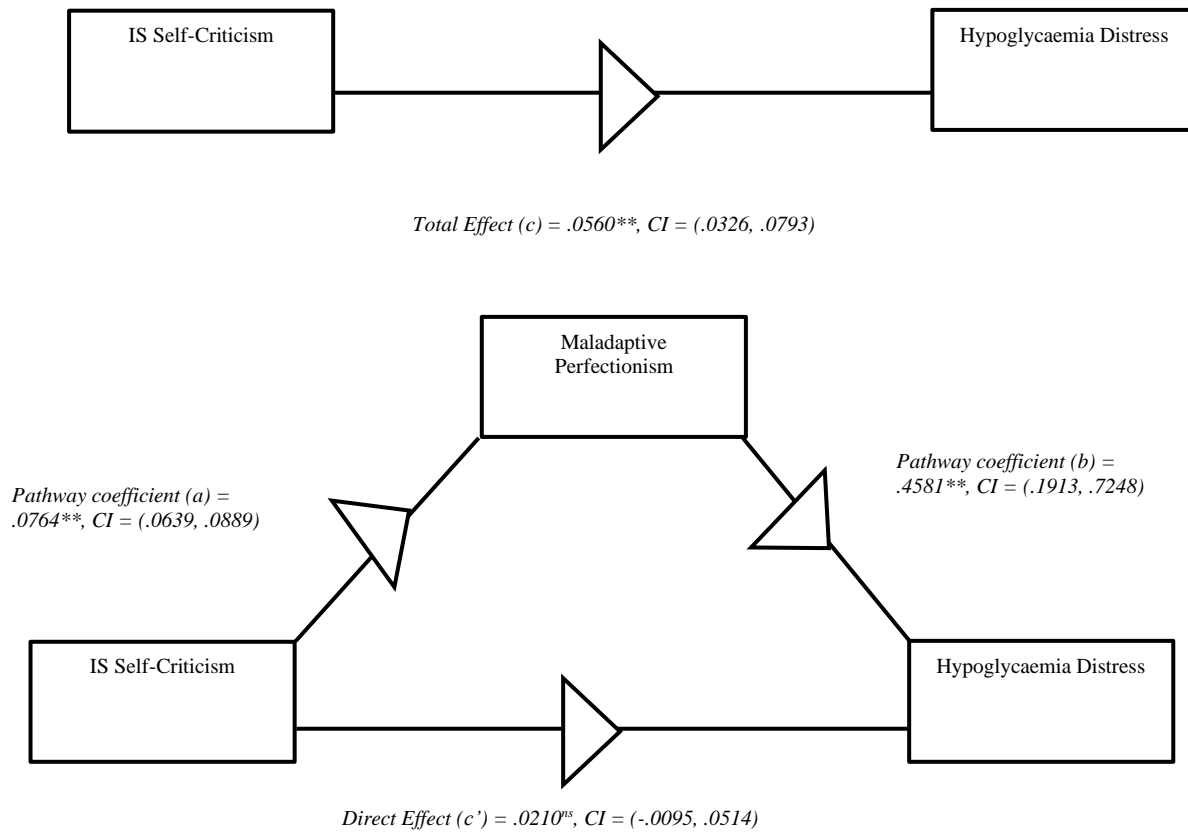
Figure 5. Model of Maladaptive Perfectionism as a Mediator Between Inadequate-Self Self-Criticism and Negative Social Perceptions DRD



Note: ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with hypoglycaemia distress through IS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely positive (0.0336, 0.0793) (Figure 6).

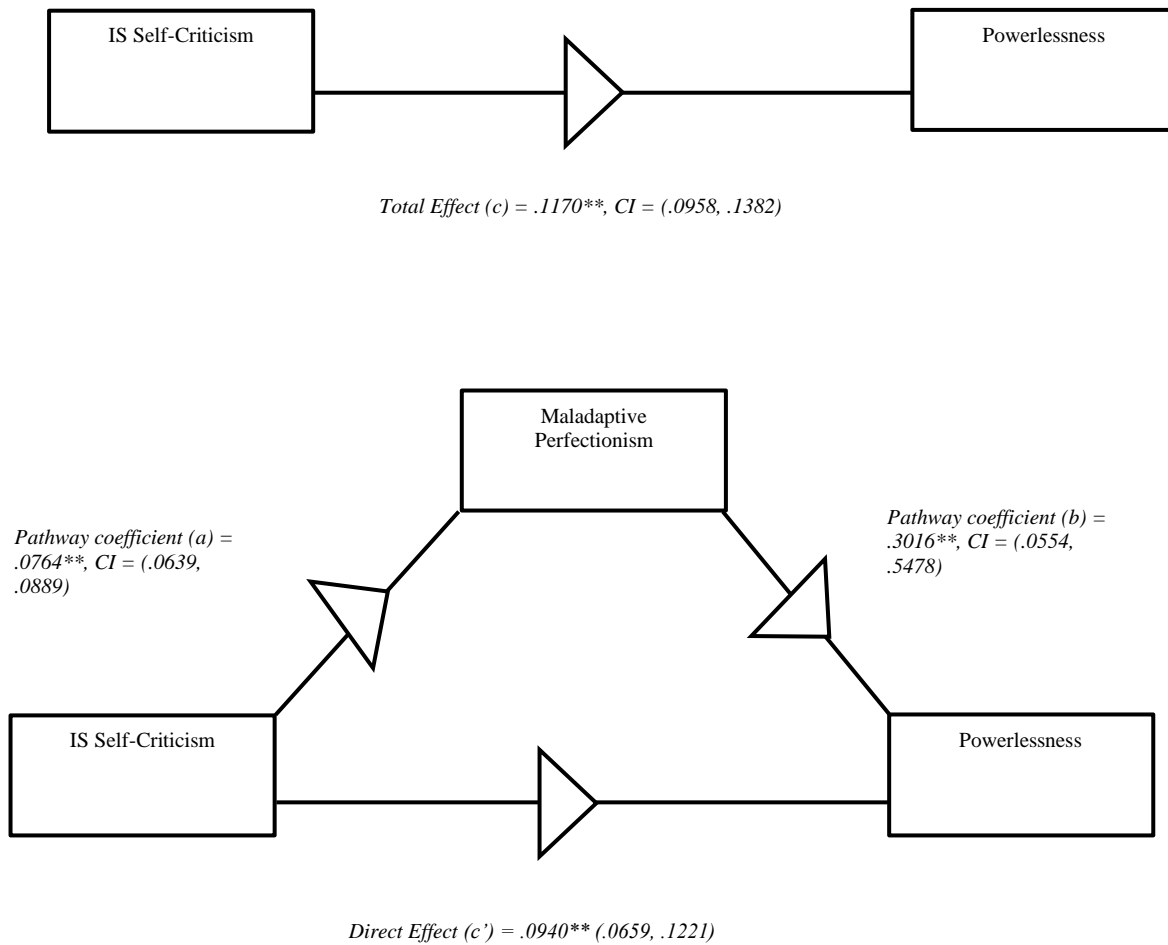
Figure 6. Model of Maladaptive Perfectionism as a Mediator Between Inadequate-Self Self-Criticism and Hypoglycaemia Distress DRD



Note. ^{ns} not significant, * $p < .05$; ** $p < .001$.

Maladaptive perfectionism was significantly associated with powerlessness through IS, as indicated by a 95% confidence interval for the 'total effect' in the mediation model that was entirely positive (0.0958, 0.1382) (Figure 7).

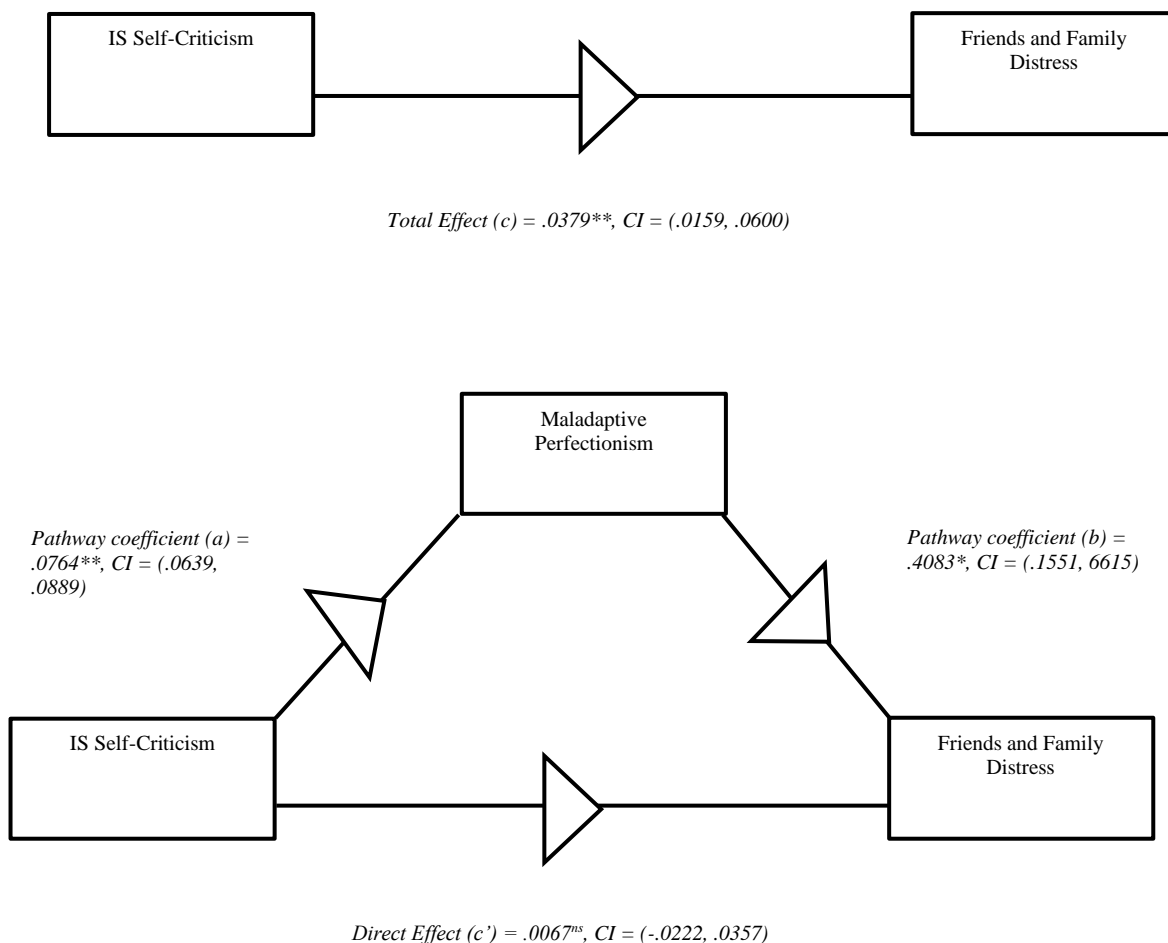
Figure 7. Model of Maladaptive Perfectionism as a Mediator Between Inadequate-Self Self-Criticism and Powerlessness DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

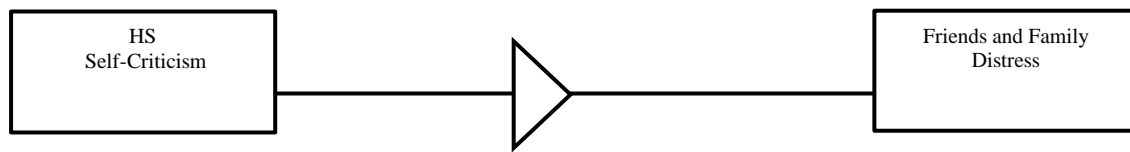
Maladaptive perfectionism was significantly associated with friends and family distress through both IS and HS as indicated by a 95% confidence interval for the 'total effect' in the mediation model that was entirely positive (IS: 0.0159, 0.0600) (Figure 8) (HS: 0.0234, 0.1203) (Figure 9).

Figure 8. Model of Maladaptive Perfectionism as a Mediator Between Inadequate-Self Self-Criticism and Friends and Family Distress DRD

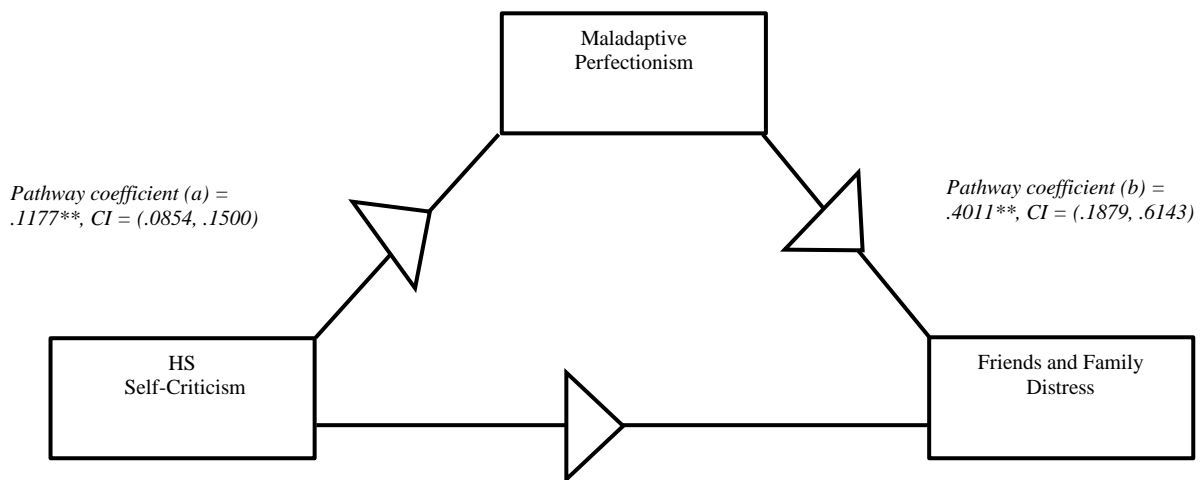


Note. ^{ns} not significant, *p < .05; **p < .001.

Figure 9. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Friends and Family Distress DRD



*Total effect (c) = 0.718**, CI = (.0234, 1203)*



*Pathway coefficient (a) = .1177**, CI = (.0854, .1500)*

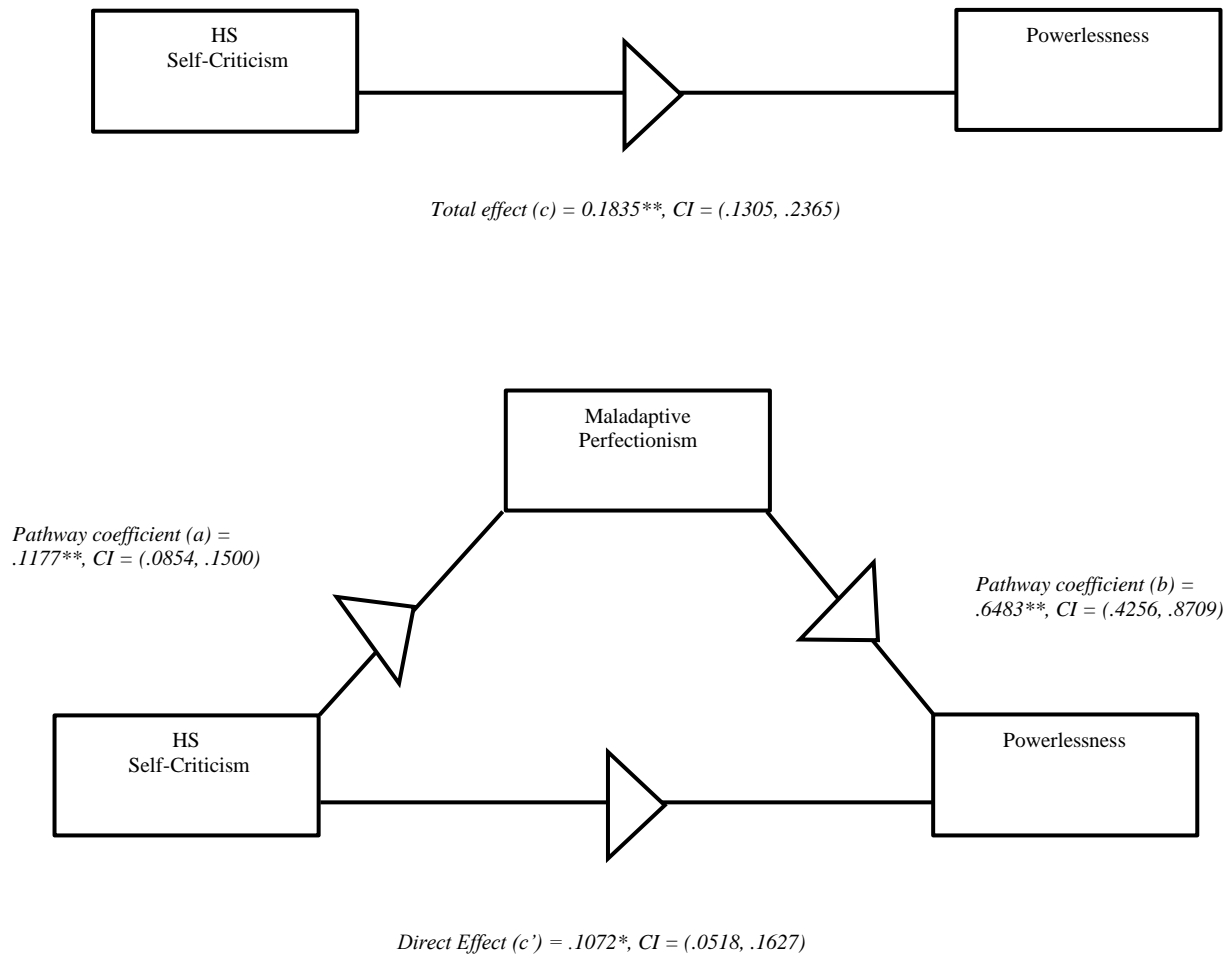
*Pathway coefficient (b) = .4011**, CI = (.1879, .6143)*

Direct Effect (c') = .0247^{ns}, CI = (-.0285, .0778)

Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with powerlessness through HS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely positive (0.1305, 0.2365) (Figure 10).

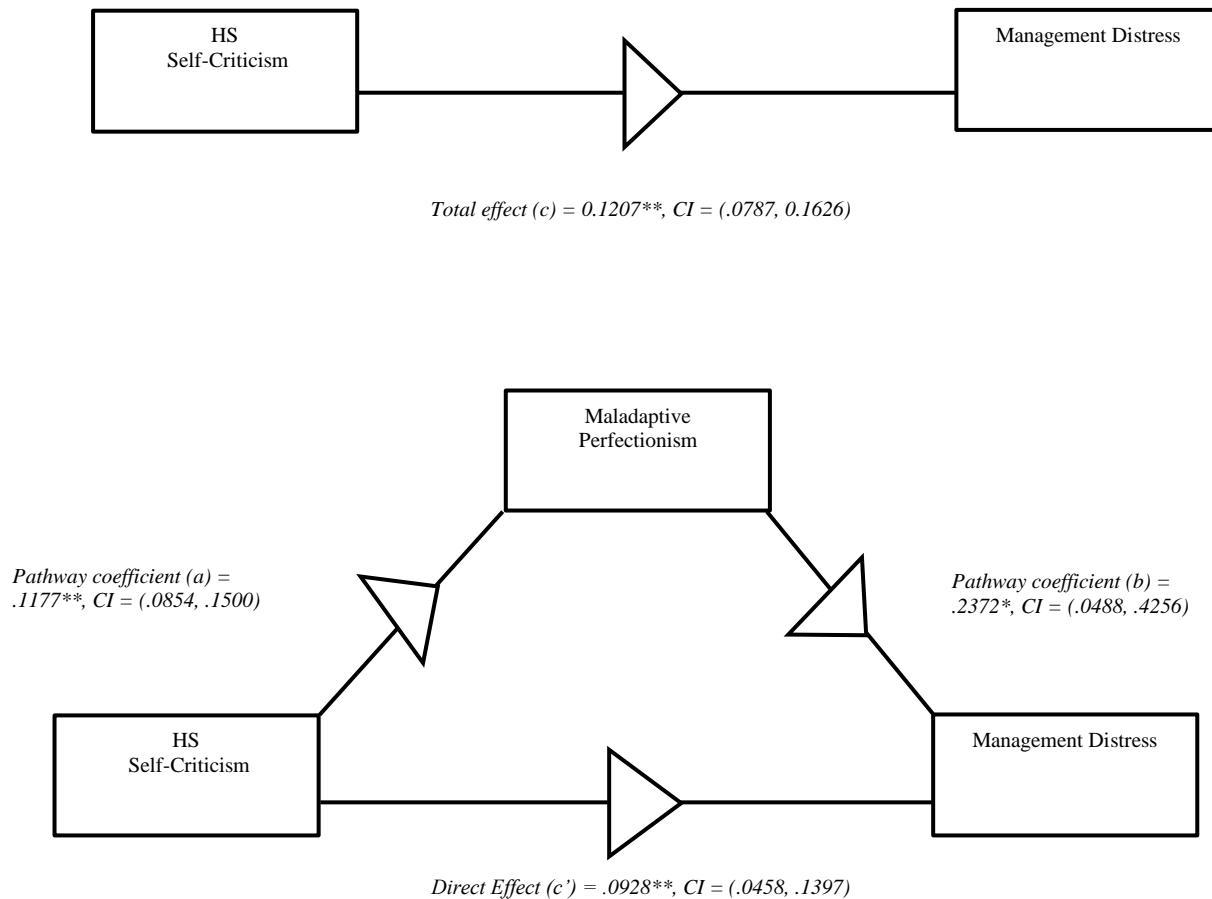
Figure 10. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Powerlessness DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with management distress through HS, as indicated by a 95% confidence interval for the 'total effect' in the mediation model that was entirely positive (0.0787, 0.1626) (Figure 11).

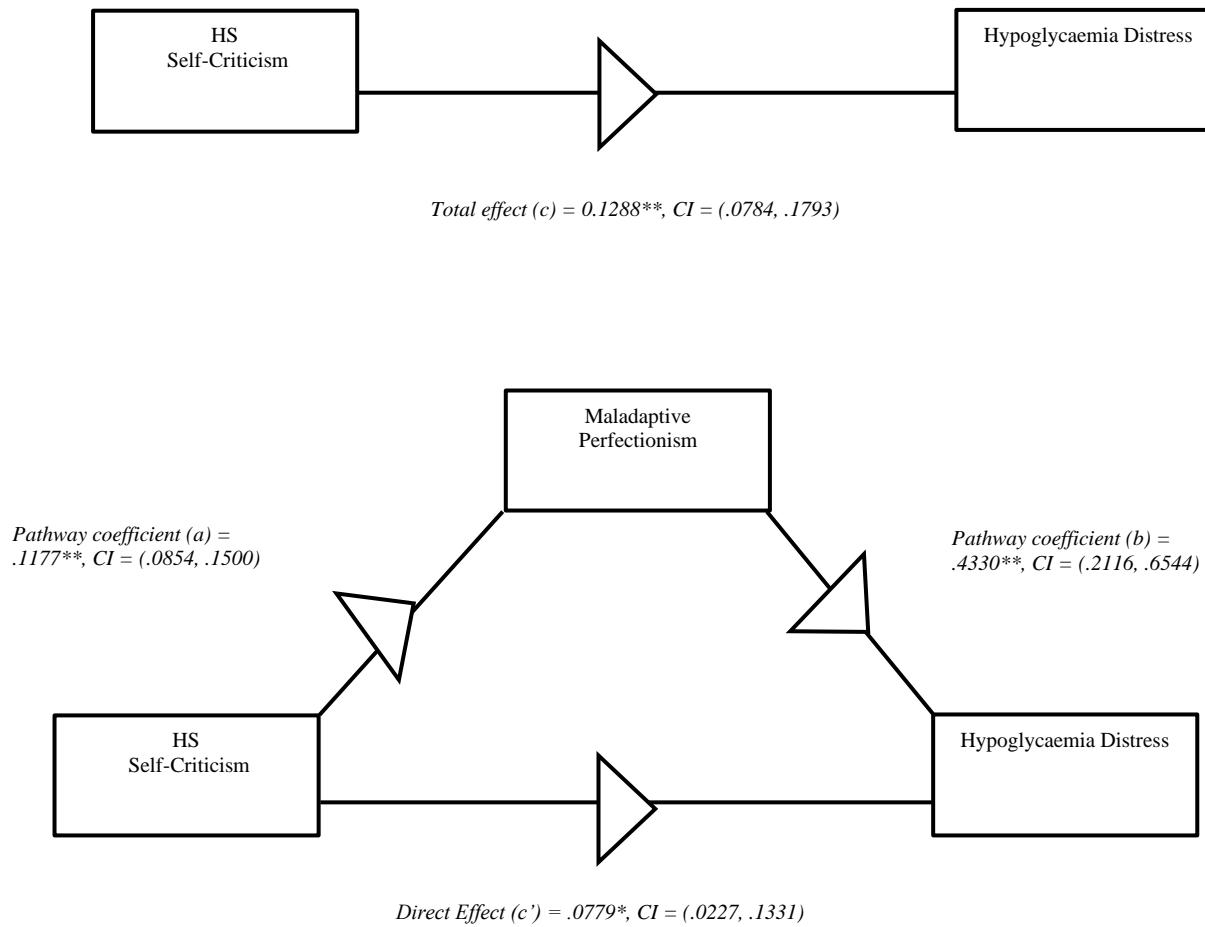
Figure 11. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Management Distress DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with hypoglycaemia distress through HS, as indicated by a 95% confidence interval for the 'total effect' in the mediation model that was entirely positive (0.0784, 0.1793) (Figure 12).

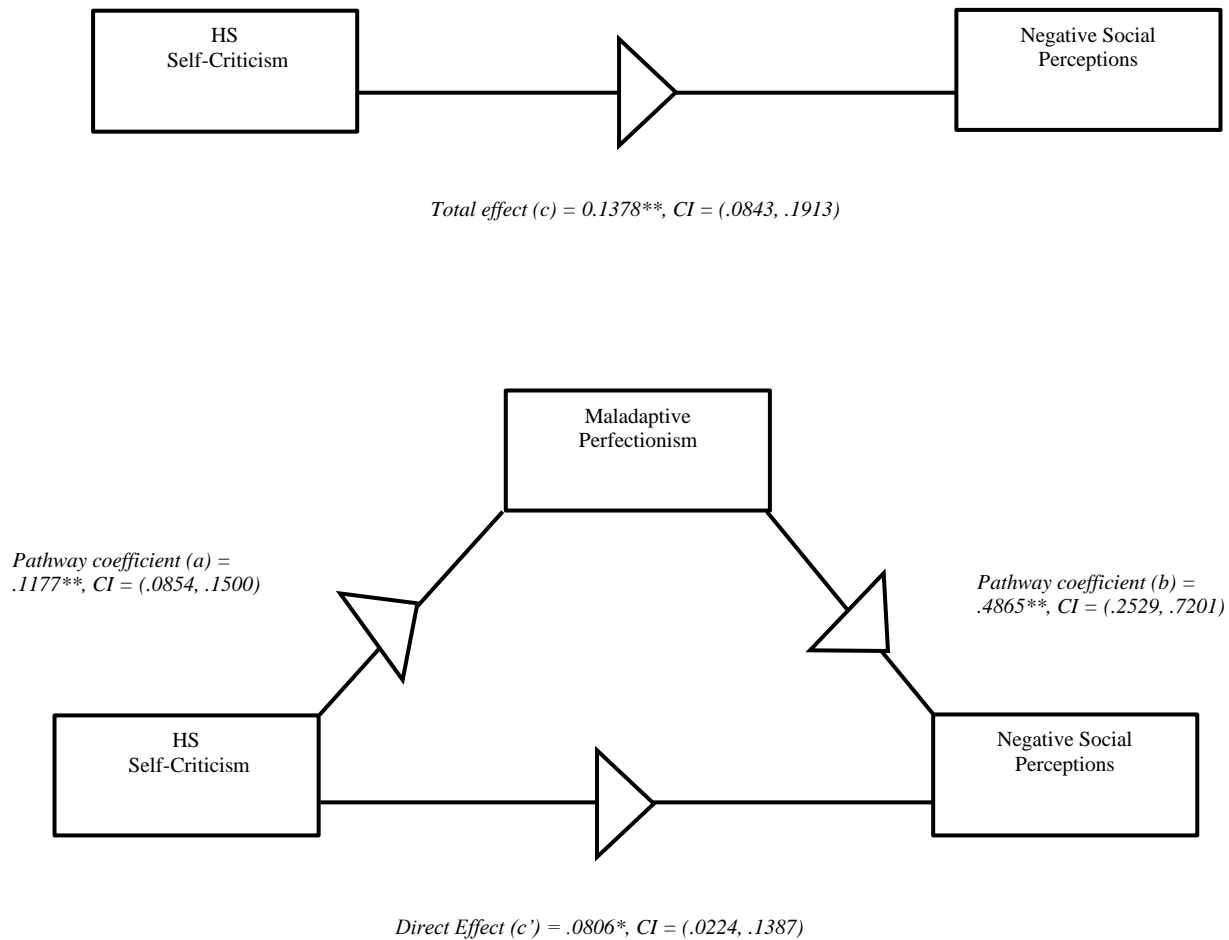
Figure 12. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Hypoglycaemia Distress DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with negative social perceptions through HS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely positive (0.0843, 0.1913) (Figure 13).

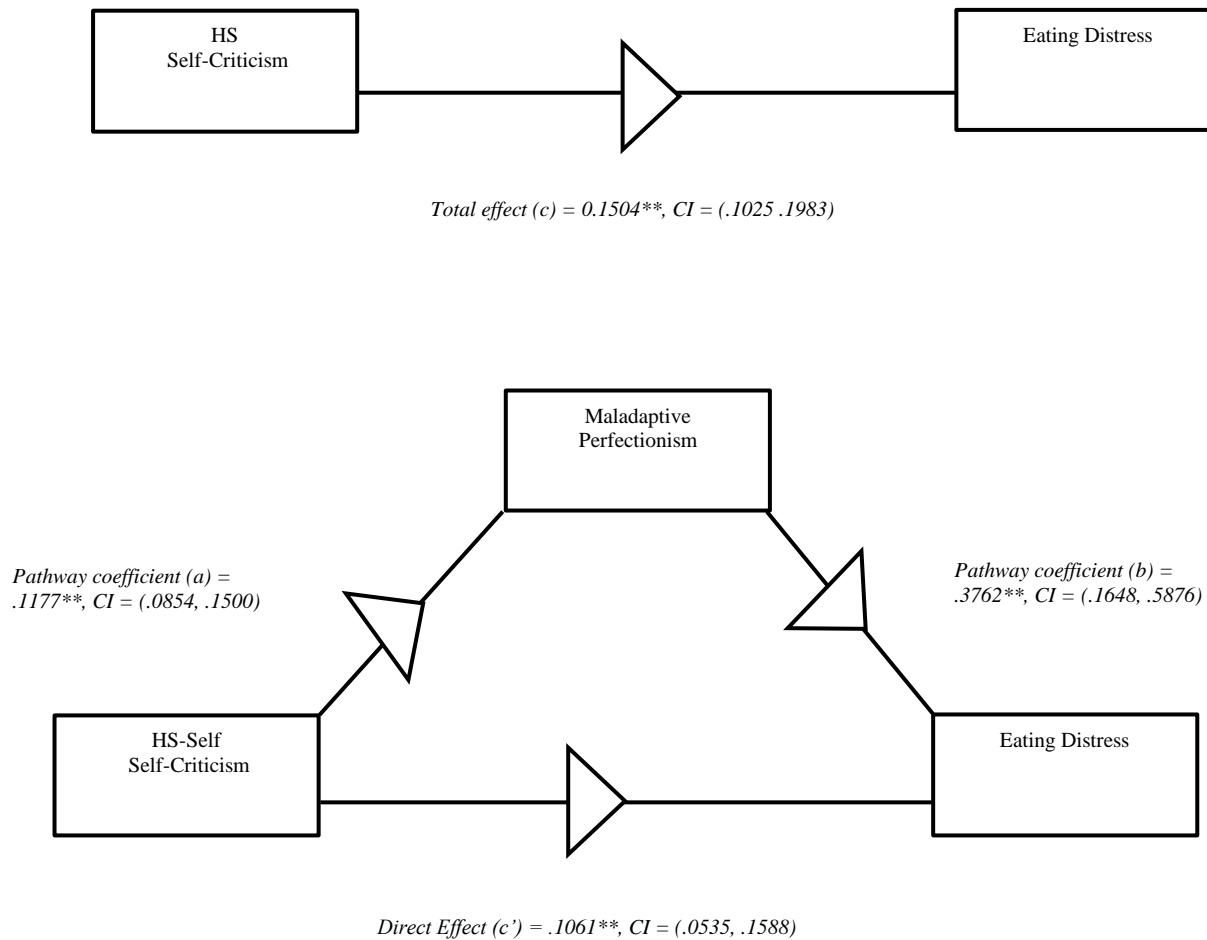
Figure 13. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Negative Social Perceptions DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with eating distress through HS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely positive (0.1025, 0.1983) (Figure 14).

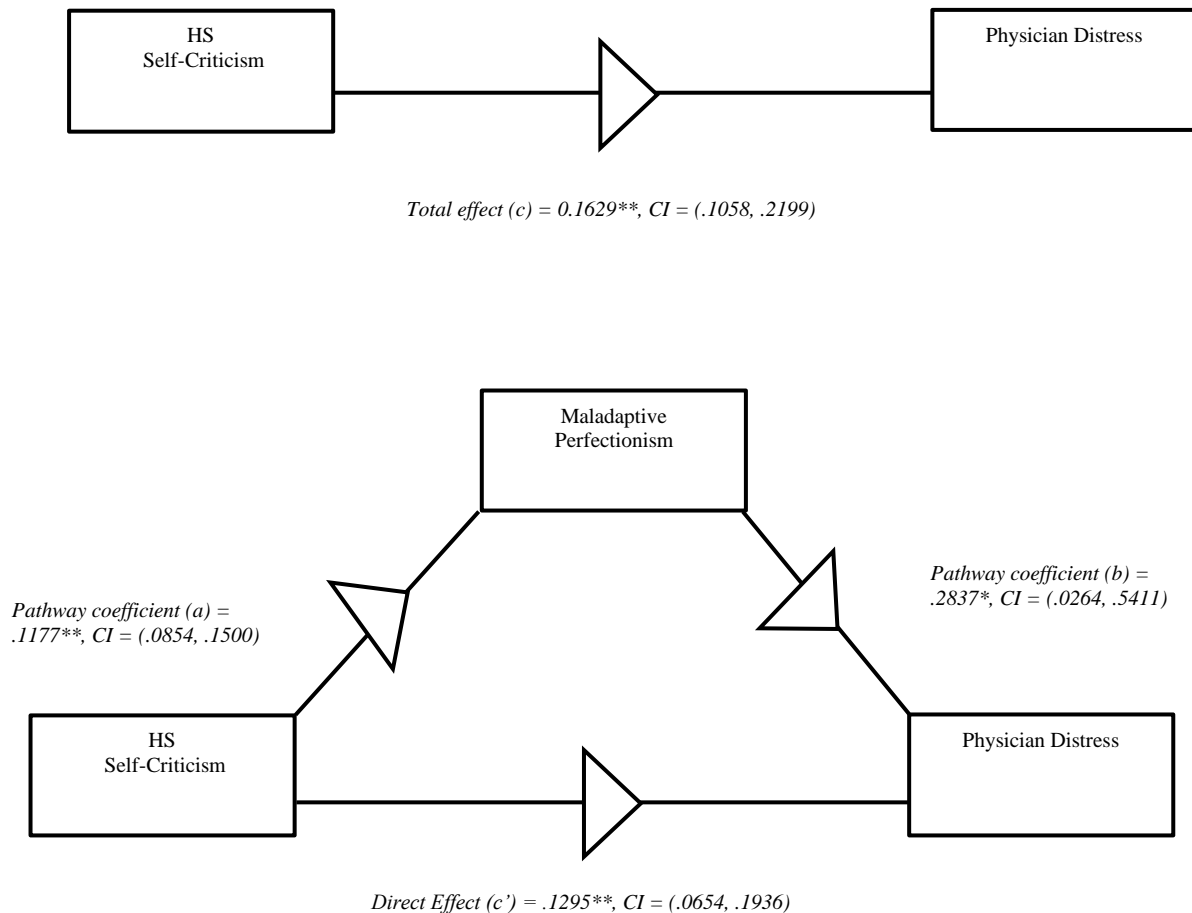
Figure 14. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Eating Distress DRD



Note. ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with physician distress through HS, as indicated by a 95% confidence interval for the 'total effect' in the mediation model that was entirely positive (0.1058, 0.2199) (Figure 15).

Figure 15. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Physician Distress DRD



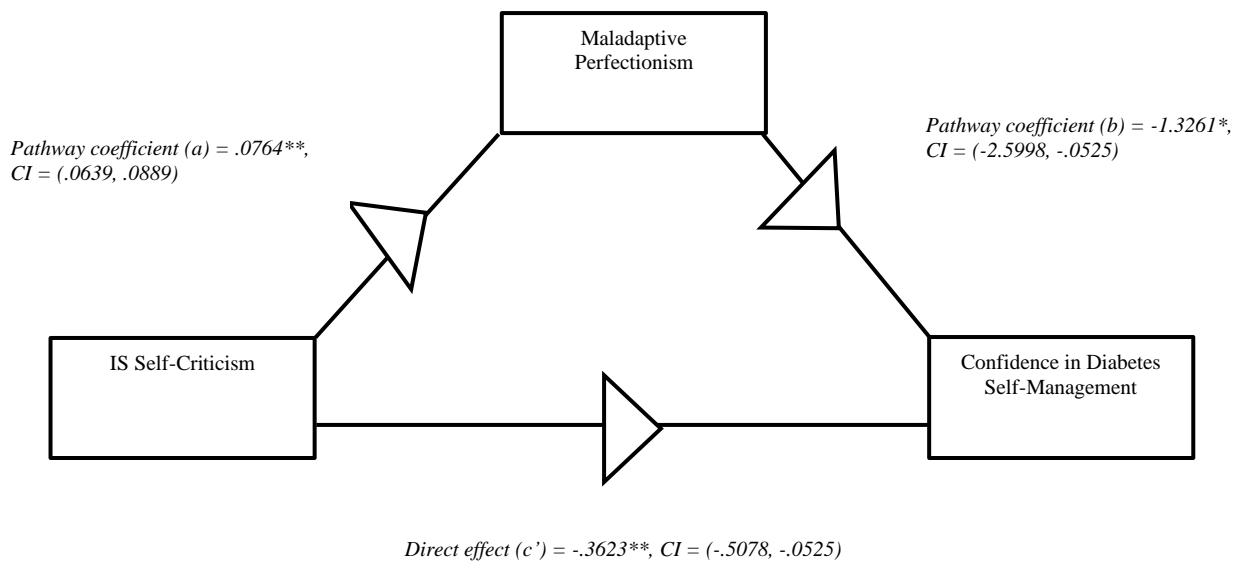
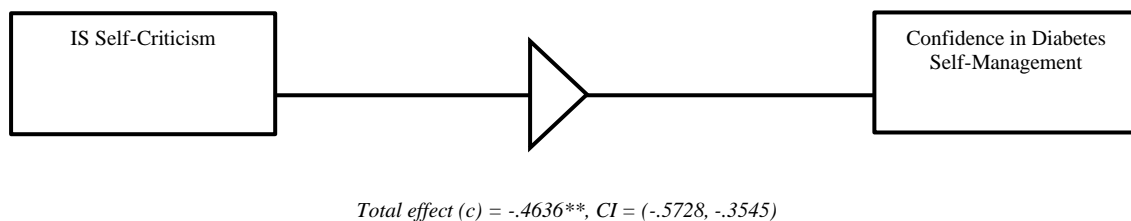
Note. ^{ns} not significant, *p < .05; **p < .001.

The relationship between IS and management distress, eating distress, and physician distress, was not mediated by maladaptive perfectionism (Appendix 13; Appendix 16; Appendix 17).

Research Question 2. Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by maladaptive perfectionism?

Maladaptive perfectionism was significantly associated with confidence in diabetes management through IS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely negative (-0.5723, -0.3545) (Figure 16).

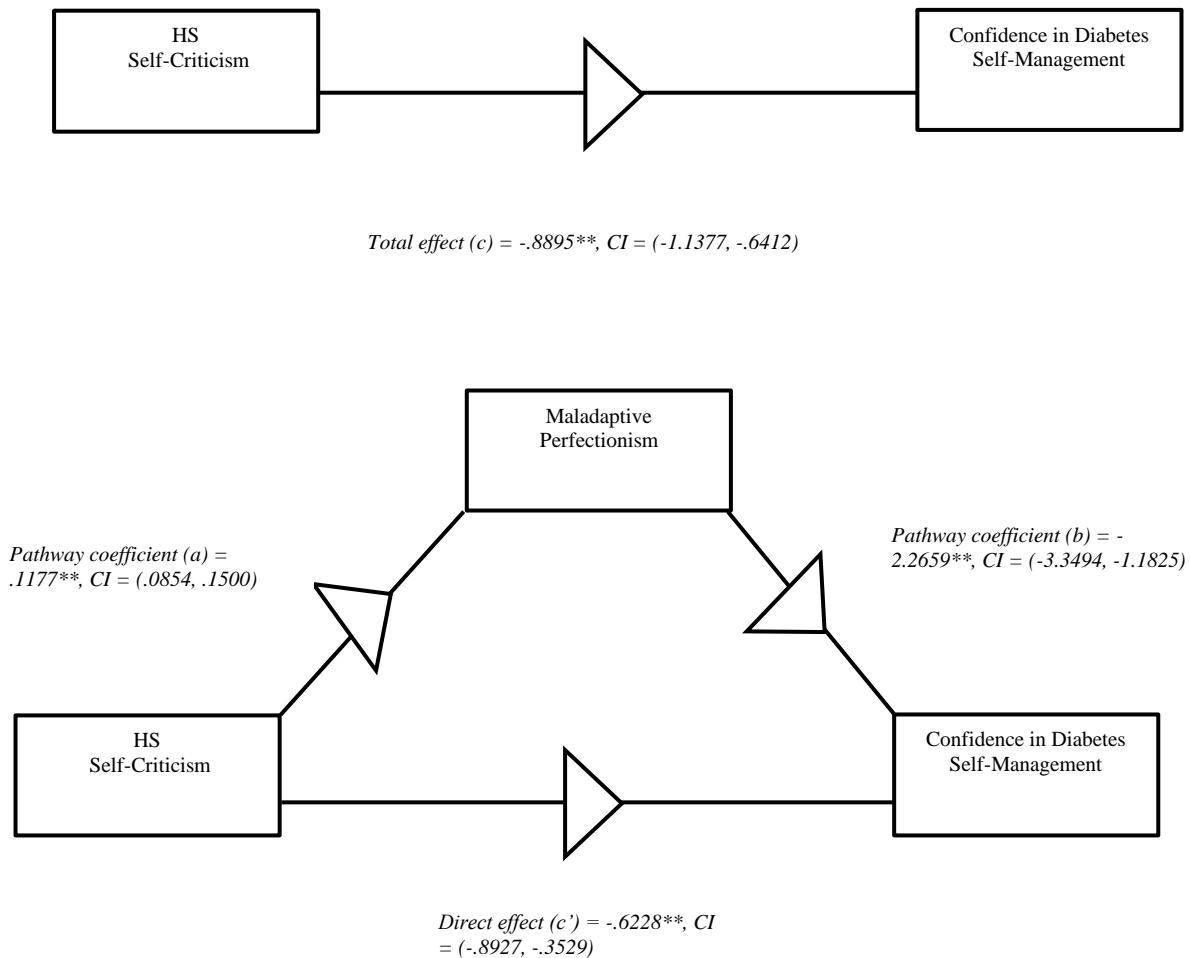
Figure 16. Model of Maladaptive Perfectionism as a Mediator Between Inadequate-Self Self-Criticism and Confidence in Diabetes Self-Management



Note: ^{ns} not significant, *p < .05; **p < .001.

Maladaptive perfectionism was significantly associated with confidence in diabetes management through HS, as indicated by a 95% confidence interval for the ‘total effect’ in the mediation model that was entirely negative (-1.1377, -0.6412) (Figure 17).

Figure 17. Model of Maladaptive Perfectionism as a Mediator Between Hating-Self Self-Criticism and Confidence in Diabetes Self-Management



Note. ^{ns} not significant, *p < .05; **p < .001.

Research Question 3. Will the relationship between self-criticism and diabetes-related distress be statistically mediated by adaptive perfectionism?

Following initial correlational analyses; it was no longer expected that adaptive perfectionism would mediate any relationships between forms of self-criticism and DRD. A simple mediation analysis found that adaptive perfectionism did not mediate any relationship between forms of self-criticism and DRD. These analyses can be found in Appendices 28 through 41.

Research Question 4. Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by adaptive perfectionism?

Following initial correlational analyses; it was no longer expected that adaptive perfectionism would mediate any relationships between forms of self-criticism and confidence in diabetes management. A simple mediation analysis found that adaptive perfectionism did not mediate any relationship between forms of self-criticism and confidence in diabetes management. These analyses can be found in Appendices 42 and 43.

Discussion

Main Findings from Correlational Analyses

Hypothesis 1: Adaptive Perfectionism will negatively correlate with self-criticism; negatively correlate with DRD; positively correlate with confidence in diabetes management.

In this sample of adults with T1D, the correlational analysis found that hypothesis 1 was not supported. This was because adaptive perfectionism did not correlate with self-criticism, DRD, or confidence in diabetes management. Considering previous findings that adaptive perfectionists have lower levels of self-critical evaluations in appraisal situations (Beiling et al., 2004; Enns et al., 2001; Rhéaume et al., 2000), the finding of no correlation between adaptive perfectionism and self-criticism and DRD could suggest that this dimension of perfectionism is not associated with greater psychological distress in a T1D population (Smith et al., 2016; Smith et al., 2017). However, it is important to acknowledge that while adaptive perfectionism does not correlate with self-criticism or DRD, it cannot be concluded that adaptive perfectionism is supportive of being “more adaptive” in terms of emotional well-being in adults with T1D.

Interestingly, there was also no correlation found between adaptive perfectionism and confidence in diabetes management. While adaptive perfectionism has been previously found to be related to greater levels of engagement in preventative health behaviour (Kawamura et al., 2004), the findings from this study seem to suggest that this does not mean that the individual feels confident when engaging in self-management strategies.

Adaptive perfectionism positively correlated with maladaptive perfectionism, which could be interpreted as aligning with Nolen-Hoeksema's (2008) statement that elements of both maladaptive and adaptive perfectionism are involved in maladaptive coping strategies. However, this conclusion cannot be specifically drawn from the findings of this study, as coping strategies were not measured. Nevertheless, this study has found that adaptive perfectionism does not correlate with self-criticism, experiences of distress or self-confidence – all of which have previously been linked to poorer coping strategies (Karlsen et al., 2012; Lopez et al., 2002; Gilbert et al., 2006; James et al., 2015). Further investigation into adaptive perfectionism as a potentially functionally neutral dimension in the context of self-criticism and confidence in diabetes management is required.

Hypothesis 2: Maladaptive Perfectionism will positively correlate with self-criticism; positively correlate with DRD; negatively correlate with confidence in diabetes management.

Hypothesis 2 was supported by the findings from this study as maladaptive perfectionism positively correlated with self-criticism, positively correlated with DRD, and negatively correlated with confidence in diabetes management. Maladaptive perfectionism is characterised by critical self-evaluations of one's performance and feelings of a discrepancy between one's performance and one's expectations (Stoeber et al., 2010; Stoeber et al., 2008). The current study's findings support previous research that maladaptive perfectionism is related to perceived distress in individuals with a chronic health condition (Deary et al., 2010; Kempke et al., 2011; Kempke et al., 2013) as well as adding to the literature specifically in the context of T1D.

Hypothesis 3: Self-criticism will positively correlate with DRD; negatively correlate with confidence in diabetes management.

The findings from this study supported hypothesis 3. Self-criticism positively correlated with DRD and negatively correlated with confidence in diabetes management. These results support previous research that self-criticism is a common factor among people who report a high level of stress and negative affect (Mongrain et al., 1995). This study's results suggest that the universal findings of the negative impacts of self-criticism can also be found in the specific context of T1D.

Main Findings from Mediational Analyses

Will the relationship between self-criticism and diabetes-related distress be statistically mediated by maladaptive perfectionism?

Maladaptive perfectionism positively mediated the relationship between both forms of self-criticism and powerlessness, management distress, hypoglycaemia distress, negative social perceptions and friends and family distress forms of DRD.

The findings that the presence of self-criticism is mediated by maladaptive perfectionism in DRD associated with personal actions, physiological needs, and social expectations, support previous findings that maladaptive perfectionism is associated with negative psychological functioning which may stop the individual from engaging in preventative health behaviours (Blatt, 1995; Chang, 2003; Flett et al., 2002; Shafran et al., 2001). Causal statements cannot be made about the relationships found in this study; however, the findings indicate that reducing maladaptive perfectionism may be a point of interest for researchers developing interventions aimed at alleviating DRD.

Maladaptive perfectionism does not mediate the relationship between IS and eating distress and physician distress, but it does mediate the relationship between HS and eating distress and physician distress. Further research into this relationship may assist in the development of assessments that can be used by medical professionals at routine check-ups to recognise when these constructs are occurring together as well as informing interventions that can effectively target these constructs.

When maladaptive perfectionism mediates the relationship between IS and hypoglycaemia distress and friends and family distress, the direct relationship between IS and these forms of

DRD becomes insignificant. This is also the case when maladaptive perfectionism mediates the relationship between HS and friends and family distress. Previous research has highlighted how people with T1D can feel pressure to be ‘perfect’ in their glucose management (Abdoli et al., 2019; Fisher et al., 2015; Pyatak et al., 2013; Rankin et al., 2012; Sparud-Lundin et al., 2010). Family involvement has been identified as a predictive factor for self-management behaviours, including glycaemic control. The use of systemic interventions to optimise access, meet healthcare needs and enhance self-management strategies have thus been recognised as important in T1D care (Naranjo et al., 2014; Tsiouli et al., 2013). The current findings are suggestive that maladaptive perfectionism may be an important factor to consider in systemic interventions for T1D.

Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by maladaptive perfectionism?

Maladaptive perfectionism negatively mediated the relationship between both forms of self-criticism and confidence in diabetes self-management. This may suggest that the association with self-criticism and maladaptive perfectionism contributes to reduced confidence in one’s ability to manage T1D.

Maladaptive perfectionism has previously been associated with lower engagement in health-promoting behaviours (Chang et al., 2008; Williams et al., 2014). However, the results of this study indicate that confidence in partaking in these behaviours may be an element which prevents health behaviour engagement. Further research should focus on the impact of maladaptive perfectionism on confidence in T1D management as a component in reduced engagement in health-promoting behaviours. Greater understanding may aid the development

of T1D-specific strategies to overcome maladaptive perfectionistic coping through supportive confidence-promotion interventions.

Will the relationship between self-criticism and diabetes-related distress be statistically mediated by adaptive perfectionism?

A mediational analysis was conducted (Appendix 27-40) but as anticipated following the correlational analyses, no mediating effect of adaptive perfectionism was found.

As previously summarised in the *Main Findings of Correlational Analysis: Hypothesis 1* section of this report: While adaptive perfectionism has not been associated with greater psychological distress (Smith et al., 2016; Smith et al., 2017) in a T1D population, this study's findings cannot conclude that adaptive perfectionism supports or promotes emotional well-being in adults with T1D. Further investigation into adaptive perfectionism in the context of self-criticism and DRD is needed to understand its role within a T1D population.

Will the relationship between self-criticism and confidence in diabetes management be statistically mediated by adaptive perfectionism?

A mediational analysis was conducted (Appendix 42 and 43) but as anticipated following the correlational analyses, no mediating effect of adaptive perfectionism was found.

Previous research has suggested that adaptive perfectionists appear to be less uncertain about their overall self-perception (Di Paula et al., 2002; Lo et al., 2019), which showed that constructs reflecting the more adaptive forms of perfectionism (e.g., perfectionistic striving) were related to greater levels of certainty in the beliefs related to one's characteristics or attributes (i.e., the self-concept). As adaptive perfectionism does not mediate or appear to

have a significant relationship with confidence in diabetes self-management, the current findings highlight the need for further investigation into adaptive perfectionism in a T1D population.

Limitations

The design of this study has several limitations. First, the study's cross-sectional nature limits the ability to draw causal conclusions, and the mediational analyses findings should be considered with caution. Meditational analysis has long been recognised as a method which is prone to bias, with the propensity to falsely demonstrate that the mediating variable mediates the effect of the independent variable on the dependent variable (Bullock et al., 2021). While methods of mediation analysis have been developed to become more robust e.g., Hayes Process Macro (2022), this has meant there is inconsistency in the literature about how mediational analysis is conducted. While the theoretical models that were measured have been previously experimentally studied and were grounded in academic literature, indicating some strength in the analyses, the paucity of theory in setting up mediation analysis remains a limitation of the study. Furthermore, the study did not consider participant demographics within the mediational analysis. Controlling for participants variables such as gender and age would have given an indication as to whether these variables impact the relationship between self-criticism, maladaptive perfectionism, DRD and confidence in self-management, as well as enhancing internal validity.

Longitudinal studies are recommended for future research to reliably confirm the direction of causation of the variables observed in this study. Additionally, greater empirical control would allow for causal relationships to be identified, for example, including demographic information as well as the use of measures with validated clinical cut-off points to create a control group and compare the results within a T1D population.

The use of questionnaires is recognised as a potentially limiting method of capturing the complex constructs they intended to characterise and measure. As questionnaires are a self-report method of data collection, researchers must rely on participants to be truthful and respond accurately. The results from this study are considered suggestive and to be built upon. Future research may benefit from including a range of methods to investigate these constructs, such as the collection of qualitative feedback.

Recruiting participants online allowed the study to reach a greater population sample than if recruitment was to be limited to a local NHS trust. The sample, however, did not have an ample representation of different ethnicities, as over 86% of participants self-identified as white. Furthermore, over 70% of participants identifying as female and most participants had an undergraduate degree or higher. As a result, the findings from this study cannot be confidently applied to all people with T1D as the results may not be representative of males or people from global majority backgrounds. Additionally, higher educational attainment has been associated with better health and longer lifespans in comparison to less-formally-educated peers (Raghupathi et al., 2020). As over 75% of the sample population had tertiary-level education, these findings may not apply to those who may regularly present to their medical team with diabetes-related health problems. The recruitment method is also limited due to its self-selecting nature, potentially missing a subgroup of participants. The study cannot conclude whether the sample may be biased with higher self-criticism, distress, and perfectionism scores or whether the results reflect the extent of DRD in a T1D population. There is the possibility that a proportion of potential participants do not engage in these online communities and as participants were recruited predominantly online, findings from this study may not be representative of or applicable to a wider T1D population.

The measures used also have limitations. The construction of the adaptive and maladaptive perfectionism scale varies amongst researchers, with the use of different subtests (Bieling et al., 2003) as well as measurement tools (Hewitt et al. 1991; Slaney et al., 2002) have been used to generate maladaptive and adaptive scores. Such measurement inconsistencies may generate variations in the overall area of perfectionism, limiting the applicability of the results to the target population.

Implications

Clinical Implications

Previous research has reported the need for routine screening of DRD and perfectionism (Moran, 2020). The findings from this study add support to Moran's (2020) suggestions, while also providing insight into how clinicians can support an individual in the context of self-criticism.

If maladaptive perfectionism is detected, further exploration into the individual's experiences of self-criticism may be useful to help inform decisions about how to support the patient in reducing DRD. The finding that maladaptive perfectionism mediated the relationship between eating and physician distress and the HS form of self-criticism may be useful to consider in instances of relationship breakdown with one's diabetes medical professionals and wider support system as well as concerns about the development of diabetes-related eating concerns. HS is the desire to harm oneself and generates feelings of self-hatred, while the IS form embodies feelings of incompetence and desire to improve (Vidal et al., 2023; Wakelin et al., 2022). In this instance, educating the patient's medical and support systems on how to target constructs that makeup HS alongside maladaptive perfectionism may offer more value than treatments for eating distress and tension in client-practitioner relationships

(Rector et al., 2000). This finding could be useful to address the challenges highlighted by Skinner et al. (2020) regarding how consultations usually focus exclusively on the practical aspects of diabetes self-management. Understanding that a patient may be striving for flawlessness and setting exceedingly high standards of performance accompanied by tendencies for overly critical evaluations of one's behaviour (Flett et al., 2002) may be useful for medical professionals in supporting the patient to set goals addressing perfectionism when the practical elements of diabetes self-management are seemingly more challenging for the patient.

In this study, when maladaptive perfectionism mediated the relationship between self-criticism (HS and IS) and friends and family distress, the direct relationship became insignificant. Similarly, the relationship between self-criticism (HS and IS) and hypoglycaemia distress also became insignificant when it was mediated by maladaptive perfectionism, aligning with previous patient descriptions of pressure to be 'perfect' in their glycaemic management (Abdoli et al., 2019; Fisher et al., 2015; Pyatak et al., 2013; Rankin et al., 2012; Sparud-Lundin et al., 2010). Armour et al. (2005) systematic review found that family interventions in diabetes populations were associated with improved diabetes-related knowledge and glycaemic control. However, the findings from this study indicate further research into maladaptive perfectionism in a T1D population may be required to support the development of effective systemic interventions aimed at reducing patient distress. Across the UK there are long waiting lists for primary and secondary care psychology services. Researchers should work alongside medical care teams focusing on the development of interventions that can be implemented by GPs and/or the individual's diabetes-specific medical professional at routine check-ups, rather than specialist psychological intervention. This may allow the individual to effectively reduce levels of maladaptive perfectionism and, in turn, reduce experiences of DRD.

Recent meta-analyses (Vidal et al., 2023; Wakelin et al., 2022) have highlighted how self-compassion-related interventions such as compassion-focused therapy reduce levels of self-criticism and thus counteract related distress (Longe et al., 2010; Lutz et al., 2020). Self-compassion can be defined as '*the sensitivity to suffering in self and others (engagement), with a commitment to try and alleviate and prevent it (action)*' (Gilbert, 2014, p. 19). Self-compassion interventions train the individual to actively self-soothe in times of distress, counteracting internal self-critical voices and reducing negative emotions. Previous research into diabetes populations has found self-compassion interventions to be associated with emotional and metabolic benefits (Gilbert, 2010; Friis et al., 2016). Diabetes medical teams and patient support systems should be encouraged to understand how best to model and support the development of patient self-compassion.

Clinical psychologists working within the NHS may want to consider the findings to inform consultation, advice, and supervision of non-psychological team members as well as shape staff support and joint clinical work with other clinicians. For example, the relationship between hated self, maladaptive perfectionism and physician distress could be considered in staff consultation and supervision through reframing the patient's perspective. This may lead onto supporting staff through training in the application of psychological principles to support health care provision, e.g., systemic theory and compassion focused therapy. The research findings from this cross-sectional study may also support psychologists working actively in research and policy development in enhancing the quality of psychological and physical care given to patients and staff working within T1D services. This could include focusing on the recommendations of group-based interventions in diabetes care as well as the inclusion of the role of perfectionism within support literature that is provided in patient waiting areas.

Research Implications

The study's findings provide support for the role of maladaptive perfectionism in the experiences of DRD and reduced confidence in diabetes management in a T1D population.

The findings from this research also add to the uncertainty that perfectionism can be an adaptive facet that is positive, healthy, or functional (Flett et al., 2002; Flett et al., 2005; Greenspon, 2000; Benson, 2003). Further research is needed to shed light on whether adaptive perfectionism is impactful within this population, and if so, how.

Future researchers should use a longitudinal and/or a qualitative research design. The use of qualitative methodology would enrich an understanding of these processes, their interactions, and the meanings that they hold (Wenger, 1999); while longitudinal methods would allow researchers to track changes across time. Additionally, using multiple informants, such as family members, friends and diabetes-specialist medical professionals may reduce self-report bias and give a greater scope to understand the social forms of DRD.

While the recruitment strategy for this study was discussed with research supervisors and experts by experience, there may have potentially been additional opportunities to seek consultation from underrepresented groups. Future research in the T1D field needs to consider methods which will improve sample diversity so that the research is representative of and applicable to all people in the UK living with T1D.

This study highlights the need for future investigations to continue considering the relationship between these processes within a T1D population to develop an understanding of perfectionism and self-criticism in this population. While this study adds to the limited

research available in understanding self-criticism and perfectionism in the specific population of adults with T1D, more research is needed to ascertain the robustness of this study's findings. Future researchers should explore these processes in different types of Diabetes as well as further investigate the different processes and variables that interact with perfectionism in a T1D population, for example, coping strategies.

Building a better understanding of self-criticism and perfectionism and their interactions with DRD and confidence in diabetes self-management will inform medical professionals and may aid the advancement of interventions that can effectively reduce these constructs.

Conclusion

The focus of this study was to investigate the relationship between self-criticism and perfectionism in DRD in a T1D population. The findings indicate that maladaptive perfectionism may be an important factor to consider when supporting an individual experiencing DRD and/or struggling with confidence in their diabetes self-management. The study also indicates that the hated-self form of self-criticism may be a more prominent factor in certain forms of DRD, which may help to inform interventions developed for people with T1D.

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Appendices

Appendix 1. Ethical Approval



Salomons Institute for Applied Psychology

Maeve Hinds
Trainee Clinical Psychologist

25 February 2022
Direct line 01227 927094
E-mail margie.callanan@canterbury.ac.uk
Our Ref V:\075\Ethics\2020-21

Dear Maeve,

Exploring the relationships between self-criticism and perfectionism in diabetes distress in a Type 1 Diabetes population.

Outcome: Full Approval

The panel would like to thank you for your submission and we are pleased to offer you Full approval with comments for consideration:

- 1) Just to note that Pg. 17 requires correct numbering of the Consent Form items
- 2) The term 'perfectionist' may not be a common one, with shared understanding of what it refers to or means; it also can be a rather 'loaded' term, in that it is judging a set of personal qualities in a particular way. It could be argued that 'perfectionists' wish to be 'perfect' and so see this as desirable and worthy, whilst others feel rather intimidated by the idea that they are not 'perfect' and perhaps should be. These 'loads' on the term may mean that thinking about the 'qualities' rather than the 'descriptor' might lead to a clearer research process and invite more participants. Making a decision not to use the term on the advertising flyer, for example, might be worth considering.
- 3) The research requires some 'medical model' language, but it may be improved if this could be minimised.

We look forward to receiving a short report on progress and outcome on completion of the research, in order to complete our file. The report should be the same one that is provided to your participants. Please note that any changes of substance to the research will need to be notified to us so that we can ensure continued appropriate ethical process.

We wish you well with your study and hope that you enjoy carrying it out.

Yours sincerely,

Professor Margie Callanan
Chair of the Salomons Ethics Panel

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Professor Rama Thirunamachandran, Vice-Chancellor and Principal

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Appendix 2. Information Sheet and Consent form

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Appendix 3. Debriefing Information

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Appendix 4. End of study report to the ethics panel/participants

End of Study Summary

Title: Exploring the Relationships between Self-Criticism and Perfectionism within Diabetes-Related Distress in a Type 1 Diabetes Population

Researcher: Maeve Hinds (Trainee Clinical Psychologist)

Supervised by: Dr Alan Hebben-Wadey (Clinical Psychologist), Dr Christian Ashford (Clinical Psychologist)

Thank you to all who took the time to participate in this research project. This brief report outlines the study and its findings.

Background: The study was completed as part of a doctorate in Clinical Psychology. Type 1 diabetes (T1D) requires lifelong, complex management across different aspects of the individual's life. People with T1D have described feeling under pressure to be 'perfect' in their management of their glucose levels and can feel as though they have failed when this has not been achieved. Diabetes-related distress is a term used to convey the emotional impact of living with diabetes. It is related to sadness, frustration and "burnout" related to diabetes management because of personal experiences of people dealing with diabetes. Greater levels of diabetes-related-distress have been shown to reduce self-management and affect glycaemic control. Research into perfectionism has continuously identified two dimensions of perfectionism: one being regularly associated with setting high standards and striving toward those goals (adaptive perfectionism) and the other being associated with being overly critical of one's behaviour and concerned about others' criticism (maladaptive perfectionism). However, many researchers hold strong doubts that perfectionism can be adaptive.

Cognitive emotion regulation strategies describe the cognitive responses to emotion-eliciting events that consciously or unconsciously attempt to adjust the extent and/or type of individual emotional experience or the event itself. The way in which an individual appraises their environmental circumstances may influence their experiences of depressive symptoms, levels of optimism and interpersonal relationships. Self-criticism is a cognitive appraisal strategy that has been previously associated with perfectionism and has been linked to distress and interference with goal progress.

Study aims: The aim of this study was to develop a greater understanding into the levels of self-criticism in adults with type 1 diabetes, and how this interacts with different types of perfectionism and impacts upon diabetes-related-distress and diabetes self-management. The relationship between self-criticism, perfectionism and diabetes-related-distress may provide insight into those who are more likely to struggle with managing their diabetes routine. The research was interested in understanding more about the levels of self-criticism in adults with type 1 diabetes and how these impact diabetes-related-distress and confidence in self-management.

This study explored self-criticism (hated-self and inadequate-self), perfectionism (adaptive and maladaptive), and diabetes-related distress (powerlessness, management distress,

hypoglycaemia distress, friends and family distress, negative social perceptions, eating distress and physician distress).

What happened in the study? 307 participants took part in a 20-minute online survey. Participants were recruited through advertisements shared on social media as well as online diabetes forums, through diabetes charities, including Diabetes UK and JDRF. Participants answered demographic questions as well as questions from four previously validated questionnaires. These questionnaires measured diabetes-related distress, perfectionism, self-criticism, and confidence in diabetes self-management. Analyses were carried out to investigate the relationships between perfectionism and self-criticism and if and how they predicted diabetes-related distress and confidence in diabetes management. After exclusion criteria was applied, data from 182 adults with T1D (18-70 years old, 130 female) was included in the study.

Results: *Adaptive perfectionism:* Adaptive perfectionism did not correlate or mediate any relationship with inadequate-self or hating-self forms of self-criticism, diabetes-related-distress, or confidence in diabetes self-management. *Maladaptive perfectionism:* For the inadequate-self form of self-criticism, maladaptive perfectionism mediated the relationship between inadequate forms of self-criticism and powerlessness, hypoglycaemia distress, negative social perceptions, and friends and family distress and confidence in diabetes self-management. For the hating-self form of self-criticism, maladaptive perfectionism mediated the relationship with powerlessness, management distress, hypoglycaemia distress, diabetes related negative social perceptions, eating distress, friends and family diabetes-related-distress, physician distress and confidence in diabetes self-management.

Conclusions Maladaptive perfectionism may be an important factor to consider when supporting an individual experiencing diabetes-related distress and/or struggling with confidence in their diabetes self-management. The study also indicates that the hated-self form of self-criticism may be a more prominent factor in certain forms of diabetes-related distress, which may help to inform interventions development for people with type 1 diabetes.

Appendix 5. Expert by Experience comments

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Appendix 5b. Demographic Information Questions used to determine Inclusion and Exclusion of Participants

1. Do you have a diagnosis of Type 1 diabetes?
2. Do you have a diagnosis of Type 2 diabetes?
3. What age are you?
4. What is your gender?
5. What is your ethnicity?
6. What is your current country of residence?
7. Have you made use of NHS Services before?
8. What is the highest level of education that you have completed?
9. What is your current employment status?
10. How many years has it been since you were diagnosed with type 1 diabetes?
11. How do you monitor your blood glucose levels?
12. Have you ever had a diagnosis of an eating disorder?
13. Do you have a diagnosis of or are experiencing significant mental health issues?
14. Do you have a diagnosis of or are experiencing significant mental health issues?

Appendix 6. Recruitment Poster



Faculty of Science, Engineering and Social Sciences
Canterbury Christ Church University

DO YOU HAVE TYPE 1 DIABETES?

...AND WANT TO
PARTICIPATE IN RESEARCH?

We are exploring the
relationships between
self-criticism and
perfectionism in
diabetes distress

INTERESTED?

To find out more please click the link
attached to this flyer or contact principal
researcher, Maeve:
mh997@canterbury.ac.uk

AM I ELIGIBLE TO PARTICIPATE?

WE ARE LOOKING
FOR:

ADULTS AGED 18+

WITH A TYPE 1
DIABETES
DIAGNOSIS

HAVE HAD TYPE 1
DIABETES
DIAGNOSIS FOR AT
LEAST ONE YEAR

SELF-MANAGING
THEIR OWN
DIABETES CARE AND
USING INSULIN FOR
GLYCAEMIC CONTROL

RECEIVING SUPPORT
AND/OR MEDICATION
FROM UK HEALTHCARE
SERVICES

HAVE NOT HAD A
DIAGNOSIS OF AN
EATING DISORDER

ARE NOT ENGAGING
IN SUBSTANCE
MISUSE

DO NOT HAVE A
DIAGNOSIS OF OR
ARE EXPERIENCING
SIGNIFICANT
MENTAL HEALTH
ISSUES

Appendix 7. Diabetes Charity Recruitment

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Appendix 8. Diabetes-related distress scale in Type 1 Diabetes (T1-DDS; Fisher et al., 2015)

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Appendix 9. Frost Multi-dimensional Perfectionism Scale (FMPS; Frost et al., 1990)

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**Appendix 10. Forms of Self-Criticising/Attacking & Self-Reassuring Scale (FSCRS;
Gilbert et al., 2004)**

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Appendix 11. Perceived Diabetes Self-Management Scale (PDSMS; Wallston, Rothman & Cherrington, 2007)

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Appendix 12. Powerlessness, Inadequate Self, Maladaptive Perfectionism Mediation

Model : 4
Y : P
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6453	.4165	1.2059	63.8778	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	2.1098	.2393	8.8151	.0000	1.6375	2.5820
IS	.0940	.0143	6.5920	.0000	.0658	.1221

ZMP	.3016	.1248	2.4174	.0166	.0554	.5478
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6304	.3974	1.2383	118.7173	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7459	.1886	9.2590	.0000	1.3738	2.1180
IS	.1170	.0107	10.8957	.0000	.0958	.1382

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1170	.0107	10.8957	.0000	.0958	.1382
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0940	.0143	6.5920	.0000	.0658	.1221
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0230	.0102	.0038	.0438	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 13. Management Distress, Inadequate Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : MD
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4374	.1913	.9790	21.1737	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.4220	.2157	6.5938	.0000	.9964	1.8475
IS	.0543	.0128	4.2321	.0000	.0290	.0797

ZMP	.0950	.1124	.8448	.3994	-.1269	.3168
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4337	.1881	.9775	41.7001	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3074	.1675	7.8040	.0000	.9768	1.6380
IS	.0616	.0095	6.4576	.0000	.0428	.0804

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0616	.0095	6.4576	.0000	.0428	.0804	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0543	.0128	4.2321	.0000	.0290	.0797	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0073	.0095	-.0112	.0259		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 14. Hypoglycaemia Distress, Inadequate Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : HD
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4055	.1644	1.4161	17.6129	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI

constant	2.1416	.2594	8.2574	.0000	1.6298	2.6534
IS	.0210	.0154	1.3568	.1766	-.0095	.0514
ZMP	.4581	.1352	3.3882	.0009	.1913	.7248

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3329	.1108	1.4985	22.4394	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.5889	.2074	7.6602	.0000	1.1796	1.9982
IS	.0560	.0118	4.7370	.0000	.0326	.0793

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0560	.0118	4.7370	.0000	.0326	.0793	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0210	.0154	1.3568	.1766	-.0095	.0514	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0350	.0101	.0157	.0553		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95

Number of bootstrap samples for percentile bootstrap confidence intervals:
--

5000

----- END MATRIX -----

Appendix 15. Negative Social Perceptions, Inadequate Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : NSP
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4153	.1725	1.5805	18.6535	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	1.9817	.2740	7.2327	.0000	1.4411	2.5224
IS	.0168	.0163	1.0304	.3042	-.0154	.0490

ZMP	.5408	.1428	3.7867	.0002	.2590	.8227
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3259	.1062	1.6976	21.3831	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3292	.2208	6.0205	.0000	.8936	1.7648
IS	.0581	.0126	4.6242	.0000	.0333	.0829

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
	Effect	se	t	p	LLCI	ULCI
	.0581	.0126	4.6242	.0000	.0333	.0829
Direct effect of X on Y						
	Effect	se	t	p	LLCI	ULCI
	.0168	.0163	1.0304	.3042	-.0154	.0490
Indirect effect(s) of X on Y:						
	Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0413	.0118	.0200	.0659		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 16. Eating Distress, Inadequate Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : ED
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4659	.2171	1.2696	24.8135	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8988	.2456	7.7321	.0000	1.4142	2.3834
IS	.0523	.0146	3.5787	.0004	.0235	.0812

ZMP	.2711	.1280	2.1178	.0356	.0185	.5237
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4444	.1974	1.2942	44.2846	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.5717	.1928	8.1535	.0000	1.1914	1.9521
IS	.0730	.0110	6.6547	.0000	.0514	.0947

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0730	.0110	6.6547	.0000	.0514	.0947	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0523	.0146	3.5787	.0004	.0235	.0812	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0207	.0124	-.0028	.0462		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 17. Physician Distress, Inadequate Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : PD
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4274	.1827	1.8275	20.0003	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI

constant	1.4782	.2946	5.0171	.0000	.8968	2.0596
IS	.0755	.0175	4.3027	.0000	.0409	.1101
ZMP	.0873	.1536	.5686	.5703	-.2157	.3904

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4256	.1812	1.8206	39.8270	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3728	.2286	6.0044	.0000	.9217	1.8240
IS	.0822	.0130	6.3109	.0000	.0565	.1079

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0822	.0130	6.3109	.0000	.0565	.1079	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0755	.0175	4.3027	.0000	.0409	.1101	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0067	.0129	-.0168	.0335		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:
95

Number of bootstrap samples for percentile bootstrap confidence intervals:	
	5000

----- END MATRIX -----

Appendix 18. Friends and Family Distress, Inadequate Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : FFD
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:							
ZMP							
Model Summary							
R	R-sq	MSE	F	df1	df2	p	
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000	
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872	
IS	.0764	.0063	12.0691	.0000	.0639	.0889	

OUTCOME VARIABLE:							
FFD							
Model Summary							
R	R-sq	MSE	F	df1	df2	p	
.3325	.1106	1.2757	11.1242	2.0000	179.0000	.0000	

Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8550	.2462	7.5356	.0000	1.3692	2.3408
IS	.0067	.0147	.4603	.6459	-.0222	.0357
ZMP	.4083	.1283	3.1822	.0017	.1551	.6615

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.2454	.0602	1.3404	11.5373	1.0000	180.0000	.0008
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3623	.1962	6.9444	.0000	.9752	1.7494
IS	.0379	.0112	3.3967	.0008	.0159	.0600

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0379	.0112	3.3967	.0008	.0159	.0600
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0067	.0147	.4603	.6459	-.0222	.0357
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0312	.0093	.0131	.0498	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	
	5000

----- END MATRIX -----

Appendix 19. Powerlessness, Hated Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : P
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5739	.3294	1.3859	43.9532	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	3.2058	.1339	23.9362	.0000	2.9415	3.4701
HS	.1072	.0281	3.8153	.0002	.0518	.1627
ZMP	.6483	.1128	5.7464	.0000	.4256	.8709

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4535	.2056	1.6325	46.5965	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.9300	.1357	21.5913	.0000	2.6622	3.1978
HS	.1835	.0269	6.8262	.0000	.1305	.2365

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1835	.0269	6.8262	.0000	.1305	.2365
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1072	.0281	3.8153	.0002	.0518	.1627
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0763	.0186	.0442	.1172	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 20. Management Distress, Hated Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : MD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4244	.1801	.9926	19.6576	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	1.9449	.1133	17.1586	.0000	1.7212	2.1685

HS	.0928	.0238	3.9004	.0001	.0458	.1397
ZMP	.2372	.0955	2.4846	.0139	.0488	.4256

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3896	.1518	1.0212	32.2160	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8439	.1073	17.1803	.0000	1.6321	2.0557
HS	.1207	.0213	5.6759	.0000	.0787	.1626

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1207	.0213	5.6759	.0000	.0787	.1626	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0928	.0238	3.9004	.0001	.0458	.1397	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0279	.0129	.0052	.0564		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	

----- END MATRIX -----

Appendix 21. Hypoglycaemia Distress, Hated Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : HD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4370	.1909	1.3712	21.1221	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.1909	.1332	16.4464	.0000	1.9280	2.4538
HS	.0779	.0280	2.7867	.0059	.0227	.1331

ZMP	.4330	.1122	3.8590	.0002	.2116	.6544
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3516	.1236	1.4770	25.3926	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.0067	.1291	15.5463	.0000	1.7520	2.2614
HS	.1288	.0256	5.0391	.0000	.0784	.1793

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1288	.0256	5.0391	.0000	.0784	.1793	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0779	.0280	2.7867	.0059	.0227	.1331	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0510	.0147	.0233	.0820		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 22. Negative Social Perceptions, Hated Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : NSP
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4482	.2009	1.5263	22.4975	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.9560	.1405	13.9171	.0000	1.6787	2.2334
HS	.0806	.0295	2.7316	.0069	.0224	.1387

ZMP	.4865	.1184	4.1095	.0001	.2529	.7201
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3542	.1255	1.6610	25.8278	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7490	.1369	12.7778	.0000	1.4789	2.0191
HS	.1378	.0271	5.0821	.0000	.0843	.1913

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1378	.0271	5.0821	.0000	.0843	.1913
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0806	.0295	2.7316	.0069	.0224	.1387
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0572	.0168	.0274	.0924	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 23. Eating Distress, Hated Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : ED
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4787	.2292	1.2500	26.6059	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.3416	.1272	18.4095	.0000	2.0906	2.5926
HS	.1061	.0267	3.9768	.0001	.0535	.1588
ZMP	.3762	.1071	3.5114	.0006	.1648	.5876

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:							
ED							
Model Summary							
R	R-sq	MSE	F	df1	df2	p	
.4196	.1761	1.3287	38.4607	1.0000	180.0000	.0000	
Model							
	coeff	se	t	p	LLCI	ULCI	
constant	2.1815	.1224	17.8190	.0000	1.9399	2.4231	
HS	.1504	.0243	6.2017	.0000	.1025	.1983	

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1504	.0243	6.2017	.0000	.1025	.1983	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1061	.0267	3.9768	.0001	.0535	.1588	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0443	.0150	.0162	.0755		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 24. Physician Distress, Hated Self, and Maladaptive Perfectionism

Mediation

Model : 4
Y : PD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4143	.1716	1.8521	18.5432	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.2022	.1548	14.2238	.0000	1.8967	2.5077
HS	.1295	.0325	3.9856	.0001	.0654	.1936

ZMP	.2837	.1304	2.1757	.0309	.0264	.5411
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3869	.1497	1.8905	31.6954	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.0815	.1460	14.2535	.0000	1.7934	2.3697
HS	.1629	.0289	5.6299	.0000	.1058	.2199

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1629	.0289	5.6299	.0000	.1058	.2199
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1295	.0325	3.9856	.0001	.0654	.1936
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0334	.0183	.0000	.0713	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 25. Friends and Family Distress, Hated Self, and Maladaptive

Perfectionism Mediation

Model : 4
Y : FFD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3371	.1137	1.2712	11.4764	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8724	.1283	14.5975	.0000	1.6193	2.1255
HS	.0247	.0269	.9160	.3609	-.0285	.0778

ZMP	.4011	.1080	3.7121	.0003	.1879	.6143
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.2131	.0454	1.3615	8.5651	1.0000	180.0000	.0039
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7018	.1239	13.7319	.0000	1.4572	1.9463
HS	.0718	.0245	2.9266	.0039	.0234	.1203

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0718	.0245	2.9266	.0039	.0234	.1203
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0247	.0269	.9160	.3609	-.0285	.0778
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0472	.0122	.0249	.0727	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 26. Confidence in diabetes self-management, Inadequate Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : PDMSTot
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5453	.2973	32.2788	37.8702	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	32.0013	1.2383	25.8438	.0000	29.5579	34.4448
IS	-.3623	.0737	-4.9132	.0000	-.5078	-.2168

ZMP	-1.3261	.6455	-2.0546	.0414	-2.5998	-.0525
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5299	.2808	32.8565	70.2616	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	33.6014	.9713	34.5949	.0000	31.6848	35.5180
IS	-.4636	.0553	-8.3822	.0000	-.5728	-.3545

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.4636	.0553	-8.3822	.0000	-.5728	-.3545
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.3623	.0737	-4.9132	.0000	-.5078	-.2168
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	-.1013	.0495	-.2021	-.0071	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 27. Confidence in diabetes self-management, Hated Self, and Maladaptive Perfectionism Mediation

Model: 4
Y : PDMSTot
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5342	.2854	32.8284	35.7375	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	28.5320	.6518	43.7722	.0000	27.2458	29.8183
HS	-.6228	.1368	-4.5539	.0000	-.8927	-.3529

ZMP	-2.2659	.5491	-4.1270	.0001	-3.3494	-1.1825
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4662	.2174	35.7523	49.9909	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	29.4960	.6351	46.4458	.0000	28.2429	30.7491
HS	-.8895	.1258	-7.0704	.0000	-1.1377	-.6412

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.8895	.1258	-7.0704	.0000	-1.1377	-.6412
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.6228	.1368	-4.5539	.0000	-.8927	-.3529
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	-.2666	.0774	-.4302	-.1291	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 28. Powerlessness, Inadequate Self, and Adaptive Perfectionism Mediation

Model : 4
Y : P
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6304	.3975	1.2452	59.0372	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	1.7483	.1905	9.1752	.0000	1.3723	2.1242
IS	.1168	.0109	10.7495	.0000	.0954	.1383
ZAP	.0104	.1038	.1003	.9202	-.1944	.2152

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6304	.3974	1.2383	118.7173	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7459	.1886	9.2590	.0000	1.3738	2.1180
IS	.1170	.0107	10.8957	.0000	.0958	.1382

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1170	.0107	10.8957	.0000	.0958	.1382	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1168	.0109	10.7495	.0000	.0954	.1383	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	.0001	.0017	-.0037	.0039		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	
	5000

----- END MATRIX -----

Appendix 29. Management Distress, Inadequate Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : MD
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4341	.1885	.9825	20.7851	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3134	.1693	7.7600	.0000	.9794	1.6474
IS	.0612	.0097	6.3409	.0000	.0422	.0803

ZAP	.0265	.0922	.2876	.7740	-.1554	.2084
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4337	.1881	.9775	41.7001	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3074	.1675	7.8040	.0000	.9768	1.6380
IS	.0616	.0095	6.4576	.0000	.0428	.0804

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0616	.0095	6.4576	.0000	.0428	.0804
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0612	.0097	6.3409	.0000	.0422	.0803
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZAP	.0004	.0015	-.0033	.0033	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 30. Hypoglycaemia Distress, Inadequate Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : HD
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3396	.1153	1.4994	11.6646	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.6135	.2091	7.7167	.0000	1.2009	2.0260
IS	.0544	.0119	4.5609	.0000	.0309	.0779

ZAP	.1082	.1139	.9498	.3435	-.1166	.3329
-----	-------	-------	-------	-------	--------	-------

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3329	.1108	1.4985	22.4394	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.5889	.2074	7.6602	.0000	1.1796	1.9982
IS	.0560	.0118	4.7370	.0000	.0326	.0793

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0560	.0118	4.7370	.0000	.0326	.0793	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0544	.0119	4.5609	.0000	.0309	.0779	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	.0016	.0020	-.0022	.0061		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 31. Negative Social Perceptions, Inadequate Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : NSP
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3272	.1071	1.7054	10.7307	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3176	.2230	5.9090	.0000	.8776	1.7577
IS	.0589	.0127	4.6276	.0000	.0338	.0840

ZAP	-.0510	.1215	-.4197	.6752	-.2907	.1887
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3259	.1062	1.6976	21.3831	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3292	.2208	6.0205	.0000	.8936	1.7648
IS	.0581	.0126	4.6242	.0000	.0333	.0829

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0581	.0126	4.6242	.0000	.0333	.0829	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0589	.0127	4.6276	.0000	.0338	.0840	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	-.0007	.0021	-.0058	.0026		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 32. Eating Distress, Inadequate Self, and Adaptive Perfectionism Mediation

Model : 4
Y : ED
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4445	.1976	1.3012	22.0345	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.5680	.1948	8.0499	.0000	1.1836	1.9523
IS	.0733	.0111	6.5954	.0000	.0514	.0952
ZAP	-.0166	.1061	-.1565	.8758	-.2260	.1928

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4444	.1974	1.2942	44.2846	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.5717	.1928	8.1535	.0000	1.1914	1.9521
IS	.0730	.0110	6.6547	.0000	.0514	.0947

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0730	.0110	6.6547	.0000	.0514	.0947	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0733	.0111	6.5954	.0000	.0514	.0952	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	-.0002	.0019	-.0045	.0037		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 33. Physician Distress, Inadequate Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : PD
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4261	.1816	1.8299	19.8535	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3810	.2310	5.9788	.0000	.9252	1.8368

IS	.0816	.0132	6.1959	.0000	.0556	.1076
ZAP	.0362	.1258	.2879	.7737	-.2121	.2845

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4256	.1812	1.8206	39.8270	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3728	.2286	6.0044	.0000	.9217	1.8240
IS	.0822	.0130	6.3109	.0000	.0565	.1079

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0822	.0130	6.3109	.0000	.0565	.1079	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0816	.0132	6.1959	.0000	.0556	.1076	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	.0005	.0021	-.0047	.0045		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	

----- END MATRIX -----

Appendix 34. Friends and Family Distress, Inadequate Self, and Adaptive Perfectionism Mediation

Model : 4
Y : FFD
X : IS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.1370	.0188	.6421	3.4449	1.0000	180.0000	.0651
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.2266	.1358	-1.6690	.0968	-.4946	.0413
IS	.0144	.0077	1.8560	.0651	-.0009	.0296

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.2538	.0644	1.3419	6.1619	2.0000	179.0000	.0026

Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3842	.1978	6.9978	.0000	.9938	1.7745
IS	.0366	.0113	3.2402	.0014	.0143	.0588
ZAP	.0963	.1077	.8940	.3725	-.1163	.3089

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.2454	.0602	1.3404	11.5373	1.0000	180.0000	.0008
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.3623	.1962	6.9444	.0000	.9752	1.7494
IS	.0379	.0112	3.3967	.0008	.0159	.0600

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0379	.0112	3.3967	.0008	.0159	.0600	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0366	.0113	3.2402	.0014	.0143	.0588	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	.0014	.0019	-.0022	.0055		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:

	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	
	5000

----- END MATRIX -----

Appendix 35. Powerlessness, Hated Self, and Adaptive Perfectionism Mediation

Model : 4
Y : P
X : HS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.0417	.0017	.6533	.3129	1.0000	180.0000	.5766
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.0344	.0858	-.4006	.6892	-.2038	.1350
HS	.0095	.0170	.5593	.5766	-.0240	.0431

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4594	.2110	1.6305	23.9367	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.9345	.1357	21.6278	.0000	2.6667	3.2022
HS	.1823	.0269	6.7784	.0000	.1292	.2353
ZAP	.1301	.1178	1.1045	.2709	-.1023	.3624

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
P						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4535	.2056	1.6325	46.5965	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.9300	.1357	21.5913	.0000	2.6622	3.1978
HS	.1835	.0269	6.8262	.0000	.1305	.2365

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1835	.0269	6.8262	.0000	.1305	.2365
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1823	.0269	6.7784	.0000	.1292	.2353
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZAP	.0012	.0032	-.0045	.0085	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 36. Management Distress, Hated Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : MD
X : HS
M : ZAP
Sample
Size: 182

OUTCOME VARIABLE:						
ZAP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.0417	.0017	.6533	.3129	1.0000	180.0000	.5766
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.0344	.0858	-.4006	.6892	-.2038	.1350
HS	.0095	.0170	.5593	.5766	-.0240	.0431

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3946	.1557	1.0222	16.5057	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	1.8468	.1074	17.1915	.0000	1.6349	2.0588

HS	.1199	.0213	5.6304	.0000	.0779	.1619
ZAP	.0848	.0932	.9091	.3645	-.0992	.2687

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
MD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3896	.1518	1.0212	32.2160	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8439	.1073	17.1803	.0000	1.6321	2.0557
HS	.1207	.0213	5.6759	.0000	.0787	.1626

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1207	.0213	5.6759	.0000	.0787	.1626	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1199	.0213	5.6304	.0000	.0779	.1619	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZAP	.0008	.0023	-.0049	.0051		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	

----- END MATRIX -----

Appendix 37. Hypoglycaemia Distress, Hated Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : HD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4370	.1909	1.3712	21.1221	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.1909	.1332	16.4464	.0000	1.9280	2.4538
HS	.0779	.0280	2.7867	.0059	.0227	.1331

ZMP	.4330	.1122	3.8590	.0002	.2116	.6544
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
HD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3516	.1236	1.4770	25.3926	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.0067	.1291	15.5463	.0000	1.7520	2.2614
HS	.1288	.0256	5.0391	.0000	.0784	.1793

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.1288	.0256	5.0391	.0000	.0784	.1793	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
.0779	.0280	2.7867	.0059	.0227	.1331	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	.0510	.0147	.0233	.0820		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	
	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	
	5000

----- END MATRIX -----

Appendix 38. Negative Social Perceptions, Hated Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : NSP
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4482	.2009	1.5263	22.4975	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.9560	.1405	13.9171	.0000	1.6787	2.2334
HS	.0806	.0295	2.7316	.0069	.0224	.1387

ZMP	.4865	.1184	4.1095	.0001	.2529	.7201
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
NSP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3542	.1255	1.6610	25.8278	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7490	.1369	12.7778	.0000	1.4789	2.0191
HS	.1378	.0271	5.0821	.0000	.0843	.1913

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1378	.0271	5.0821	.0000	.0843	.1913
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0806	.0295	2.7316	.0069	.0224	.1387
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0572	.0168	.0274	.0924	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 39. Eating Distress, Hated Self, and Adaptive Perfectionism Mediation

Model : 4
Y : ED
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4787	.2292	1.2500	26.6059	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	2.3416	.1272	18.4095	.0000	2.0906	2.5926
HS	.1061	.0267	3.9768	.0001	.0535	.1588
ZMP	.3762	.1071	3.5114	.0006	.1648	.5876

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
ED						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4196	.1761	1.3287	38.4607	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.1815	.1224	17.8190	.0000	1.9399	2.4231
HS	.1504	.0243	6.2017	.0000	.1025	.1983

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1504	.0243	6.2017	.0000	.1025	.1983
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1061	.0267	3.9768	.0001	.0535	.1588
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0443	.0150	.0162	.0755	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 40. Physician Distress, Hated Self, and Adaptive Perfectionism Mediation

Model : 4
Y : PD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4143	.1716	1.8521	18.5432	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.2022	.1548	14.2238	.0000	1.8967	2.5077
HS	.1295	.0325	3.9856	.0001	.0654	.1936

ZMP	.2837	.1304	2.1757	.0309	.0264	.5411
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3869	.1497	1.8905	31.6954	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	2.0815	.1460	14.2535	.0000	1.7934	2.3697
HS	.1629	.0289	5.6299	.0000	.1058	.2199

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1629	.0289	5.6299	.0000	.1058	.2199
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.1295	.0325	3.9856	.0001	.0654	.1936
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0334	.0183	.0000	.0713	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 41. Friends and Family Distress, Hated Self, and Adaptive Perfectionism

Mediation

Model : 4
Y : FFD
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.3371	.1137	1.2712	11.4764	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.8724	.1283	14.5975	.0000	1.6193	2.1255
HS	.0247	.0269	.9160	.3609	-.0285	.0778

ZMP	.4011	.1080	3.7121	.0003	.1879	.6143
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***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
FFD						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.2131	.0454	1.3615	8.5651	1.0000	180.0000	.0039
Model						
	coeff	se	t	p	LLCI	ULCI
constant	1.7018	.1239	13.7319	.0000	1.4572	1.9463
HS	.0718	.0245	2.9266	.0039	.0234	.1203

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0718	.0245	2.9266	.0039	.0234	.1203
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
.0247	.0269	.9160	.3609	-.0285	.0778
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	.0472	.0122	.0249	.0727	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 42. Confidence in diabetes management, Inadequate Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : PDMSTot
X : IS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.6688	.4473	.4304	145.6641	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	-1.2066	.1112	-10.8531	.0000	-1.4259	-.9872
IS	.0764	.0063	12.0691	.0000	.0639	.0889

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5453	.2973	32.2788	37.8702	2.0000	179.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	32.0013	1.2383	25.8438	.0000	29.5579	34.4448
IS	-.3623	.0737	-4.9132	.0000	-.5078	-.2168
ZMP	-1.3261	.6455	-2.0546	.0414	-2.5998	-.0525

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5299	.2808	32.8565	70.2616	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	33.6014	.9713	34.5949	.0000	31.6848	35.5180
IS	-.4636	.0553	-8.3822	.0000	-.5728	-.3545

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.4636	.0553	-8.3822	.0000	-.5728	-.3545
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
-.3623	.0737	-4.9132	.0000	-.5078	-.2168
Indirect effect(s) of X on Y:					
Effect	BootSE	BootLLCI	BootULCI		
ZMP	-.1013	.0495	-.2021	-.0071	

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----

Appendix 43. Confidence in diabetes management, Hated Self, and Maladaptive Perfectionism Mediation

Model : 4
Y : PDMSTot
X : HS
M : ZMP
Sample
Size: 182

OUTCOME VARIABLE:						
ZMP						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4724	.2231	.6050	51.7045	1.0000	180.0000	.0000
s						
Model						
coeff	se	t	p	LLCI	ULCI	
constant	-.4254	.0826	-5.1498	.0000	-.5884	-.2624
HS	.1177	.0164	7.1906	.0000	.0854	.1500

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.5342	.2854	32.8284	35.7375	2.0000	179.0000	.0000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	28.5320	.6518	43.7722	.0000	27.2458	29.8183

HS	-.6228	.1368	-4.5539	.0000	-.8927	-.3529
ZMP	-2.2659	.5491	-4.1270	.0001	-3.3494	-1.1825

***** TOTAL EFFECT MODEL *****

OUTCOME VARIABLE:						
PDMSTot						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.4662	.2174	35.7523	49.9909	1.0000	180.0000	.0000
Model						
	coeff	se	t	p	LLCI	ULCI
constant	29.4960	.6351	46.4458	.0000	28.2429	30.7491
HS	-.8895	.1258	-7.0704	.0000	-1.1377	-.6412

***** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y *****

Total effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
-.8895	.1258	-7.0704	.0000	-1.1377	-.6412	
Direct effect of X on Y						
Effect	se	t	p	LLCI	ULCI	
-.6228	.1368	-4.5539	.0000	-.8927	-.3529	
Indirect effect(s) of X on Y:						
Effect	BootSE	BootLLCI	BootULCI			
ZMP	-.2666	.0774	-.4302	-.1291		

***** ANALYSIS NOTES AND ERRORS *****

Level of confidence for all confidence intervals in output:	95
Number of bootstrap samples for percentile bootstrap confidence intervals:	5000

----- END MATRIX -----