Exploring the role of self-compassion in adolescent wellbeing and type 1 diabetes management.

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Thesis Portfolio Abstract

Self-compassion – a self-relating style characterised by kindness, acceptance, and the motivation to soothe emotional distress – has been empirically validated as a correlate of optimal psychological functioning, wellbeing, and physical health among adults. However, literature examining the relationship between self-compassion and positive outcomes during adolescence is in its infancy. The current research portfolio was thus designed to examine self-compassion as a potential intrapersonal resilience resource that may help young people navigate transitions and challenges during the adolescent period, including living with a chronic illness.

The association between self-compassion and subjective wellbeing in adolescents was estimated through meta-analytic modelling, while self-compassion was empirically examined as a correlate of effective disease management in adolescents with type 1 diabetes. The meta-analysis revealed a large, positive correlation between self-compassion and subjective wellbeing (r = .46) in studies with adolescents aged 10 to 19. Among a sample of 52 adolescents (aged 11 to 18) with established type 1 diabetes, self-compassion was found to predict improved glycaemic control and regimen adherence, outcomes linked to a reduced risk of short- and long-term health complications. Impaired self-soothing was also discovered to mediate the relationship between emotional distress and poorer diabetes regimen adherence.

A compassionate self-approach thus appears to be linked with the subjective experience of wellbeing among adolescents, as well as having specific implications for behavioural and physiological resilience among those living with a chronic health condition. As a trainable resource, self-compassion may provide a valuable tool for promoting positive mental and physical health among young people.

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Introduction to the Thesis Portfolio

> *A mute fermentation warns of danger's approach. A change in humour, frequent anger, a mind in constant agitation, makes the child almost unmanageable. He becomes deaf to the voice that made him docile. His feverishness turns him into a lion. He disregards his guide; he no longer wishes to be governed.*
>
> (Rousseau, 1762/1979, p. 175)

This is how Jean-Jacques Rousseau described the onset of adolescence in his classic, eighteenth-century treatise on the nature of man and learning, *Emile: Or on education*. Theories regarding adolescence may have moved on since Rousseau's time, but this transitional phase of life continues to be regarded as a period of physical and psychological transformation, marked by rapidly changing biology, identity, and social expectations (Arnett, 1999). This thesis portfolio acknowledges a growing body of evidence conceptualising adolescence as a discrete developmental phase, distinct from both childhood and adulthood (e.g., Blakemore, 2018; Giedd, 2008). In adopting an exclusive focus on the adolescent years, the research presented herewith examines a population whose wellbeing and functioning appears ripe for optimisation, if only we can identify the protective factors that contribute to resilience and flourishing.

This research portfolio proffers **self-compassion** as one such potential resilience-promoting resource among youth. Put simply, self-compassion can be envisaged as compassion turned inward; that is, an inner-directed attitude of kindness, acceptance, and reassurance of the kind commonly provided to others in

moments of pain and suffering (Neff, 2003a). As a theoretical construct, self-compassion originates from Buddhist philosophy, which considers false any implied dichotomy between self- and other-directed affinity (Kumar, 2002). Literature produced by Western psychologists has generally adopted Kristin Neff's (2003a) definition, which comprises three interrelated constituents: self-kindness (a warm, non-judgmental attitude toward the self), common humanity (a capacity to recognise suffering as a shared human experience), and mindfulness (an openness to the present moment that cultivates distress tolerance).

For conceptual clarity, Neff's (2003a) definition of self-compassion has been implemented within this portfolio. However, the present author acknowledges the continued absence of academic consensus regarding how this construct is defined. Reviewers synthesising existing literature note that compassion (and, by extension, self-compassion) is a complex, multi-dimensional construct comprising affective, cognitive, and motivational components (Strauss et al., 2016). Self-compassion does not exist as a tangible, concrete entity (i.e., it is non-falsifiable), thus it is possible that existing conceptualisations capture only what about, or what related to it, is readily measurable. There is also a recognised overlap between self-compassion and humanistic self-concepts, in particular Rogers' (1961) unconditional positive regard and Ellis' (1973) unconditional self-acceptance (Barnard & Curry, 2011).

While accepting the essential similarity between the caring, non-judgmental stance of humanistic approaches and the self-kindness component of Neff's (2003a) model, the present author contends that self-compassion (in its entirety) may be a broader construct. In illustration, Webb and Forman (2013) have reported a large but imperfect association between self-compassion and self-acceptance ($r = .47$, $p = .01$), inferring a degree of conceptual distinction. Other scholars suggest that self-

compassion represents an emotion-regulation strategy through which self-acceptance might be cultivated, positioning it as an active, transformative process that nurtures a more balanced (cognitive) interpretation of painful affective experiences (e.g., Ying 2009). Plainly, extensive further empirical investigation is required to consolidate our understanding of self-compassion, and its relationship to other self-concepts. Given the limited space to explore these issues further within this thesis portfolio, the current scientific discord regarding how self-compassion is defined must be borne in mind as a limitation applicable to all presented data and conclusions.

Having been empirically linked to a range of positive psychological outcomes and personality traits in adults (Neff, Kirkpatrick, & Rude, 2007; Neff, Rude, & Kirkpatrick, 2007), self-compassion (as defined by Neff (2003a)) is now beginning to be examined as a correlate of adaptive functioning among children and young people (e.g., Bluth & Blanton, 2015; Neff & McGehee, 2010). The present body of work adds to this endeavour, in acknowledgement of the need to identify protective intrapersonal factors that can be promoted among youth. Given the evidence that mental health trajectories may be established during adolescence, such resilience resources may contribute to both concurrent and longer-term health and wellbeing (Giedd, Keshavan, & Paus, 2008).

The portfolio opens with a systematic review (with meta-analysis) examining the pooled association between self-compassion and subjective wellbeing (SWB) in studies with adolescents. An empirical paper follows, which narrows the investigation of self-compassion correlates to a youth population with chronic illness: type 1 diabetes. The portfolio also contains chapters outlining additional methods and results, along with a general discussion summarising the overall findings and contribution to the field.

Chapter 1

Systematic Review

The following paper is intended for submission to the journal *Applied Psychology: Health and Well-being*. Author Guidelines for the selected journal are provided in Appendix A. For the purposes of the thesis portfolio, tables and figures have been included within the text to assist reader flow. These will be removed and submitted separately (as per Author Guidelines) prior to journal submission.

Please note, due to the margins required for thesis binding, the following paper appears to exceed the journal page limit (30 pages). Applying margins of the size mandated by the journal reduces the page count to the prescribed limit.

The relationship between self-compassion and subjective wellbeing in adolescents – a systematic review with meta-analysis.

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The relationship between self-compassion and subjective wellbeing in adolescents – a systematic review with meta-analysis.

Abstract

Background: Self-compassion – an inner dialogue characterised by warmth, acceptance, and reassurance – has been empirically validated as a correlate of positive functioning and wellbeing in adults. This meta-analysis examines the relationship between self-compassion and subjective wellbeing among adolescents, a population whose mental health might be malleable to optimisation via psychological resilience resources.

Methods: A systematic literature search identified quantitative, peer-reviewed studies reporting on the cross-sectional association between self-compassion and subjective wellbeing in adolescents aged 10 to 19. Pooled effect size estimates for subjective wellbeing and constituents (positive affect, negative affect, life satisfaction) were calculated using a random-effects model. Study quality was examined as a potential moderator.

Results: Nine studies were identified for inclusion, with an overall sample N = 1345. A large, positive association was identified between self-compassion and overall subjective wellbeing among adolescents (r = .46). The magnitude of averaged effects was larger for life satisfaction (r = .49) and negative affect (r = -.47), relative to positive affect (r = .33). Study quality did not moderate these associations, with most studies showing low risk of bias.

Conclusions: Self-compassion may provide a valuable tool for understanding and promoting positive mental health and wellbeing among young people.

Keywords: self-compassion; adolescent; wellbeing; affect; life satisfaction; meta-analysis.

There is increasing recognition within the scientific community that a state of positive mental wellbeing represents a personal objective for many individuals. Historically, wellbeing has tended to be conceptualised by means of the presence, absence, or severity of psychological distress (Westerhof & Keyes, 2010). However, the positive psychology movement has long-championed the notion that wellbeing is, of itself, a distinct and meaningful mental health outcome (Bradburn, 1969; Seligman, 2011). A growing evidence-base supports this proposition, identifying psychopathology and positive mental health as operating along distinct continua that are only modestly correlated (Keyes, 2005; Lamers, Westerhof, Glas, & Bohlmeijer, 2015). This *dual-factor model* is advocated by the World Health Organization (WHO), whose constitution defines health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (WHO, 1948, p.1).

The discrete goal of optimal wellbeing may be of particular significance during the developmental phase of adolescence. These years are sometimes characterised as a time of *storm and stress*, involving the rapid maturation of biophysiological systems and development of key socio-cognitive-emotional competencies (e.g., identity differentiation, executive functioning, metacognition, affect regulation) (Arnett, 1999; Blakemore & Choudhury, 2006; Erikson, 1968; Giedd, 2008; Spear, 2000). Occurring in tandem with an intensification of environmental pressures (e.g., school examinations, extra-curricular activities, changing family and peer dynamics), this transitional period seems to foster a vulnerability to emotional distress that is reflected in the increased incidence of various mental health conditions among adolescents, including depression and anxiety disorders (Grant et al., 2003). Consequently, a substantial body of research

has attended to risk and protective factors for psychopathology in youth (e.g., Grant, Compas, Thurm, McMahon, & Gipson, 2004; Marsh, Chan, & MacBeth, 2017).

The focus on adverse mental health outcomes risks a myopia regarding the potency of adolescence as a window of opportunity to enhance positive emotional wellbeing. Arnett (1999) notes that many individuals weather the adolescent period with minimal strain, exhibiting a resilience that enables them to "roll with life's punches" (Leary, Tate, Adams, Allen, & Hancock, 2007, p.887). Furthermore, the developing brain possesses a malleability that means this transition is an ideal time to promote acquisition of positive coping skills that may contribute to optimal functioning and mental health (Blakemore & Choudhury, 2006; Giedd, 2008). Understanding the mechanisms that help young people navigate the challenges of adolescence is therefore an important end-point for research – not only to reduce the risk of psychopathology but also to support adolescents to flourish and thrive.

Self-compassion is one explanatory mechanism posited as a potential resource for improved wellbeing, both among adults and adolescents (MacBeth & Gumley, 2012; Marsh et al., 2017; Zessin, Dickhäuser, & Garbade, 2015). Originating from Buddhist teachings, self-compassion is most-simply conceptualised as compassion turned inward. Kristin Neff (2003a) has proposed a tripartite, dimensional definition, now widely adopted within Western psychological literature. Neff's (2003a) model involves the adoption of a warm, supportive attitude to personal failings or shortcomings, which are responded to with kindness in place of harsh self-criticism. Neff further argues that self-compassionate individuals possess a capacity to situate their emotional distress within a framework of shared human suffering (instead of a unique, isolated experience), and to hold painful feelings in mindful awareness, neither avoiding nor over-identifying with them. Neff (2003b)

has utilised this definition to develop the Self-Compassion Scale (SCS), a self-report tool assessing how respondents' typically self-relate in times of distress. Most self-compassion research to date has utilised this measure, thus overtly adopting Neff's tripartite model. Other definitions of self- and other-directed compassion have been proposed: for example, Gilbert's (2017) evolutionary model conceptualises a soothing emotion-regulation system as an adaptive mechanism for alliance formation and distress tolerance, while Dryden (2013) suggests integration with the humanistic construct of unconditional self-acceptance. Despite this definitional discord, there seems to be general scholarly agreement that a compassionate self-approach may offer a helpful self-regulation strategy that invokes a safe, comforting self-to-self relational context, enabling emotional-approach coping in place of self-criticism, rumination, and suppression of painful thoughts and feelings.

Marsh et al. (2017) recently presented meta-analytic findings that appear to verify self-compassion as being protective against psychological distress in youth, reporting a strong, inverse correlation in studies utilising adolescent participants. In light of the dual-factor model of mental health, the present author argues that a meta-analysis examining positive aspects of emotional wellbeing is also required for a more comprehensive understanding of whether self-compassion is implicated in adaptive psychological functioning among adolescents.

This meta-analysis will specifically investigate the relationship between self-compassion and *subjective* wellbeing (SWB). SWB is a construct derived from the hedonic tradition, which defines wellbeing as an idiosyncratic experience comprised from the relative balance of positive and negative emotion, combined with a cognitive evaluation of being satisfied with life (Diener & Suh, 1997). This is referred to as the tripartite model of SWB and is typically evaluated through self-

report measures of positive and negative affect, and life satisfaction. SWB was selected as the focus of the present investigation in light of the limited extant literature examining relations between self-compassion and other conceptualisations of wellbeing among adolescents. Four additional citations were located in preliminary searches that expanded the sampling frame to consider alternative definitions (e.g., eudaimonic/psychological wellbeing (PWB; Ryff, 1989), or social-connectedness (Lee & Robbins, 1995)). However, only two among these reported on the baseline self-compassion/wellbeing association – one examining PWB (Sun, Chan, & Chan, 2016), the other social-connectedness (Neff & McGehee, 2010) – prohibiting any meaningful sensitivity analyses by wellbeing subtype. Reviewers thus elected to retain an exclusive focus upon SWB.

There is also an empirical basis for specific linkage between self-compassion and SWB in youth: for example, correlations with small-to-large effect sizes have been reported for the relationship between self-compassion and the affective components of SWB in adolescent samples (e.g., Bluth & Blanton, 2014; Bluth & Blanton, 2015). In a study of undergraduates, Odou and Brinker (2015) also found both increased positive affect and decreased negative affect when a depressed mood induction was followed by a self-compassionate writing task. They suggest self-compassion enables rapid processing of negative emotion through providing an alternative to rumination or suppression, and the generation of pleasant affect by enabling the sufferer to feel connected and soothed, even at times of difficulty. Furthermore, a positive association has been demonstrated between self-compassion and life satisfaction in studies of both adults and adolescents, with the generation of a hopeful, optimistic cognitive-motivational state implicated as a potential

explanatory mechanism (Bluth, Campo, Futch, & Gaylord, 2017; Wei, Liao, Ku, & Shaffer, 2011; Yang, Zhang, & Kou, 2016).

A meta-analysis examining the self-compassion/wellbeing association among adults provided comprehensive evidence of a strong correlation between self-compassion and the cognitive and negative affective components of SWB, and a moderate relationship with positive affect (Zessin et al., 2015). However, no systematic review or meta-analysis has been carried out to date to examine whether self-compassion has an equivalent relation to SWB specifically among adolescents. There is an empirical basis for possible differences in the magnitude of these associations across developmental stages; for example, Diehl, Hay, and Berg (2011) showed that ratios of positive to negative affect are higher among middle-aged adults compared to younger people. Given the potential utility of self-compassion as a resilience resource for flourishing during the adolescent phase, the aim of the present meta-analysis was thus to explore the relationship between self-compassion and SWB in the adolescent population. More specifically, answers were sought to three research questions:

1. Is there an association between self-compassion and SWB in adolescents and, if so, what is the direction and magnitude?
2. Does self-compassion relate differently to the positive affective, negative affective, and cognitive (life satisfaction) components of SWB among adolescents?
3. To what methodological quality have studies examining the self-compassion/SWB relationship in adolescents been conducted, and how does this influence any conclusions drawn?

On the basis of existing evidence, it was hypothesised that self-compassion would exhibit a positive correlation to overall SWB in adolescent participants. The direction of effects was also expected to be positive with regard to life satisfaction and positive affect, but inverse for negative affect. Specific predictions regarding effect size magnitude were not identified in advance in light of the evidence demonstrating age-related differences in SWB variables. Study quality was expected to be mixed given the emerging nature of the field.

Method

Protocol and Registration

The present meta-analysis was registered with the International Prospective Register of Systematic Reviews (www.crd.york.ac.uk/PROSPERO, record number 82657). This PROSPERO entry was considered to represent the review protocol.

Information Sources and Search Strategy

Literature searches were conducted in January 2018 (weeks two and three) using six bibliographic databases: PsycINFO, PsycARTICLES, Web of Science Core Collection, EMBASE, MEDLINE, and Applied Social Sciences Index and Abstracts (ASSIA). To locate relevant articles, the following search terms were employed in a two-component keyword strategy with Boolean operators: (self-compassion) and (adolescen* or child* or teen* or youth or juvenile or young people or young adult). Searches were limited by source type to ‘articles’ or ‘peer-reviewed’ (as per database filters available). A record of self-compassion research publications available at Kristin Neff’s website (www.self-compassion.org) and the reference list of a recent meta-analysis (Marsh et al., 2017) were also screened for additional citations.

Eligibility Criteria

Publications were selected for inclusion in accordance with the following criteria:

1. *Population*: Only studies with participants aged 10 to 19 years (inclusive) were included. This age-range mirrors the adolescent period currently specified by the WHO (2014). Studies of university/college students were excluded at the screening stage except where the title or abstract denoted inclusion of first-year/freshman only; age data for the latter was reviewed within full-text articles to determine eligibility.
2. *Measures:* Studies had to include measures of self-compassion (as defined by Neff (2003a)) and at least one of the three subjective wellbeing components – positive affect, negative affect, or life satisfaction (Diener & Suh, 1997). Studies examining other types of wellbeing (e.g., social connectedness, goal-fulfilment, or eudaimonia) were excluded, along with any that operationalised wellbeing through the measurement of psychological distress (e.g., depression, anxiety, stress). The latter criterion was applied in light of evidence that psychopathology and mental wellbeing operate along distinct continua (Lamers et al., 2015; Westerhof & Keyes, 2010).
3. *Setting:* There was no exclusion criteria for research setting (clinical or non-clinical) or country of origin.
4. *Study design:* Only studies using quantitative methodology were included. There was no restriction on particular designs but only baseline (pre-interventional) data was used from experimental studies.
5. *Statistical requirements:* Studies had to report the correlation between self-compassion and at least one SWB component in bivariate or multivariate analysis. Experimental studies with missing baseline data were included

where the required correlation(s) or raw data were provided by the author(s) upon request.

6. *Format:* Only studies published in a peer-reviewed journal with the full-text available in the English-language (original or translated) could be included due to resource restraints. There was no exclusion criteria based on publication date.

Quality (Risk of Bias) Assessment

The methodological quality of studies included for synthesis was evaluated using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh, Lawton, Gardner, & Armitage, 2011). Psychometric evaluation of this 16-item tool suggests good inter-rater and test-retest reliability, and ease of application to health-related research (Sirriyeh et al., 2011). The QATSDD was chosen for the present study to enable standardisation of quality assessment scores across included studies of varying design (e.g., cross-sectional, experimental, longitudinal). Fourteen QATSDD items apply to studies of any quantitative design, 14 to qualitative, and all 16 to studies utilising mixed-methods. For each relevant criterion, raters award a score on a scale of 0 to 3 based on guidance notes (see Appendix B). Scores are summed and expressed as a percentage of the total number of applicable criteria.

Data Extraction

Data was extracted by the first author using a bespoke extraction form. Extracted data included: study characteristics (author(s), publication year, title, country, design, setting, intervention (where relevant), outcome measures), sample characteristics (number of participants, gender (proportion of females), age (mean, standard deviation, range)), and effect sizes (correlation coefficients (*r* values)

representing the relationship between self-compassion and subjective wellbeing components (positive affect, negative affect, life satisfaction), with statistical significance where available). Effect sizes were extracted from the main body of article text (where reported) or from data provided by authors; *r* values represent the bivariate correlation unless otherwise stated.

Data Analytic Strategy

Analyses were conducted in Jamovi (Version 0.8.1.14), using 'Meta-Analysis for Jamovi' (Version 1.0.0), an interface utilising the RStudio 'metafor' package. A random-effects model was selected, using DerSimonian-Laird estimators, in light of assumed between-study heterogeneity and to allow findings to be generalised beyond the data set (Field & Gillett, 2010). Given the non-normal sampling distribution of the chosen effect size (*r*), correlation coefficients were converted for meta-analytic modelling using Fisher's *r*-to-*z* transformation (Schulze, 2004). For ease of interpretation, results of the analysis were converted back to the *r* metric prior to reporting. The *Q* statistic was used to examine effect size heterogeneity, and the I^2 statistic to assess model variance due to between-study variance.

Some of the included studies reported effect sizes for multiple SWB components (see Table 1). To estimate the relationship between self-compassion and overall SWB (the first research question), an average of the Fisher-transformed effect sizes (*z*) was computed. This ensured each study contributed only one effect size to the meta-analytic model, avoiding violation of the assumption of independence. To answer the second research question, effect sizes for each SWB component were integrated in separate models, measuring the unique relationship between self-compassion and positive affect, negative affect, and life satisfaction,

respectively. Finally, the effects of study quality on effect sizes was analysed using random-effects meta-regression modelling.

To examine possible publication bias, funnel plots displaying effect sizes (Fisher's *z*) against their corresponding sampling variance (standard error) were visually inspected. Rosenthal's fail-safe N was also calculated to identify how many unpublished works with non-significant effects would be required for the correlation between self-compassion and subjective wellbeing (overall and by component) to be zero.

Results

Study Selection

Implementation of the search strategy resulted in the identification of 902 citations; these were de-duplicated and examined in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009) (see Figure 1). All articles assessed at full-text level (n = 28) were cross-checked by a second reviewer (JY) to ensure reliable application of the eligibility criteria. One hundred per cent agreement was reached regarding the studies included in the final data set.

Descriptive Information

The final dataset was composed of nine studies, with total sample size N = 1345 (M = 149.44, SD = 237.53); publication details are provided in Table 1. Three studies were cross-sectional in design, one longitudinal, and five experimental; baseline data representing the cross-sectional association was extracted from the latter two design-types for analyses. Experimental studies varied in design and content, with four examining the effects of self-compassion and/or mindfulness-based interventions on mental health and wellbeing in adolescents, and the fifth

exploring differences in response to a laboratory stress-test among adolescents higher and lower in trait self-compassion. All studies included for synthesis were published between 2014 and 2017, highlighting the relative novelty of this field. Furthermore, six of the nine papers originated from the same research group.[1]

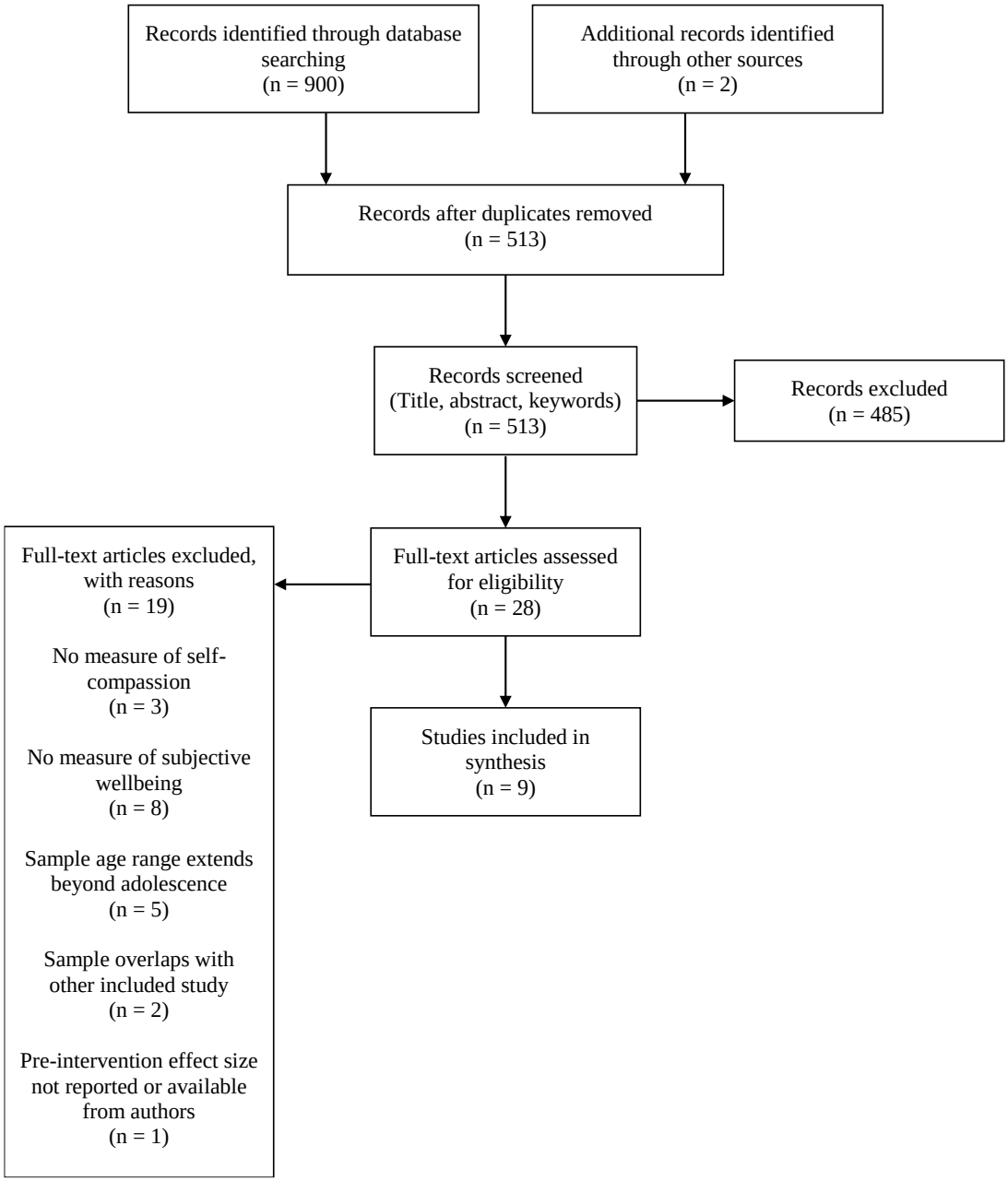

Figure 1. Systematic search and selection process (PRISMA; Moher et al., 2009)

[1] Karen Bluth, the lead author for this research group, was contacted regarding the existence of any crossed samples to ensure no duplicate data was included for meta-analytic synthesis.

Table 1. Description of studies included in final dataset (*N* = 9)

Author(s) and year	Title	*N*	Positive affect	Negative affect	Life satis-faction
Bluth and Blanton (2014)	Mindfulness and self-compassion: Exploring pathways to adolescent emotional well-being.	67	✓	✓	✓
Bluth and Blanton (2015)	The influence of self-compassion on emotional well-being among early and older adolescent males and females.	23*	✓	✓	✓
Bluth et al. (2017)	Age and gender differences in the associations of self-compassion and emotional well-being in a large adolescent sample.	765	×	×	✓
Bluth, Gaylord, Campo, Mullarkey, and Hobbs (2016a)	Making friends with yourself: A mixed methods pilot study of a mindful self-compassion program for adolescents.	34	✓	✓	✓
Bluth, Roberson, and Gaylord (2015)	A pilot study of a mindfulness intervention for adolescents and the potential role of self-compassion in reducing stress.	28	×	×	✓
Bluth et al. (2016b)	Does self-compassion protect adolescents from stress?	28	✓	✓	✓
Galla (2016)	Within-person changes in mindfulness and self-compassion predict enhanced emotional well-being in healthy, but stressed adolescents.	132	✓	✓	✓
Galla (2017)	"Safe in my own mind:" Supporting healthy adolescent development through meditation retreats.	79	✓	✓	×
Gunnell, Mosewich, McEwen, Eklund, and Crocker (2017)	Don't be so hard on yourself! Changes in self-compassion during the first year of university are associated with changes in well-being.	189	✓	✓	✓
Totals		1345	7	7	8

Notes: *Sample total *N* = 90. Study authors provided data for a sub-set of participants due to part-sample crossover with Bluth and Blanton (2014).

In total, 22 effect sizes were extracted for analysis, representing the association between self-compassion and positive affect (*n* = 7), negative affect (*n* = 7), and life satisfaction (*n* = 8), respectively (see Table 2). Self-compassion was measured in all studies using the original (26-item) or short-form (12-item) versions of the Self-Compassion Scale (SCS: Neff, 2003; SCS-SF: Raes, Pommier, Neff, & Van Gucht, 2011). Only two of the nine included studies reported the SCS or SCS:SF at the sub-scale level; effect sizes (*r*) within the present analyses therefore represent SCS total-scale scores. The 20-item Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), or its 10-item short-form (PANAS-SF; Mackinnon et al., 1999) were also uniformly implemented across all studies examining the two affective components of SWB. There was slightly more variability in the measurement tools applied to the construct of life satisfaction, including the 7-item Student Life Satisfaction Scale (SLSS; Huebner, 1991), the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and the 7-item Subjective Vitality Scale (SVS; Ryan & Frederick, 1997). All included measures are self-report questionnaires utilising Likert-type scales, have satisfactory psychometric properties, and have been validated for use in adolescent samples (Castillo, Tomás, & Balaguer, 2017; Huebner, 1991a, 1991b; Huebner & Dew, 1995; Jovanović, 2016; Neff & McGehee, 2010).

Table 2 provides an overview of study and sample characteristics. 63.5 per cent of participants within the total sample were female (*n* = 854), with 35.9 per cent male (*n* = 483), 0.6 per cent non-binary (*n* = 8). Age range (10 to 19 years) was directly reported in eight studies and estimated from author guidance for the remaining publication (K. E. Gunnell, personal communication, January 30, 2018). Several studies failed to report mean participant age, meaning an average could not

be calculated for the meta-analytic sample. All included studies were conducted in north America in non-clinical settings, although the participants in two publications (Galla, 2016, 2017) were noted to show elevated levels of stress and depression.

Quality Assessment

Articles in the final dataset were assessed by the first author in accordance with the QATSDD. A second quality rater (AR), blind to first author scores, examined three papers (33.3 per cent) to ensure reliable and consistent application of the tool. The Pearson correlation coefficient representing inter-rater agreement was .71; this replicates the acceptable reliability level reported by the QATSDD authors (Sirriyeh et al., 2011). Full agreement was reached through consensus discussion.

Results of the quality assessment are presented in Table 3. The overall quality of studies was high, with eight publications obtaining ≥66.7 per cent of the maximum score, indicating low risk of bias. The top-rated study (Bluth et al., 2017) attended to all relevant QATSDD criteria to at least some degree, demonstrating robust methodological and analytic quality. The lowest quality rating was allocated to the paper by Bluth et al. (2015), largely due to the brevity of the published report, which constrained the level of conceptual and methodological detail. Patterns within the data indicate authors tended to provide an explicit theoretical framework and clear objectives, and selected data collection tools and analytic methods that were justified and suitable to the research question(s). However, eight studies failed to consider sample size in terms of analysis, with only one (Bluth et al., 2017) reporting statistical power analysis. There was also a consistent lack of attention to user involvement in design, although some reports are noted to be preliminary investigations or intervention pilots. There was mixed quality with regard to the remaining criteria (see Table 3 for details).

Table 2. Summary of study and sample characteristics, and effect sizes extracted for meta-analytic modelling

Study	Country	Setting	Design	Intervention (and concepts incorporated)	SC measure	SWB measures	Sample size *(N)* and composition	Age: *M (SD)*, range	Gender: % F/M	SWB comp-onent	Effect sizes (*r*)
Bluth and Blanton (2014)	USA	Non-clinical (school)	Cross-sectional	N/A	SCS	PANAS; SLSS	67 healthy high school pupils	NR (NR), 14 to 18	58.2/41.8	PA	.22
										NA	-.64
										LS	.52
Bluth and Blanton (2015)[a]	USA	Non-clinical (school)	Cross-sectional	N/A	SCS	PANAS; SLSS	23 healthy middle school pupils	NR (NR), 11 to 14	47.8/52.2	PA	.41
										NA	-.40
										LS	.31
Bluth et al. (2017)	USA	Non-clinical (school)	Cross-sectional	N/A	SCS-SF	SLSS	765 healthy middle and high school pupils	NR (NR), 11 to 19	54.9/45.1	LS	.48
Bluth et al. (2016a)[a]	USA	Non-clinical (community)	Experimental (RCT with wait-list control)	6-week Mindful Self-compassion intervention (mindfulness, self-compassion)	SCS-SF	PANAS; SLSS	34 healthy volunteers	NR (NR), 14 to 17	76.5/23.5	PA	.17
										NA	-.54
										LS	.49
Bluth et al. (2015)	USA	Non-clinical (community)	Experimental (pre-post, uncontrolled)	6-week mindfulness intervention (mindfulness, loving-kindness)	SCS-SF	SLSS	28 healthy volunteers	NR (NR), 10 to 18	57.1/42.9	LS	.55

Bluth et al. (2016b)[b]	USA	Non-clinical (community)	Experimental (high vs. low self-compassion)	Trier Social Stress Test (physiological responses)	SCS	PANAS; SLSS	28 healthy volunteers	NR (NR), 13 to 18	78.6/21.4	PA NA LS	.33 -.53 .53
Galla (2016)	USA	Non-clinical (residential retreat)	Experimental (pre-post, uncontrolled)	Five-day meditation course (mindfulness, loving-kindness, self-compassion)	SCS-SF	PANAS-SF; SWLS	132 healthy but "stressed" volunteers interested in meditation practice	16.76 (1.48), NR	60.6/39.4	PA NA LS	.28 -.42 .52
Galla (2017)	USA	Non-clinical (residential retreat)	Experimental (retreat vs. wait-list control, non-randomised)	Five-day meditation course (mindfulness, loving-kindness, self-compassion)	SCS-SF	PANAS-SF	79 healthy volunteers (but elevated in depression symptoms) interested in meditation practice	17.02 (1.36), 14.25 to 19.58	60.8/34.2 (5% non-binary)	PA NA	.52 -.40
Gunnell et al. (2017)[c]	Canada	Non-clinical (college)	Longitudinal	N/A	SCS	PANAS-SF; SVS	189 healthy first-year student volunteers	NR (NR), 17 to 19	77.2/22.8	PA NA LS	.34 -.45 .47

[a] = *r*s provided by first author (not directly reported), [b] = *r*s represent standardised beta from multivariate analysis, [c] = *r*s represent mean of cross-sectional coefficients at Time 1 and Time 2.

Abbreviations: SCS, Self-Compassion Scale. SCS-SF, Self-Compassion Scale-Short Form. PANAS, Positive and Negative Affectivity Scale. PANAS-SF, Positive and Negative Affectivity Scale-Short Form. SLSS, Student Life Satisfaction Scale. SWLS, Satisfaction with Life Scale. SVS, Subjective Vitality Scale. PA: Positive Affect. NA: Negative Affect. LS: Life satisfaction. N/A, not applicable. NR, not reported.

Table 3. Quality assessment ratings using the QATSDD tool (Sirriyeh et al., 2012)

Study	Design	QATSDD criteria																% total
		1	2	3	4	5	6	7	8	9 Qn	10 Qn	11 Ql	12	13	14 Ql	15	16	
Bluth and Blanton (2014)	Quantitative Cross-sectional	3	2	3	0	1	2	2	3	2	2	N/A	3	3	N/A	1	2	69.0
Bluth and Blanton (2015)	Quantitative Cross-sectional	3	3	3	0	2	1	3	2	2	3	N/A	3	3	N/A	1	2	73.8
Bluth et al. (2017)	Quantitative Cross-sectional	3	3	3	3	3	3	3	2	2	2	N/A	3	3	N/A	1	2	85.7
Bluth et al. (2016a)	Mixed Experimental	3	3	2	0	1	3	3	2	2	3	2	3	3	0	0	2	66.7
Bluth et al. (2015)	Quantitative Experimental	1	3	2	0	1	1	1	1	1	2	N/A	2	1	N/A	0	1	40.5
Bluth et al. (2016b)	Quantitative Experimental	3	3	2	0	1	3	3	1	1	3	N/A	3	3	N/A	0	2	66.7
Galla (2016)	Quantitative Experimental	3	2	3	0	2	2	1	2	3	3	N/A	3	3	N/A	0	3	71.4
Galla (2017)	Quantitative Experimental	3	3	1	0	2	3	1	3	2	2	N/A	3	3	N/A	0	2	66.7
Gunnell et al. (2017)	Quantitative Longitudinal	2	3	2	0	2	1	2	2	3	3	N/A	3	3	N/A	0	3	69.0

Notes: QATSDD criteria: 1. Explicit theoretical framework. 2. Statement of aims/objectives. 3. Research setting described. 4. Sample size considered for analysis. 5. Representative sample of reasonable size. 6. Data collection procedure described. 7. Rationale for data collection tool(s). 8. Detailed recruitment data. 9. Statistical assessment of reliability/validity of data collection tool(s). 10. Fit between research question(s) and data collection method. 11. Fit between research question(s) and format/content of data collection tool(s). 12. Fit between research question and analytic method. 13. Choice of analytic method justified. 14. Reliability of analytic process assessed. 15. User involvement in design. 16. Strengths/limitations discussed. Qn = criterion applies to quantitative designs; Ql = criterion applies to qualitative designs.

Effect Size Analyses

Meta-analytic findings are presented in Table 4. In accordance with Cohen's suggested criteria for estimating the magnitude of effects (1988), the combined correlation coefficient for the association between self-compassion and overall SWB showed a large effect size (r = .46); adolescents with higher trait self-compassion thus reported significantly higher levels of SWB. Inspection of the forest plot (Figure 2) revealed that effect sizes were homogenous with minimal between-study variance; this was also confirmed statistically (see Q and I^2 statistics, Table 4).

Table 4. Meta-analytic findings on relationship between self-compassion and subjective wellbeing in adolescents

Model	*k*	*N*	*r*	95% CI	Z	*p*	*Q*	I^2
Overall SWB	9	1345	.46	.42; .50	18.2	<.001	2.14	0.0
Positive affect	7	552	.33	.25; .41	7.45	<.001	6.43	6.7
Negative affect	7	552	-.47	-.53; -.40	-11.7	<.001	5.67	0.0
Life satisfaction	8	1266	.49	.44; .53	18.7	<.001	1.76	0.0

Notes: k = number of effect sizes in model; N = sample size; r = mean Pearson correlation coefficient (effect size); 95% CI = lower and upper confidence interval for effect size; Z = Wald-Test; p = statistical significance; Q = Hedge's test of heterogeneity; I^2 = study variance in percentile (values of 0 and 25 indicate no and low variance, respectively)

Sensitivity analyses were used to assess whether self-compassion related differently to the three components (positive affect, negative affect, life satisfaction) of SWB; results are displayed in Table 4. All three SWB components had a statistically significant relationship with self-compassion; however, the magnitude of this association was stronger for life satisfaction (r = .49) and the negative affective component (r = -.47), which both displayed large averaged correlation coefficients, relative to positive affect, which displayed a medium effect size (r = .33). For all three components, effect sizes were not significantly heterogenous, with low total variance attributed to between-study variance.

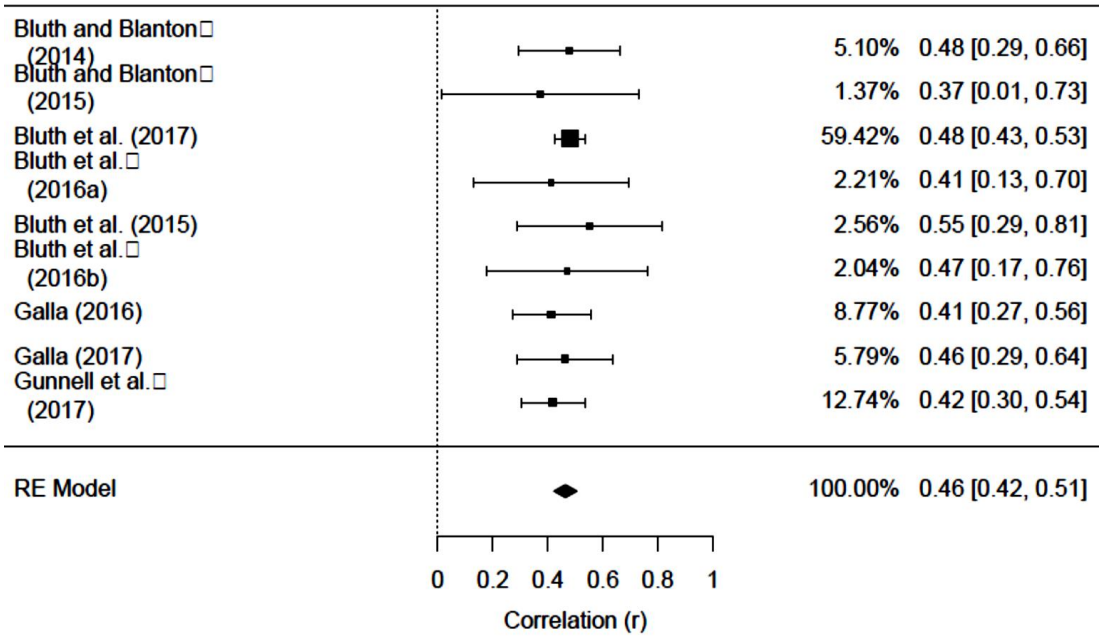

Figure 2. Forest plot of meta-analysis of relationship between self-compassion and overall SWB

Publication Bias

Funnel plots were visually inspected to detect potential publication bias. Given the small number of studies included in each meta-analytic model, plots were somewhat difficult to interpret. However, all appeared to be approximately symmetrical, with only two effects outside the 95 per cent confidence interval of the population mean; these were the large positive correlation reported by Galla (2017) for positive affect, and the large inverse correlation for negative affect reported by Bluth and Blanton (2014). Rank correlation tests for funnel plot asymmetry suggested non-significant asymmetry for all models (see Table 5). Furthermore, Rosenthal's fail-safe *N* statistics for each model indicate that a large number of unpublished studies with non-significant findings would be required to render the self-compassion/SWB relationship (at overall and individual component level) obsolete.

Table 5. Publication bias analysis findings

Model	T	*p*	*Fail-safe N*
Overall SWB	.09	.753	702
Positive affect	.05	1.000	132
Negative affect	-.14	.773	319
Life satisfaction	.04	.901	679

Notes: τ = Kendall's tau; *p* = statistical significance; *Fail-safe N* = Rosenthal's.

Moderating Effects of Quality

Meta-regression analyses examined the possible impact of study quality on meta-analytic models; results are summarised in Table 6. Study quality did not have a significant influence on the self-compassion/overall SWB effect size, nor the strength of any of the unique relationships between self-compassion and positive affect, negative affect, and life satisfaction. These findings suggested the reported effect sizes were not unduly influenced by risk of bias due to variation in the methodological quality of included studies.

Table 6. Moderator analysis for effect of study quality on relationship between self-compassion and subjective wellbeing in adolescents

Model	*Slope*	Z	*p*
Overall SWB	.003	0.52	.602
Positive affect	-.018	-0.76	.449
Negative affect	.012	0.50	.620
Life satisfaction	-.001	-0.50	.619

Notes: Slope = random-effects meta-regression slope; Z = Wald-Test; *p* = statistical significance

Discussion

The present meta-analysis explored the current literature conducted with adolescents on the relationship between self-compassion and subjective wellbeing. The analysis was structured around three research questions that examined: the

direction and magnitude of the overall self-compassion/SWB association in adolescents, differences in the unique relationships between self-compassion and the three SWB components, and the impact of methodological quality on any conclusions drawn.

With regard to the first research question, meta-analytic modelling identified a positive association between self-compassion and overall SWB, with a large effect size (Cohen, 1988); adolescents with higher levels of trait self-compassion therefore appear to experience greater SWB. The magnitude of this effect-size estimate is consistent with the coefficient reported by Zessin et al. (2015) in a meta-analysis examining self-compassion and a broader range of wellbeing conceptualisations (SWB, PWB, relational, spiritual) among adults. The relationship between self-compassion and wellbeing thus appears to be relatively constant from adolescence into adulthood. The psychopathology/self-compassion association also shows developmental stability (MacBeth & Gumley, 2012; Marsh et al., 2017), suggesting patterns of mental *health* and *ill-health* vary similarly with self-compassion over time. Effect sizes for the overall self-compassion/SWB relationship in adolescents were homogenous, with minimal between-study variance. This contrasts with the findings reported by Marsh et al. (2017) who identified significant heterogeneity in the association between self-compassion and psychopathology among adolescents. This divergence might be an artefact of inclusion criteria, which, for the present study, specified SWB in narrow terms (as composed of only positive and negative affect, and life satisfaction) relative to the broader definition of psychological distress chosen by Marsh and colleagues. Furthermore, the sample and study characteristics of the present meta-analysis were relatively homogenous (e.g., all conducted in north American, non-clinical settings, with healthy participants).

However, it is also plausible that the self-compassion/SWB relationship is genuinely more consistent, or less influenced by additional, moderating factors (e.g., age, gender, socio-economic status), than the self-compassion/psychopathology association. Future studies incorporating a wider diversity of participants may be of merit in providing clarity.

This meta-analysis also confirmed there are some differences between the three components of SWB, regarding the strength of association with self-compassion among adolescents. The averaged correlation coefficients for negative affect and life satisfaction were broadly similar, both being large in magnitude and occurring in the hypothesised directions. The relationship between self-compassion and positive affect appeared comparatively weaker, although still exhibiting a medium effect in the hypothesised positive direction. These effect sizes were, again, broadly consistent with the results reported by Zessin et al. (2015) regarding the association between self-compassion and different types of wellbeing among adults. The self-compassion/positive affect relationship appeared slightly weaker among adolescents (r = .33, compared to .39 in the meta-analysis by Zessin and colleagues). This may reflect a genuine greater effect of a self-compassionate stance on generating positive affect among adults, although Bluth and Blanton (2014) suggest adolescents may find it more difficult to connect with positively-worded emotions, thus respond to these questionnaire items more equivocally. Nevertheless, the differences identified in the strength of association between self-compassion and the three SWB components infers these are distinct constructs, which should therefore be theoretically and methodologically distinguished in research with adolescents.

Findings from meta-regression analyses indicated that methodological quality did not significantly influence the overall self-compassion/SWB association, nor the

strength of the relationship between self-compassion and any of the three SWB components. This finding seems likely to reflect the minimal variability in quality for the included studies, all but one of which showed low risk of bias. However, future studies of a higher quality – in particular utilising larger samples with adequate statistical power – may help to clarify whether the magnitude of the reported associations has been accurately estimated by the present meta-analysis.

Theoretical Implications

Much of the adolescent literature to date has focused on the inverse relation between self-compassion and psychopathology, with the former posited as a potential protective factor for the development of distress (e.g., Marsh et al., 2017; Muris, 2016). However, this approach disregards the distinct aim of attaining optimal wellbeing: to feel, think, cope, and function well. Whilst unable to verify any causal inference, this meta-analysis helps address this shortcoming by providing preliminary evidence that self-compassion might also be a mechanism of interest in improving *positive* wellbeing indicators among youth. This is a potentially valuable discovery in light of the adolescent period providing a window of opportunity for the development of resilience, adaptive functioning, and positive mental health. For example, Gilbert (2009) suggests the maturation of neurophysiological systems during adolescence enables cultivation of metacognitive abilities that support effective coping and affect regulation, such as the capacity to self-reassure via recalled emotional memories of being held positively in the minds of others. As a potential mechanism through which these psychological assets might be cultivated, self-compassion may help adolescents to effectively navigate the numerous biological, interpersonal, and environmental stresses and challenges of adolescence. Furthermore, broaden-and-build theory (Fredrickson, 2001) proposes that the

experience of positive emotions may help us acquire novel skills and knowledge through broadening cognitive, attentional, and behavioural capacities. This broadened mindset is juxtaposed with the narrow cognitive-behavioural contingencies associated with negative affect (e.g., preferential attention to threat and 'fight-flight-freeze' actions under conditions of fear) (Fredrickson & Branigan, 2005). The experiments of Isen and colleagues have shown empirically that people experiencing positive emotions exhibit more open, flexible, and creative patterns of decision-making (see Isen, 2000, for a review). As a component of SWB, the elevated positive affect experienced by adolescents who are more self-compassionate may thus contribute to the accumulation of personal skills and resources through fostering a broadened, flexible cognitive organisation. Theoretically, being self-compassionate may provide a resilience resource that supports adolescents to thrive and flourish, while also protecting against the development of psychological distress.

Results of the present meta-analysis suggest differential relationships among the three SWB components. Why might self-compassion relate more strongly to negative affect and life satisfaction than positive affect in young people? As noted, it is possible this is a methodological artefact of the measures utilised in assessing affect. However, given that Zessin et al. (2015) also reported this pattern among studies of adult participants, a theoretical explanation is also required. Self-compassion has often been conceptualised as an emotion regulation strategy that is engaged in moments of suffering or difficulty (e.g., Neff, 2003a). Given this definition, it seems plausible that self-compassion might genuinely function more effectively to ameliorate negative emotions than to generate positive affect, as we would expect the former to be present in times of heightened distress. Over time, one might assume that reductions in negative affect could lead to more positive

(cognitive) evaluations of satisfaction with life and perhaps greater awareness of the experience of positive emotions. Thus, self-compassion may contribute to greater subjective wellbeing by altering the relative balance of positive to negative affect, rather than by stimulating large increases in the experience of positive emotions (Bradburn, 1969).

Clinical Implications

The potential clinical utility of the present findings stem from the empirical status of self-compassion as a trainable resource that can be acquired through teaching and self-guided practice, in addition to a dispositional trait (Gilbert, 2014; Kirby, Tellegen, & Steindl, 2017; Neff & Germer, 2013). Self-compassion interventions have the potential to confer the apparent advantages of a kinder, more reassuring self-context to adolescents whose dispositional level of self-compassion is low. Results of the present meta-analysis suggest enhanced SWB may be among these benefits, which may, in turn, support young people to make the most of the opportunities available to them. Initial findings indicate that self-compassion shows promise as an intervention target for SWB in youth; for example, Bluth et al. (2016a) found adolescents (aged 14 to 17) reported significantly greater life satisfaction after six sessions of a Mindful Self-Compassion programme, relative to waitlist controls. Furthermore, self-compassion appears to be causally-implicated as a mechanism through which interventions incorporating principles of compassion, mindfulness, and meditative practice affect change in SWB variables among adolescents (Bluth et al., 2016a; Galla, 2016, 2017). However, more research is needed to establish whether these findings can be generalised to all adolescents, particularly in light of heavy reliance on healthy, volunteer samples and the absence (to date) of experimental studies utilising active control groups.

Limitations

The findings of this meta-analytic review should be considered in the context of several limitations. Firstly, due to the recent emergence of scientific interest in self-compassion among adolescents, literature searches revealed a relative scarcity of evidence relevant to the given research questions. Only nine publications met inclusion criteria, several being small-scale exploratory or pilot investigations, resulting in a small total *N* for meta-analytic modelling. This limitation is particularly pertinent to sensitivity analyses examining positive and negative affect; these models had a substantially smaller *N* due to the affective components not being measured in the large sample utilised by Bluth et al. (2017). More large-scale research is needed to substantiate the conclusions of this review and the applicability of self-compassion as a correlate of adolescent wellbeing. As a topic area, adolescent wellbeing appears to have been comparatively neglected relative to investigations of the influence of self-compassion on psychopathology. As SWB appears to have particular utility as a resilience resource in adolescence, it would be helpful for future studies to include measures of positive mental health and wellbeing, in addition to distress and/or psychopathology symptoms.

There would also be merit in other researchers picking up the adolescent self-compassion/wellbeing mantle. The current predominance of literature by Bluth and colleagues necessitated a rigorous approach to the detection and exclusion of crossed samples, resulting in a consequent reduced total *N* for meta-analytic modelling. Furthermore, the narrow field of empirical output – just three research groups (Bluth et al., Galla, Gunnell et al.) figuring in the present review – may introduce bias into the derivation of pooled effect sizes, such that meta-analytic findings are unduly influenced by the inherent homogeneity of the assembled studies.

A further limitation relates to the current shortage of experimental evidence, meaning this review was limited to examining the cross-sectional association between self-compassion and SWB in adolescents. Further longitudinal and intervention studies are needed in adolescent populations to establish causality in this relationship, although preliminary findings support the notion that bolstering self-compassion may generate increased positive affect and life satisfaction, along with reductions in negative affect (Bluth et al., 2016a; Galla, 2016, 2017).

Few among the publications included for synthesis examined relations between SWB and SCS subscales – Bluth and Blanton (2015) and Gunnell et al. (2017) being noted exceptions. As a result, it is not possible at this stage to extrapolate assumptions regarding which components of self-compassion have greater or lesser relevance to adolescent wellbeing. A more nuanced understanding would likely be helpful in harnessing self-compassion as an intervention tool for promoting SWB in this population. The need for further research at the subscale-level is also underscored by emerging evidence that the SCS may be more accurately modelled using a two-factor structure representing self-compassion and self-judgement, respectively (Lopez et al., 2015). The notion that these are distinct phenomena is supported by neuroimaging studies demonstrating activation of different brain regions under conditions of self-soothing and self-criticism (e.g., Longe et al., 2010). In keeping with recent meta-analytic findings with regard to psychopathology (see Muris & Petrocchi, 2016), future studies would benefit from identifying whether negative (e.g., self-judgement, isolation, and over-identification) or positive (e.g., self-kindness, common humanity, and mindfulness) indicators of self-compassion are differentially linked to SWB in youth.

While this study examined the impact of methodological quality on the association between self-compassion and adolescent wellbeing, further research is needed to identify other potential moderators. Previous meta-analytic findings suggest that gender, age, and self-esteem influence the self-compassion/wellbeing relationship among adults (Zessin et al., 2015), whereas elder age (but not gender) weakens the inverse association between self-compassion and psychopathology in adolescents (Marsh et al., 2017). Initial results suggest developmental phase and gender may also be significant factors in the association between self-compassion and the affective components of SWB among adolescents (e.g., Bluth & Blanton, 2015; Galla, 2017). To support further investigation, authors must take greater care to report sample demographics, particularly age data, which was missing from a number of the studies included in the present meta-analysis. Studies with a balanced ratio of male-to-female participants would also be of merit, given the predominance of females in the current literature.

More cross-cultural research is required to establish whether the findings of this review can be generalised beyond north America, where all studies to date have been based. In addition, the prevalence of studies utilising healthy participants means the impact of clinical status remains unclear. However, some evidence of applicability to distressed adolescents can be drawn from the findings reported by Galla (2016, 2017) from samples with elevated levels of stress and depression. Finally, it should be noted that the inclusion criteria for this review meant that unpublished data or ‘grey literature’ was not included within meta-analytic models. The mean effect sizes presented may thus be inflated by ‘desk-drawer effects’, although publication bias analyses suggest this would be unlikely to render the self-compassion/SWB relationship entirely absent among adolescents.

Conclusions

With these methodological limitations noted, this meta-analysis provides some initial insights into the possible relationship between self-compassion and SWB in adolescents, a population who may benefit from an understanding of mechanisms promoting mental health and resilience. Encouragingly, the quality of the literature conducted to date is relatively high, although minimal in quantity and emanating from a narrow pool of research groups. The moderate-to-strong associations identified between self-compassion and both affective and cognitive SWB suggest self-compassion may provide a tool for understanding and promoting positive mental health among young people. However, further research is required to validate these conclusions.

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Chapter 2

Bridging Chapter

2.1 "Storm and Stress?"

The previous chapter noted some of the many changes and challenges that adolescents negotiate as they traverse the transition from childhood to young adulthood. Not only is adolescence a period of physiological transformation but also marked by significant adjustments in psychosocial expectations, relations, stressors, and identity (Simmons & Blyth, 2017). Whilst Hall's (1904) claim that adolescence is universally a time of 'storm and stress' has been refuted, contemporary writers generally agree that some degree of behavioural and emotional disturbance is more commonplace than during other periods of life (Arnett, 1999). Neuroimaging studies have demonstrated that structural and functional brain maturation underlies many of the cognitive-behavioural phenomena observed in adolescents, including the development of self-processing and heightened reactivity to peer influence (Blakemore & Mills, 2014; Sebastian, Burnett, & Blakemore, 2008). Thus, the modified storm-and-stress view focuses instead on individual and cultural variation in the adolescent experience, which can be understood as a product of environmental influences, as well as person-to-person variability in emotional arousal and regulation capacities (Hollenstein, & Lougheed, 2013).

2.2 Chronic Illness in Adolescence

Youth with chronic health conditions form a sub-population seemingly more vulnerable to experiencing psychological and behavioural upheaval during adolescence (Edwards & Titman, 2010). The burden associated with chronic disease management may further exaggerate the challenges of this period, potentially

contributing to poorer emotional wellbeing and more acute difficulties with the process of separation-individuation (Barlow & Ellard, 2006; Suris, Michaud, & Viner, 2004). Type 1 diabetes (T1D) is one of the most common chronic conditions among youth, and requires intensive management to minimise the risk of short- and long-term complications (Royal College of Paediatrics and Child Health, 2018). Adolescents living with T1D identify the health risks, relentless behavioural self-regulation, professional monitoring, and sense of difference that characterise their experience as challenges that can be stressful, inconvenient, and isolating (Davidson, Penney, Muller, & Grey, 2004; Freeborn, Dyches, O Roper, & Mandleco, 2013). Given that adolescence is normatively a period of heightened self-consciousness, emotional lability, and sensitivity to peer-group status (Blakemore & Mills, 2014; Sebastian et al., 2008; Larson, Moneta, Richards, & Wilson, 2002) it is perhaps not surprising that youth with T1D exhibit trends toward declines in social acceptance and heightened distress relative to their healthy peers (Helgeson, Snyder, Escobar, Siminerio, & Becker, 2007; Reynolds & Helgeson, 2011). The development of autonomy may also be contested where an adolescent's growing capacity for self-management co-exists with patterns of parental overprotection or dependence (e.g., for crisis support or transport to diabetes clinics) (Davidson et al., 2004; Graue, Wentzel-Larsen, Hanestad, & Søvik, 2005). Undoubtedly, the daily hassles of life with T1D append a further layer of complexity to what is already a transformational and, for some, challenging developmental period (Christie, 2013).

2.2.1 Risk and resilience in paediatric diabetes. An alternative, less deficit-based perspective highlights that a sizeable proportion of young people with T1D remain emotionally well and on-track with the developmental tasks of adolescence, despite the demands of living with a chronic condition (Palladino et al.,

2013). Paediatric researchers and practitioners suggest the dual concepts of risk and resilience help account for individual variability in adjustment and coping with illness (e.g., Hilliard, Harris, & Weissberg-Benchell, 2012). While risk factors may increase vulnerability, resilience is defined as the process by which some individuals are able to adapt and thrive, despite adverse circumstances (Luthar, Cicchetti, & Becker, 2000). Paediatric resilience is considered to be a complex phenomenon comprised from intrapersonal, interpersonal, and institutional processes and resources (De Michelis, 2016).

2.3 Self-Compassion – A Resilience Resource for Adolescents with T1D?

The meta-analytic findings presented in Chapter 1 identified **self-compassion** – an intrapersonal form of self-reassurance (Neff, 2003a) – as one potential resilience resource, associated with improved mental health and wellbeing during adolescence *per se*. In light of the additional challenges faced by those with chronic conditions, the empirical investigation that follows (Chapter 3) was designed to examine whether a compassionate self-approach might also foster greater physiological and behavioural resilience among adolescents living with T1D (Hilliard et al., 2012). For the purposes of the study, resilience was defined as constituting: (a) good glycaemic control, and (b) robust diabetes regimen adherence. These outcomes were selected for scrutiny in light of evidence suggesting the stress associated with managing T1D contributes to declines in treatment adherence and glycaemic control during adolescence (Gonzalez et al., 2008; Malik & Koot, 2009). These trends are, in turn, associated with increased risk of long-term microvascular complications and psychopathology in early to mid-adulthood (Bryden, Dunger, Mayou, Peveler, & Neil, 2003).

2.3.1 Self-compassion, affect, and T1DM. There is good reason to assume that self-compassion may contribute to positive outcomes for adolescents with T1D. The meta-analytic review in Chapter 1 demonstrated that more self-compassionate adolescents seem to exhibit higher levels of positive affect and lower levels of negative affect. The same healthy affective balance has also been identified as a route through which self-compassion facilitates engagement in general health-promoting behaviours, such as healthy eating, exercise, sleep, stress management, and seeking medical attention (Sirois, Kitner, & Hirsch, 2014; Terry, Leary, Mehta, & Henderson, 2013). Furthermore, positive affect is associated with improved glycaemic control over time among adolescents with T1D (Lord, Rumburg, & Jaser, 2015). These findings have been linked to the broadening effects of positive emotion for flexible, creative problem-solving, and the attenuation of negative emotions that may compromise self-regulation and encourage use of maladaptive coping strategies, such as escape-avoidance (Allen & Leary, 2010; Sirois, 2015; Sirois, Molnar, & Hirsch, 2015; Tran, Wiebe, Fortenberry, Butler, & Berg, 2011). Thus, the affective component of the enhanced subjective wellbeing found among more self-compassionate youth (Chapter 1) appears to foster more adaptive coping and engagement with positive health behaviours. Crucially, for adolescents with T1D, such behavioural resilience would include adherence to treatment regimens, which is in turn associated with more optimal glycaemic control (Hood, Peterson, Rohan, & Drotar, 2009).

2.4 A Positive Focus

The empirical research paper and systematic review presented in this portfolio thus share a common objective in seeking to understand the mechanisms that help young people successfully negotiate challenges encountered during the

adolescent period. In line with the work of positive psychologists, the focus of both papers is explicitly upon studying what enables some adolescents to flourish in the face of adversity, in contrast to the identification of risk factors for maladaptive outcomes (Seligman, 2011). In presenting the following empirical work on self-compassion, the present author hopes to contribute to the answering of a question recently posed by DeMichelis (2016): “what can we – a community of concerned researchers, service providers, and clinicians – do to promote the resilience of children who are facing illness or disability?” (p.2).

Chapter 3

Empirical Research Paper

The following paper is intended for submission to the *Journal of Pediatric Psychology*. Author Guidelines for the selected journal are provided in Appendix C.

Please note, due to the margins required for thesis binding, the following paper appears to exceed the journal page limit (25 pages). Applying margins of the size mandated by the journal reduces the page count to the prescribed limit.

Extending self-kindness: Self-compassion as a predictor of glycaemic control and regimen adherence in adolescents with type 1 diabetes.

Katherine Jackson, BA (Hons), MSc

Abstract

Objective: This exploratory study sought to examine self-compassion as a potential resilience resource for effective type 1 diabetes management (T1DM) in adolescents. Cross-sectional relationships between self-compassion and two T1DM outcomes (regimen adherence and glycaemic control) were assessed. Variability in self-compassion was also examined as a possible mediator of the associations between emotional distress, critical/intrusive parental diabetes behaviour, and T1DM outcomes.

Methods: Adolescents aged 11 to 18 (n = 52) provided demographic information and completed self-report measures of adherence, self-compassion, emotional distress, and critical/intrusive parenting. HbA_{1c} readings were extracted from clinical records to measure glycaemic control.

Results: Self-compassion was associated with better glycaemic control and regimen adherence. In addition, lower levels of self-compassion mediated the relationship between elevated emotional distress and poorer adherence. Unexpectedly, emotional distress was not related to HbA_{1c}, and critical/intrusive parenting was unrelated to both adherence and HbA_{1c}.

Conclusions: Access to a self-compassionate mindset may have beneficial effects on glycaemic control and regimen adherence among adolescents with T1D, suggesting this may be an effective intervention target for improving T1DM in this vulnerable population. Replication in a larger sample is required to validate these conclusions.

Keywords: self-compassion; adolescents; type 1 diabetes; glycaemic control; adherence

Extending self-kindness: Self-compassion as a predictor of glycaemic control and regimen adherence in adolescents with type 1 diabetes.

Type 1 diabetes (T1D) is among the most common paediatric diagnoses, affecting over 27,000 children and young people (CYP) aged ≤19 in England and Wales (Royal College of Paediatrics and Child Health [RCPCH], 2018). Untreated, T1D can lead to serious complications, including ketoacidosis, retinopathy, nephropathy, peripheral nerve damage, and cardiovascular disease (RCPCH, 2018). These risks can be attenuated if blood glucose levels are maintained within a safe range, a process that requires rigorous adherence to a complex regimen involving regular blood glucose testing, insulin administration, and monitoring of diet and exercise (National Collaborating Centre for Women's and Children's Health [NCC-WCH], 2015). Regrettably, T1D management (T1DM) tends to deteriorate during adolescence, meaning a significant minority of young people exhibit suboptimal levels of regimen adherence and glycaemic control (Helgeson et al., 2010). Several factors are thought to contribute, including pubertal hormone fluctuation, elevated stress, changing parental and peer relationships, and increased responsibility for self-care (Borus & Laffel, 2010; Goran & Gower, 2001; Helgeson et al., 2010; Holmes et al., 2006; Lewin et al., 2006).

Despite sharing these transitions, some adolescents with T1D are able to maintain a stable pattern of good glycaemic control (Helgeson et al., 2010). Hilliard, Harris, and Weissberg-Benchall's (2012) model of paediatric diabetes resilience explains this variability via protective processes (individual and environmental), which help CYP build skills and assets fostering robust T1DM. Empirical studies grounded in resilience theory have identified positive affect, benefit finding, and adaptive coping skills (e.g., problem-solving, emotional expression) among these

protective factors (Jaser & White, 2011; Lord, Rumburg, & Jaser, 2015; Tran, Wiebe, Fortenberry, Butler, & Berg, 2011). A potential resilience resource that has not yet been examined among adolescents with T1D is self-compassion.

Self-compassion can be conceptualised as a self-relating style characterised by warmth, kindness, reassurance, and acceptance, alongside a motivation to relieve personal suffering. Neff (2003a) argues that self-compassion comprises three, interrelated components: (a) *self-kindness*: a supportive attitude that enables us to direct care and concern toward ourselves (as we would others); (b) *common humanity:* a capacity to accept personal failings as part of the human condition; and, (c) *mindfulness*: an openness to the present moment that allows us to attend to difficult thoughts and feelings without being overwhelmed. Most empirical research to date has adopted this definition (the present study included), although evolutionary approaches (e.g., Gilbert, 2017) attend more closely to the premise of adaptive emotion-regulation systems and associated neurophysiological processes.

Theoretical models from health psychology conceptualise self-compassion as a self-regulation resource, fostering positive health behaviours by motivating people to set realistic aims, engage in goal-directed behaviour, attend to progress with acceptance, regulate affective responses to setbacks, and use adaptive coping strategies (Sirois, 2015; Sirois, Molnar, & Hirsch, 2015; Terry & Leary, 2011). There is also some evidence that self-reassurance modulates inflammatory physiological processes implicated in T1D onset and progression (Breines et al., 2014). A self-compassionate mindset may thus help adolescents with T1D to cope with their intensive treatment plans, and reduce the risk of unhelpful self-criticism in response to regimen lapses or suboptimal blood-glucose readings.

Among healthy adults, self-compassion predicts reductions in health risk

behaviours, stronger intentions toward and practice of health-promoting activities, and improved physical health (Dunne, Sheffield, & Chilcot, 2016; Kelly, Zuroff, Foa, & Gilbert, 2010; Sirois, 2015; Sirois, Kitner, & Hirsch, 2014). Adults with diabetes who are more self-compassionate also show better treatment adherence, lower HbA_{1c} (an indicator of good glycaemic control), and less diabetes-related stress (Ferrari, Dal Cin, & Steele, 2017; Friis, Johnson, Cutfield, & Consedine, 2015). To date, only one study has examined self-compassion among adolescents with chronic illness: Kemper, Heyer, Pakalnis, and Binkley (2016) reported an association with fewer depressive symptoms, which in turn predicted less headache-related disability in teens with chronic migraine. The primary aim of the present study was thus to extend the existing evidence-base by examining self-compassion as a possible predictor of improved T1DM among adolescents.

A secondary objective was to explore whether variance in self-compassion might be an intermediary mechanism in the association between two established risk factors – emotional distress and critical/intrusive parental diabetes behaviour – and poorer adolescent T1DM (de Groot et al., 2001; Gonzalez et al., 2008; Lewin et al., 2006; Wiebe et al., 2005). Evidence for possible mediation is found in the large inverse association between distress and self-compassion within adolescent studies (Marsh, Chan, & MacBeth, 2017). Maternal criticism has also been linked to lower self-compassion in CYP, a finding attributed to the internalisation of disparaging dialogue into the self-to-self relational frame (Neff & McGehee, 2010). If impaired self-soothing explains the poorer adherence and diabetes control seen among emotionally distressed and/or criticised adolescents, self-compassion may provide an intervention target for improving outcomes within these specific sub-populations.

This study addresses two research questions:

1. Is self-compassion associated with T1DM in adolescents (as measured by glycaemic control and self-reported regimen adherence)?
2. Does self-compassion mediate the relationships between emotional distress and critical/intrusive parenting behaviours, and T1DM outcomes?

It was hypothesised that greater self-compassion would be related to improved adherence and glycaemic control. Lower levels of self-compassion were expected to mediate associations between (a) emotional distress; (b) critical/intrusive parenting, and poorer T1DM outcomes.

Methods

Participants

Adolescents were recruited to this exploratory, cross-sectional study between June and December 2017. All participants were under the care of paediatric or transition-age diabetes services at two NHS organisations in East Anglia, UK.[2] Patients aged 11 to 18 were eligible if diagnosed with T1D for at least 12 months and able to speak/read English. Inclusion criteria were selected to reflect the secondary education period typically associated with adolescence in the UK, the age parameters of the Paediatric Diabetes Best Practice Tariff (NHS Improvement, 2016), and to partial out any influence of the quasi-remission phase common in the first year of T1D treatment (NCC-WCH, 2015). Adolescents with type 2 diabetes were not eligible due to differences in disease aetiology and management.

Procedure

Prior to commencement, a youth mental health service user panel were consulted on the research proposal and materials. Ethical approval was obtained from the Health Research Authority and the North of Scotland Research Ethics

[2] Norfolk and Norwich University Hospitals and West Suffolk NHS Foundation Trust.

Committee. The study was advertised via mail-shot to eligible patients (n = 318)[3], posters in participating organisations, and word-of-mouth at clinics and service events. Seventy-five patients/parent-child dyads returned expressions of interest; 21 did not respond to further contact, meaning a total of 54 adolescents entered the study (17 per cent of total eligible). Recruitment levels were constrained by clinical workloads, concurrent research activity, and low time / interest among some CYP. All participants (and parents of under-16s) reviewed age-appropriate research information sheets. Adolescents aged ≥16 years gave written consent; those aged <16 provided assent alongside the written consent of a parent/guardian. Participants completed five self-report questionnaires via their preferred method: (a) online using a dedicated study website[4]; or (b) on paper during routine hospital appointments. HbA_{1c} values and diabetes diagnosis dates for the corresponding patients were extracted from clinical records by diabetes service staff. Where requested, participants were entered into a prize draw to win a £25 Amazon voucher.

Measures

Outcome variables.

Glycaemic control. Participants' glycaemic control was assessed using the most recent HbA_{1c} reading recorded in clinical notes (+/- maximum three months). HbA_{1c} refers to glycated haemoglobin, a by-product of the merging of red blood cells with glucose, which provides an index of average blood sugar levels over ~three months. Higher HbA_{1c} values indicate poorer glycaemic control and elevated risk of complications (The Diabetes Control and Complications Trial Research Group, 1993). An HbA_{1c} target of ≤48 mmol/mol is currently recommended for

[3] Advertising materials were addressed to parent and child for eligible patients aged <16 years.
[4] Website provided by Jisc Online Surveys (formerly Bristol Online Surveys).

CYP aged ≤18 years, and levels monitored ≥four times per annum by care providers (NCC-WCH, 2015).

Diabetes regimen adherence. The 14-item Self-Care Inventory (SCI; La Greca, Swales, Klemp, & Madigan, 1988) was administered as a measure of regimen adherence. The SCI assesses self-reported adherence across four domains of T1DM (glucose monitoring, insulin administration, dietary regulation, and exercise) on a 5-point Likert scale (1 = *Never do it* to 5 = *Always do this as recommended without fail*); items can also be marked not applicable. It has been substantiated as a psychometrically valid youth-report measure, and is applicable to various insulin-delivery regimens (Lewin et al., 2009). Scores represent the mean of completed items, multiplied by 10, with higher scores indicating better adherence.

Predictor variables.

Self-compassion. The primary construct of interest was measured using the Self-Compassion Scale (SCS; Neff, 2003b), a 26-item self-report questionnaire utilising a 5-point Likert scale (1 = *Almost never* to 5 = *Almost always*) to assess how people typically self-relate in times of difficulty. Initial psychometric validation recommended averaging responses across six subscales (self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification) or an aggregate representing global self-compassion levels (Neff, 2003b). However, more recent factor analyses suggest the SCS may be better represented by two subscales (comprising positively-worded vs. negatively-worded items), representing a self-compassionate/reassuring mindset and a self-critical mindset, respectively (Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2015; Lopez et al., 2015). As this debate remains unresolved, both the full-scale and two-factor solutions were

examined in this study. Suitability of the SCS for research participants aged 11 to 18 has previously been demonstrated (e.g., Bluth & Blanton, 2015).

Emotional distress. The Paediatric Index of Emotional Distress (PI-ED; O'Connor, Ferguson, Carney, House, & O'Connor, 2016) was used to assess levels of emotional distress within the sample. The PI-ED is a psychometrically robust, 14-item screening tool for psychopathology in CYP with physical health problems. Respondents indicate frequency of common anxiety and depression symptoms on a 4-point scale (0 = *Not at all* to 3 = *Always*). Summed scores of ≥20 indicate clinically-relevant emotional distress.

Critical/intrusive parental diabetes behaviour. The Diabetes Family Behaviour Checklist (DFBC; Schafer, McCaul, & Glasgow, 1986) was used to examine parenting behaviours specific to T1DM. Given study aims, only the 7-item non-supportive subscale (DFBC-N) was utilised; this measures how often respondents experience critical/intrusive parental T1DM input on a 5-point Likert scale (1 = *Never* to 5 = *At least once a day*). Higher summed scores indicate more frequent exposure to critical/intrusive parenting. The DFBC-N has shown acceptable reliability and validity with adolescent samples (Lewin et al., 2005).

Demographics and diabetes information. For statistical control purposes, basic demographic and disease-specific information were also collected. Age (years), gender, and insulin delivery method (pump vs. injections) were directly reported by participants. Diagnosis dates, sourced from clinical records, were converted to indicate disease duration (days elapsed).

Measures were ordered as follows: demographics, SCI, SCS, PI-ED, DFBC.

Data Analytical Plan

Data was screened for errors, completeness, outliers, and statistical assumptions. Scale reliability and sensitivity power analyses were computed, and HbA_{1c} values screened for seasonal variation. Planned analyses included descriptive statistics, bivariate correlational analyses, and multivariate regression analyses; these were conducted using IBM SPSS Statistics 23. Given the small number of recruited participants and untested relevance of self-compassion to adolescent T1DM, backward-entry regression modelling was applied to appraise predictors of glycaemic control and regimen adherence in an exploratory fashion (Field, 2013). In light of the ongoing debate regarding the SCS factor-structure, separate models were computed using SCS full-scale means (SCS-FS), positive items only (SCS-P), and negative items only (SCS-N). Mediation analyses using the bias-corrected bootstrap estimation procedure were also planned to examine self-compassion as a potential explanatory variable in the relationships between T1DM outcomes and (a) emotional distress; (b) critical/intrusive parental behaviour. Hayes' (2012) *PROCESS* tool was utilised for mediation analyses.

Results

Preliminary Analysis

Two participants were excluded during screening having not met inclusion criteria (diagnosed <12 months), resulting in final sample $N = 52$. This falls below the minimum required sample size for multiple regression according to conventional rule-of-thumb formulae, e.g., 10 participants per predictor (Harrell, 2001) or "50 + 8m" where "m" is the number of tested predictors (Tabachnick & Fidell, 2013). Sensitivity power analysis in GPower 3.1 suggested sample size $N = 52$ may be adequate to identify substantial effects (as defined by Cohen, 1988) of $R^2 \geq .24$ in

multivariate models with seven predictors (power = 0.8, α = .05). Multiple regression analyses were thus conducted with caution, noting inadequate power to detect small-to-medium-sized effects within this exploratory investigation.

The dataset contained 20 missing values (0.6 per cent/total); these were replaced with variable means upon confirmation of random dispersal. Data was inspected for statistical assumptions relevant to planned analyses, with no gross violations identified. Scale reliability analysis found all questionnaires demonstrated acceptable internal consistency (see Table 8). There was a non-significant effect of collection month on HbA_{1c}, $F(7, 44) = 0.50$, $p = .831$, indicating low seasonal variation.

Descriptive Characteristics

Descriptive statistics are outlined in Table 7. Of the 52 adolescents included in the final dataset, 44.2 per cent were female and 55.8 per cent male. The target age-range was fully represented, with considerable variation in disease duration (1 year, 2 months to 16 years, 5 months). The majority of participants (71.2 per cent) used an insulin pump to manage their diabetes, the remainder with needle injections. HbA_{1c} values reflected the suboptimal glycaemic control typical of adolescence: only two participants (3.8 per cent) were within recommended target range (≤48mmol/mol), while 17 adolescents (32.7 per cent) showed levels classified at-risk (>69 mmol/mol) (NCC-WCH, 2015). Mean HbA_{1c} for the sample was analogous to the national average for CYP aged <19 with T1D (67.3 mmol/mol) (RCPCH, 2018). For the variables assessed by self-report questionnaires, the sample displayed values across the range. Fourteen participants (26.9 per cent) scored above clinical cut-off on the PI-ED (≥20) indicating somewhat elevated levels of emotional distress in the sample, as is common among T1D youth (Reynolds & Helgeson, 2011).

Table 7. Descriptive statistics for the final sample (*N* = 52)

	M	*SD*	Range	*Max. Range*
Age (years)	14.87	2.00	11-18	*11-18*
Diabetes duration (years)	7.06	4.35	1.15–16.45	*N/A*
HbA_{1c} (mmol/mol)	65.93	14.40	42-107	*N/A*
SCI	37.61	6.28	17.86–48.57	*10-50*
SCS-FS	2.90	0.82	1.24–4.60	*1-5*
SCS-P	2.79	0.77	1.17–4.68	*1-5*
SCS-N	2.98	1.02	1.00–4.87	*1-5*
PI-ED	15.20	8.67	0–38	*0-42*
DFBC-N	15.72	4.92	8-33	*7-35*

Note. SCI = Self-Care Inventory. SCS-FS = Self-Compassion Scale, full-scale. SCS-P = Self-Compassion Scale, positive items. SCS-N = Self-Compassion Scale, negative items. PI-ED = Paediatric Index of Emotional Distress. DFBC-N = Diabetes Family Behaviour Checklist, non-supportive subscale.

Correlational Analyses

Bivariate correlations are presented in Table 8. Regarding primary hypotheses, self-compassion (measured by the SCS-FS) exhibited a moderate inverse association with HbA1c ($r = -.27$, $p = .051$) and large positive association with regimen adherence ($r = .48$, $p < .001$). Subscale analyses revealed greater dependency between outcome variables and the SCS-P, and weaker interrelations with the SCS-N. Coefficients marked with asterisks remained significant after Holm *p*-value adjustment for multiple comparisons (see Wright, 1992).

Regarding secondary hypotheses, critical/intrusive parental diabetes behaviour was not correlated with self-compassion or T1DM outcomes (*p*s ≥ .345). Emotional distress was strongly associated with self-compassion (full- and subscales) and decreased adherence (*p*s ≤ .001), but exhibited no statistically significant relationship with glycaemic control (HbA_{1c}) ($p = .175$). Gender was also related to self-compassion, with female participants being less self-compassionate.

Table 8. Bivariate correlations and scale reliability analyses

Variable	1	2	3	3(a)	3(b)	4	5	6	7	8	9	α
1. Glycaemic control (HbA_{1c})		-.63***	-.27‡	-.34*	.18	.19	.08	.42**	-.05	.25‡	-.31*	-
2. Adherence (SCI)			.48***	.55***	-.36**	-.47***	-.13	-.32*	-.05	-.21	.13	.87
3. Self-compassion (SCS)				.89***	-.94***	-.77***	-.05	-.05	-.39**	-.08	.10	.95
3(a) SCS, positive items (SCS-P)					-.69***	-.68***	-.04	.00	-.27‡	-.14	.05	.90
3(b) SCS, negative items (SCS-N)						.74***	.05	.07	.43**	.02	-.13	.94
4. Emotional distress (PI-ED)							.02	.17	.44**	.19	-.10	.93
5. Critical/non-supportive parental diabetes behaviour (DFBC-N)								.02	-.02	.25‡	-.07	.62
6. Age (years)									-.23‡	.40**	-.15	-
7. Gender										.03	.14	-
8. Disease duration (days)											-.02	-
9. Insulin delivery method												-

$^{\ddagger}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. α = Cronbach's alpha.

Linear Regression Analyses

Linear regression models were computed using the backward-entry procedure; this eliminates non-significant predictors in reverse-order of magnitude, re-examining regression coefficients until the best predictive model is identified. The two outcomes of interest were each regressed onto three separate models, utilising (a) SCS full-scale scores; (b) SCS positive items only; and (c) SCS negative items only. Results are displayed in Table 9.

Table 9. Regression models predicting glycaemic control and regimen adherence

	Outcome variable: HbA_{1c}					
	Model: SCS-FS		Model: SCS-P		Model: SCS-N	
Predictor variables	β, first equation R^2 = .32 R^2 *adj* = .21	β, last equation R^2 = .29 R^2 *adj* = .25	β, first equation R^2 = .39 R^2 *adj* = .29	β, last equation R^2 = .35 R^2 *adj* = .31	β, first equation R^2 = .27 R^2 *adj* = .15	β, last equation R^2 = .24 R^2 *adj* = .21
Age	.36*	.37**	.42**	.38**	.33*	.38**
Gender	.00		.07		.00	
Insulin method	-.24‡	-.24‡	-.27*	-.24*	-.25‡	-.26*
Disease duration	.11		.06		.11	
DFBC-N	.02		.03		.03	
PI-ED	-.21		-.29		.00	
Self-compassion	-.39‡	-.23‡	-.49**	-.33**	.12	

	Outcome variable: Adherence (SCI)					
	Model: SCS-FS		Model: SCS-P		Model: SCS-N	
Predictor variables	β, first equation R^2 = .35 R^2 *adj* = .24	β, last equation R^2 = .31 R^2 *adj* = .29	B, first equation R^2 = .42 R^2 *adj* = .33	β, last equation R^2 = .40 R^2 *adj* = .37	β, first equation R^2 = .30 R^2 *adj* = .19	β, last equation R^2 = .28 R^2 *adj* = .25
Age	-.22	-.30*	-.28*	-.32**	-.20	-.25‡
Gender	.12		.06		.12	
Insulin method	.02		.04		.03	
Disease duration	-.03		.02		-.02	
DFBC-N	-.10		-.11		-.11	
PI-ED	-.21		-.12		-.42*	-.43**
Self-compassion	.34‡	.46***	.48**	.55***	-.07	

‡p < .10. *p < .05. **p < .01. ***p < .001.

Regarding glycaemic control, utilising the SCS-FS, predictors remaining in the final model were age, insulin delivery method, and self-compassion. Better

glycaemic control (lower HbA_{1c}) was predicted by lower age, insulin pump usage, and higher levels of self-compassion. An alternative regression model utilising the SCS-P explained more variance in HbA_{1c} (and exhibited a larger β coefficient), indicating SCS positive items were a stronger predictor of glycaemic control than the combined full-scale. The subscale representing a self-critical mindset (SCS-N) was not a significant predictor of HbA_{1c}.

Regarding regimen adherence, utilising the SCS-FS, predictors remaining in the final model were age and self-compassion. Greater adherence (SCI scores) was predicted by younger age and higher self-compassion. As above, regression analyses utilising the SCS-P provided the best explanatory model of variation in regimen adherence, and exhibited the largest β coefficient. Age and emotional distress (PI-ED scores) were retained in the model using SCS negative items (SCS-N), indicating a self-critical mindset was not significantly related to adherence levels.

Mediation analyses

In light of regression analyses identifying the SCS-P as the best predictor of study outcomes, secondary hypotheses were evaluated using this positive subscale only. A bias-corrected mediation model (bootstrap sample = 5000) was computed to examine whether a self-compassionate/reassuring mindset would explain the relationship between emotional distress and adherence levels, controlling for age as a covariate. Other planned mediation analyses were not performed due to exhibiting non-significant relationships between predictor and outcomes (*p*s > .05). The resulting model (Figure 3) indicated partial mediation. There was a significant indirect effect of emotional distress (PI-ED) on adherence (SCI) through self-compassion/reassurance (SCS-P), b = -0.25, BCa CI [-0.49, -0.07]. This represents a large effect, β = -0.34, 95% BCa CI [-0.62, -0.10]. Within this sample, the poorer

diabetes regimen adherence observed among participants with elevated emotional distress was explained by lower levels of a self-compassionate/reassuring mindset.

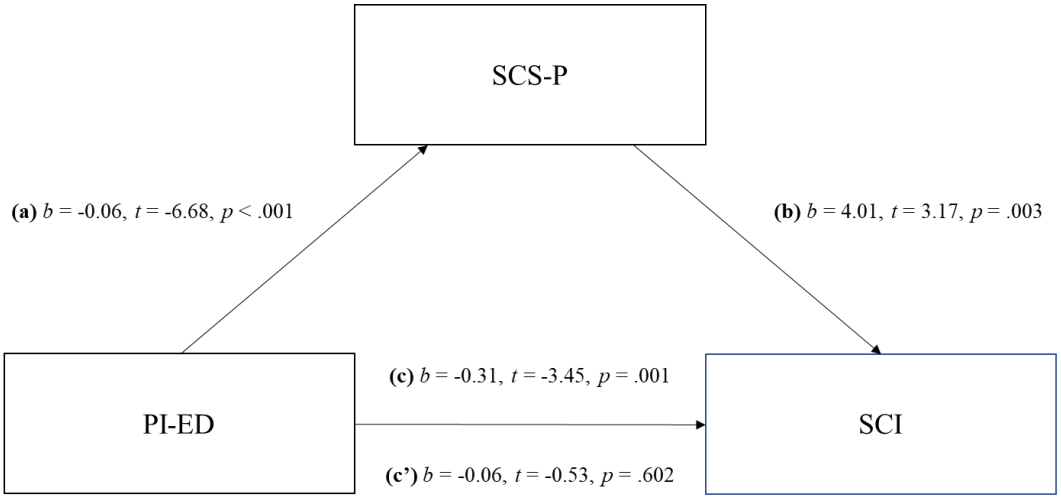

Figure 3. Mediation of the emotional distress/regimen adherence relationship by self-compassion (positive items), controlling for age.

Discussion

This study explored whether self-compassion is related to key physiological and behavioural outcomes in adolescents with T1D. The primary hypothesis was supported: self-compassion was associated with improved glycaemic control and regimen adherence in a sample of adolescents with established T1D. A moderate inverse relationship with HbA_{1c} and large positive association with adherence was identified, after controlling for other predictors. The small sample size necessitates tentative interpretation; however, these results offer preliminary indication that the benefits of self-compassion for diabetes management previously observed in adults may also apply in adolescence (Ferrari et al., 2017; Friis et al., 2015). In the present study, younger age also predicted better T1DM; this echoes a documented trend attributed to shifts from parent-led to self-led diabetes care during later adolescence (Holmes et al., 2006). Insulin delivery via subcutaneous pump was also related to

lower HbA_{1c}; this is consistent with evidence from RCTs examining comparative efficacy with needle injection treatments (Pickup, Matock, & Kerry, 2002).

In light of emerging critique regarding the SCS factor-structure (see Muris & Petrocchi, 2017), analyses were repeated with questionnaire items divided to represent self-compassionate/reassuring vs. self-critical mindsets. Regression models utilising positive items explained the largest proportion of variance in both glycaemic control and regimen adherence. By contrast, in isolation, negative items were not a significant predictor. These results infer that a soothing intrapersonal dialogue characterised by warmth and acceptance has unique benefits for T1DM in adolescents, not explained by variation in self-criticism. Whilst beyond the scope of the present paper, these findings also lend ancillary support to use of a two-component model of the SCS in future studies examining the effects of self-compassion (or self-criticism) on chronic disease management in adolescents.

A second research aim was to examine self-compassion as a potential explanatory mechanism linking two established risk factors (emotional distress and critical/intrusive parental diabetes behaviour) to T1DM outcomes. Findings regarding secondary hypotheses were mixed. There was no statistically significant association between emotional distress and glycaemic control in the sample, prohibiting planned mediation analyses. Interrelations among critical/intrusive parental behaviour, self-compassion, and T1DM outcomes also failed to emerge. However, a self-compassionate/reassuring mindset (assessed by SCS-P) did mediate the relationship between emotional distress and regimen adherence. This suggests impaired self-soothing may explain why emotionally distressed adolescents exhibit more pronounced difficulties adhering to T1D treatments (Holmes et al., 2006).

Implications

Taken together, the present findings tentatively suggest that a compassionate self-approach may have a role in supporting effective T1DM among adolescents. Replication in a robust, larger-scale sample may lend support to a speculative proposition that self-compassion could have comparable relevance to the management of diabetes in adolescence, as in adulthood (Ferrari et al., 2017; Friis et al, 2015). Theories of adolescent development infer that access to an adaptive emotion-regulation strategy might be especially beneficial during this period of rapid biopsychosocial change. Adolescence is a transition characterised by increased engagement with innate affiliative needs for belonging, status, and approval (Gilbert & Irons, 2009). Metacognitive maturation initiates reflective appraisal processes (a sense of the self in others' minds), alongside the emergence of self-conscious emotions (e.g., pride, guilt, shame) and self-to-self relating (e.g., self-reassurance, self-criticism) (Sebastian, Burnett, & Blakemore, 2008). Gilbert and Irons (2009) suggest a heightened focus on social acceptance means adolescents are especially prone to feelings of shame in environments that suggest comparative social inadequacy. For adolescents living with T1D, the unrelenting demands of treatment and side-effects of glycaemic instability may expose these vulnerabilities. Concerns about fitting in and declines in perceived social acceptance are more common among adolescents with T1D than their healthy peers (Helgeson, Snyder, Escobar, Siminerio, & Becker, 2007; Marshall, Carter, Rose, & Brotherton, 2009), perhaps amplified by the illness status that may permeate co-occurring identity formation. Modern treatment frameworks, structured around strict numeric HbA_{1c} targets and intensive behavioural management, provide further scope for self-appraisal – and a sense of failure, shame, and self-blame if found wanting (Archer, 2014; Wolpert & Anderson, 2001). The present findings suggest that adolescents who relate to

themselves in a more kind, accepting manner may be better placed to cope with these demands, providing a protective buffer for T1DM.

Neff's (2003a) tripartite model of self-compassion provides a framework for interpreting these effects. Access to a compassionate mindset may help adolescents with T1D conceptualise their hardships as a shared human experience, lessening the sense of difference and isolation that can undermine regimen adherence (Storch et al., 2006). Soothing system-activation may also nurture mindful acceptance of suffering, reducing engagement with ruminative or suppressing emotion-regulation strategies that deplete self-regulatory resources (Schmeichel, 2007). A kind self-attitude may further serve to encourage subjective forgiveness when experiencing lapses, attenuating negative affect and promoting regimen re-engagement over defensive denial and avoidant coping (Archer, 2014; Sirois et al., 2015; Terry & Leary, 2011). Self-compassion thus has apparent potential as a psychological resilience resource for adolescents with T1D, fostering commitment to treatment through enhanced self-regulation and, in turn, improved glycaemic control. Replication and further research is needed to verify proposed pathways, including whether it is the more conscientious regimen adherence observed among more self-compassionate adolescents that accounts for their apparently lower HbA_{1c} levels.[5] However, these preliminary findings are in keeping with evidence that self-compassion is associated with lower negative affectivity and 'backsliding' in response to self-regulatory failures, as well as increased use of effective coping strategies, adherence to medical advice, and engagement with health-promoting behaviours (Adams & Leary, 2007; Sirois et al., 2014; Sirois et al., 2015; Terry, Leary, Mehta, & Henderson, 2013).

[5] This research need has been partially addressed with mediation analyses for the purposes of the Thesis Portfolio - see Chapter 5: Additional Results (section 5.3).

Mediation results suggest impaired self-compassion may help to explain why emotionally distressed adolescents experience particularly acute problems with T1D regimen adherence and control (de Groot et al., 2001; Gonzalez et al., 2008). Psychological distress is thought to increase the salience of negative beliefs about the self, fostering a self-deprecating attitude and self-blaming attributional style that seems intuitively at odds with a compassionate inner dialogue (Beck, Rush, Shaw, & Emery, 1979). More emotionally distressed adolescents may thus lack access to the self-soothing capacities necessary to foster ongoing adherence efforts in the face of otherwise demoralising lapses in diabetes care and control. Theoretically, this could explain why CBT and antidepressant medications exhibit only weak effects on glycaemic control among T1D youth, despite effectively reducing psychological distress (Winkley, Landau, Eisler, & Ismail, 2006). Interventions focused on enhancing self-compassion may target more directly the specific cognitive-affective-motivational mechanisms that influence adherence behaviours.

Self-compassion has added potential utility as trainable resource. A well-established evidence-base demonstrates self-compassion can be enhanced at state and trait-level in adults (see Kirby, Tellegen, & Steindl, 2017). Recent studies indicate that a more compassionate mindset can also be cultivated among adolescents (e.g., Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016). The present findings suggest self-compassion training may help adolescents maintain effective T1DM, particularly among those whose heightened distress contributes to self-defeating cognitions and behaviours. To date, only one trial has examined self-compassion as an intervention for diabetes control: Friis, Johnson, Cutfield, and Consedine (2016) reported a reduction of one per cent in HbA_{1c} levels among 63 adults with diabetes at three months following an 8-week mindful self-compassion

program. If replicated in larger-scale research, the results of the present study might infer that compassion-based interventions could also prove beneficial for supporting T1D youth. Future studies might investigate which components of a self-compassionate mindset are associated most strongly with T1DM outcomes, thus identifying potential intervention targets.[6]

Limitations and future directions

Although this study usefully extends previous research findings to an adolescent sample, it is not without limitations. The cross-sectional design prohibits causal inference, meaning the associations identified may function in any direction. For example, it is plausible that the inner dialogues of adolescents with well-managed T1D may exhibit greater warmth and kindness due to their already greater sense of self-efficacy. Further longitudinal and experimental research is necessary to establish if self-compassion initiates improvements in T1DM among youth. Findings in the present study are also based on a small, self-selecting sample, whose characteristics may vary systematically from those who declined to take part. Given the overt research aims, participants may already have been more open to the concept of self-compassion, or perhaps encouraged to volunteer within more supportive family systems. The latter may also explain why critical/intrusive parenting did not emerge as a significant predictor of study outcomes, contrary to previous findings (e.g., Lewin et al., 2006; Wiebe et al., 2005).

It is also possible that findings are attributable to unmeasured confounding variables related to both self-compassion and T1DM, such as socioeconomic status or eating disorder pathology (Ferrari et al., 2017; Helgeson et al., 2010; Kelly, Vimalakanthan, & Carter, 2014). Age was measured in years (not days), reducing

[6] See Chapter 5: Additional Results (5.4), for exploratory analysis examining the relationship between T1DM outcomes and self-compassion as measured at the SCS sub-scale level.

analytical sensitivity, and other variables were assessed with self-report measures that depend upon honest disclosure. Participants may have been motivated to inflate adherence scores in an effort to avoid the adverse emotions associated with confronting self-regulatory failures (Terry & Leary, 2011). However, the wide range of SCI scores and strong correlation (r = -.63) with HbA_{1c} values suggest generally reliable reporting. Future researchers may wish to consider using frequency of blood-glucose monitoring as a more objective adherence indicator. Finally, the capacity to generalise beyond the sample is limited by the ethnic homogeneity of the patient population at participating sites, reported as being 95 / 96.9 per cent White compared to a national average of 73.7 per cent (RCPCH, 2018).

These limitations noted, this exploratory study makes a nascent contribution to our understanding of the protective factors associated with effective T1DM in young people. The sample size was small and lacked ethnic heterogeneity, necessitating replication and extension – but was representative of the target population in terms of gender, age, and outcome variables of interest. In an extension to the adult literature (e.g., Ferrari et al., 2017), T1DM was assessed using both self-reported behavioural and objective physiological measures, and the analytic method attended to possible explanatory pathways, including emotional distress and the relative contributions of self-compassionate vs. self-critical mindsets. As many adolescents experience suboptimal T1D outcomes, future studies might consider examining these associations in a larger, more diverse sample to determine generalisability. If the present findings are replicated, further research investigating self-compassion as an intervention target for regimen adherence and glycaemic control within this population may also be of value.

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Chapter 4

Additional Methods

The previous chapter outlined findings of an empirical investigation into the relationship between self-compassion and type 1 diabetes management (T1DM) outcomes among a clinical sample of adolescents. For completeness, this chapter provides an overview of methodological and ethical issues considered in the design and conduct of the Empirical Research Project (ERP). The information below explores: (a) the rationale for the chosen study design; (b) sample selection; (c) the rationale for using selected measures and their psychometric properties; (d) service user involvement; (e) procedural issues; (f) ethical considerations; and (g) dissemination plans.

4.1 ERP Design

The study employed a quantitative, cross-sectional design to explore the relationship between self-compassion and diabetes management in adolescents with T1D. Consistent with the research hypotheses, this design permitted investigation of the direction, strength, and statistical significance of associations among the variables of interest. As only one group of researchers (to date) have investigated self-compassion in adolescents with chronic physical health conditions (Kemper et al., 2016), this study was considered exploratory in nature. The design was selected to broadly replicate similar cross-sectional research in the adult diabetes literature (e.g., Ferrari, Dal Cin, & Steele, 2017; Friis, Johnson, Cutfield, & Consedine, 2015), although on a notably smaller scale due to time and resource constraints on thesis production. It was considered inappropriate to conduct an intervention-based study until an association between self-compassion and improved adolescent T1DM has

been demonstrated. A quantitative design was preferred to reduce data completion time, in recognition that adolescents with T1D already have burdensome treatment regimens to follow and may decline to take part in more time-consuming research. As a doctoral thesis project, the limited window of recruitment and data collection time available meant it was not possible to conduct a larger-scale or longitudinal-design study. Further research of this nature will be necessary to replicate, extend, and generalise the results of the present study.

4.2 Sample Selection

Adolescence was defined in the current study as between 11 and 18 years (inclusive). This age-range is slightly narrower than the adolescent period currently specified by the World Health Organization (2014) of between 10 and 19 years. It was selected to reduce socio-cultural heterogeneity within the sample by recruiting within the boundaries of secondary school-age in the UK. All participants (and the consenting parent of those aged <16 years) were required to speak/read English, as no translation or interpreting budget was available.

Conventional rule-of-thumb formulae for multiple regression modelling signalled the need for a sample of at least 70 to 106 participants, utilising Harrell's (2001) and Tabachnick and Fidell's (2013) formulae, respectively. An *a priori* power calculation was also computed in GPower 3.1 to ascertain minimum sample size based on previously reported effect sizes. With no extant literature among adolescents, an estimated effect size (R^2 = .159) was computed representing the mathematical average of effects reported in studies examining self-compassion among adults with diabetes (Ferrari et al., 2017; Friis et al., 2015). With alpha held at .05, the *a priori* analysis indicated a sample of 84 participants would provide adequate power (0.8) for a multiple regression model incorporating seven predictor

variables. However, the possibility that effect sizes may be divergent in magnitude within an adolescent diabetes population was held in mind. As the final sample (*N* = 52) fell below the projected *a priori* calculation, post hoc power calculations were subsequently computed utilising the observed effects (see 5.1).

4.3 Measures: Selection and Psychometric Properties

A number of clinical and questionnaire-based measures were used to obtain data relevant to the research hypotheses. All questionnaires were administered directly to adolescents (only), in light of the primary variable of interest being a self-relational construct (Neff, 2003a). The decision to favour self-report was also influenced by the paradigm recognising CYP as competent social beings, capable of providing a reliable and valid commentary on their own behaviours and feelings (Coyne, 1998). Basic psychometric data for all measures can be reviewed in the ERP (Chapter 3) but some additional information is provided below. Estimated completion time was an important consideration in the selection of all self-report questionnaires, in order to minimise the burden on adolescent participants.

4.3.1 Glycaemic control. Glycaemic control was assessed using participants' most recent glycated haemoglobin (HbA_{1c}) measurement. HbA_{1c} was selected in light of widespread use throughout diabetes literature and clinical practice as an outcome measure for glycaemic control (e.g., National Collaborating Centre for Women's and Children's Health [WCC-WCH], 2015; Stettler et al., 2006). By providing a three-month average of blood plasma glucose concentration, HbA_{1c} offers a substantially more reliable indicator of ongoing glycaemic control than measures of concurrent blood sugar concentration, which fluctuate in line with carbohydrate consumption. Clinically, HbA_{1c} is also a 'metric that matters' in so far as HbA_{1c} levels are inversely associated with the incidence and progression of

diabetes-related microvascular complications (The Diabetes Control and Complications Trial Research Group, 1993).

In defining "most recent" HbA_{1c}, a maximum interval of three months +/- questionnaire administration was selected, primarily because three months is the approximate lifespan of red blood cells (Cohen et al., 2008). Service providers for CYP with T1D are also expected to monitor HbA_{1c} at least every three months under NICE guidance and the Paediatric Diabetes Best Practice Tariff (NCC-WCH, 2015; NHS Improvement, 2016), meaning readings within this timeframe were easily retrievable from participants' records. HbA_{1c} data was sourced direct from the clinical records of participating diabetes services, both to enhance metric objectivity and due to problems with missing data in previous studies requesting self-reported values (e.g., Ferrari et al., 2017).

4.3.2 Regimen adherence. The Self-Care Inventory (SCI; La Greca, Swales, Klemp, & Madigan, 1988) (Appendix D) was used to measure regimen adherence. The SCI was chosen because its 14 items address frequency of engagement with all core T1DM components, including glucose monitoring, insulin administration, meals, exercise, and engagement with services. The SCI is also brief (completion time ~five minutes), readily interpretable (i.e., higher scores = better adherence), and applicable to a range of insulin delivery regimes (e.g., pump, injections). It has been substantiated as a reliable measure of adherence behaviours in adolescents with T1D, with a shared test-retest variance of 91 per cent over a two-week period in a sample of 11 to 18 year olds (Lewin et al., 2009). Internal consistencies have been reported at .73 or above and moderate-to-strong correlations identified with structured interviews assessing adherence (Lewin et al., 2009; Pereira, Almeida, Rocha, & Leandro, 2011).

4.3.3 Self-compassion. Self-compassion was measured using the Self-Compassion Scale (SCS; Neff, 2003b) (Appendix E). The SCS was selected for use in the current study because it is one of only two quantitative instruments currently available that are specifically designed to assess self-directed (rather than other-directed) compassion (Elices et al., 2017). The full, 26-item SCS was chosen in favour of the short-form version (Raes, Pommier, Neff, & Van Gucht, 2011) due to more robust psychometrics and factorial validation. During its development, Neff (2003b) demonstrated that the SCS showed satisfactory discriminatory validity (e.g., differentiating self-compassion from self-esteem), internal consistency (Cronbach's $\alpha = .92$), and test-retest reliability (.93 over three weeks) among adults. A number of factor analyses have since been conducted, although there is ongoing disagreement with regard to whether a single higher-order factor of self-compassion or a two-component model (representing self-compassion vs. self-criticism) provides the best fit (see Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2015; Lopez et al., 2015; Neff, 2016). In recognition of this ambiguous status, the present author followed the recommendation of Muris and Petrocchi (2016) to examine the relative contributions of positive (e.g., *"I'm kind to myself when I'm experiencing suffering"*) and negative (e.g., *"When something upsets me I get carried away with my feelings*") items to the prediction of study outcomes, in addition to the full scale. The SCS was also considered appropriate for the present study due to a brief completion time (~ 10 minutes) and prior use among the sampled age-range (e.g., Bluth & Blanton, 2015; Neff & McGehee, 2010).

4.3.4 Emotional distress. The Paediatric Index of Emotional Distress (PI-ED; O'Connor, Ferguson, Carney, House, & O'Connor, 2016) was used (under

license)[7] to measure emotional distress (e.g., *"I worry about things"*; *"I am lonely"*). This instrument was favoured by diabetes clinicians at the research sites due to its brevity and routine use in paediatric diabetes services (NHS Improvement, 2016). Satisfactory psychometric properties have been demonstrated, with internal consistency reported at .83, a significant association with the Beck Youth Inventories for depression and anxiety, and good test-retest reliability (.81) over one week (O'Connor et al., 2016). The PI-ED also helpfully excludes somatic symptoms that confound the measurement of emotional distress in CYP with physical health conditions. Furthermore, as a generalised distress measure, its use negated the need for separate tools assessing anxiety and depression, and circumvented disputes about whether these conditions can be reliably differentiated in youth (Brady & Kendall, 1992). Licensing costs also fell within the thesis portfolio budget, in contrast with alternative measures validated in youth aged ≤18, such as the Beck Youth Inventories (J. Beck, A. Beck, & Jolly, 2001).

4.3.5 Critical/intrusive parental diabetes behaviour. This variable was examined using the non-supportive subscale of the Diabetes Family Behaviour Checklist (DFBC; Schafer, McCaul, & Glasgow, 1986) (Appendix F). The DFBC was selected due its comparative brevity among instruments measuring family diabetes behaviour, and previous use in research with adolescents. Internal consistencies for the non-supportive scale have been reported at .60 to .82 (Schafer et al., 1986; Hanson, DeGuire, Schinkel, & Henggeler, 1992; Lewin et al., 2005) and test-retest reliability at .77 (La Greca, Swales, Klemp, Madigan, & Skyler, 1995). Convergent and divergent validity have also been demonstrated, with strong

[7] Due to copyright conditions, a copy of the PI-ED has not been included in appendices.

correlations to other validated measures of parental support, adherence, and glycaemic control (Lewin et al., 2005).

The validity of measuring frequency of critical/intrusive parental behaviours only (e.g., *"Nag you about testing your glucose level"*) was supported by analyses confirming the supportive and non-supportive scales of the DFBC represent unique dimensions (Lewin et al., 2005). Within the adolescent T1D literature, the associations between diabetes-specific parental behaviours and regimen adherence/glycaemic control are substantially stronger for critical/intrusive behaviours relative to supportive behaviours (e.g., Lewin et al., 2005; Lewin et al., 2006). There appears to be something specific about the *presence* of parental behaviours perceived as critical or intrusive – as distinct from the *absence* of parental behaviours perceived as supportive – that affects how adolescents manage their diabetes. Duke et al. (2008) have suggested this might relate to regimen non-adherence being used by adolescents as a means of resisting the demands of parents they see as coercive or critical.

4.3.6 Demographics and diabetes information. An 'About You' form (Appendix G) was used to gather self-reported data on participants' age, gender, and insulin delivery method; this enabled statistical control in light of previous research highlighting these variables as potential covariates (Helgeson et al., 2010; Holmes et al., 2006; Pereira et al., 2011; Pickup, Matock, & Kerry, 2002). Although an association between glycaemic control and socioeconomic status has been found in some studies (e.g., Helgeson et al., 2010), a measure was not included due to concerns that adolescents might not feel confident to answer questions on parental income/profession.

Diabetes duration was calculated from the date of diagnosis in medical records because the researcher was unclear if participants would recall this information freely. Metric accuracy was high due to precise diagnosis dates (DD/MM/YY) being routinely recorded by participating services. This also allowed calculation of disease duration in days (rather than months or years), reducing the window of error within this variable. Diabetes duration was also considered a likely covariate, having been consistently linked to variations in regimen adherence and glycaemic control within the adolescent T1D literature (e.g., Duke et al., 2008; Pereira, Berg-Cross, Almeida, & Machado, 2008).

4.4 Service User Involvement

A local diabetes youth group[8] were approached during the research planning phase (August-November 2016) to elicit feedback on the proposed study questions, design, and materials, among the target population. Unfortunately, the author's attempts to make contact with the youth group were not reciprocated. CYP and families receiving diabetes care at Norfolk and Norwich University Hospital (NNUH) were invited to comment on the project proposal at a Trust-led 'Diabetes Fayre' event. Clinical professionals with expertise in paediatric diabetes were involved in the design and conduct of the study at both research sites.

A local youth service user panel (*Inspire*, a Norfolk & Suffolk NHS Foundation Trust initiative involving service users in mental health research) were formally consulted on the research proposal. The *Inspire* youth panel also reviewed the study's Research Information Sheets (RIS) for readability, comprehension, and age-appropriateness. Feedback suggested that the RIS helpfully recognised adolescents with T1D as experts in managing their condition. The language was

[8] Norwich and District Diabetes Youth Group

noted to have been simplified adequately in the version aimed at 11 to 15 year olds, without appearing patronising. The *Inspire* team also reported that the RIS managed expectations appropriately by stating explicitly that the study may not have direct benefits for participants. Some reviewers felt that more clinical follow-up should be provided to participants scoring in the range indicating clinically-relevant distress on the PI-ED, such as a psychological review with the relevant diabetes team. This was discussed with site collaborators but considered not viable due to resource demands. Furthermore, it was noted that the PI-ED is routinely administered to all adolescents with T1D ≥ four times per annum as part of standard care (NHS Improvement, 2016), making it likely that clinical teams would be already be providing psychological support where required. In response to feedback, some RIS wording was amended to make more explicit the voluntary nature of participation and how HbA_{1c} values would be gathered.

4.5 Procedural Issues

4.5.1 Sample recruitment. Given the relatively large sample required, several recruitment strategies were utilised. At the two research sites, administrative support staff for paediatric and transition-age diabetes first reviewed service caseloads to identify potential participants. Research Information Sheets (RIS) (Appendices H - J) were then sent to all patients meeting inclusion criteria (n = 318), together with a letter of introduction from the relevant diabetes team psychologist(s) (Appendices K - L). Two versions of the RIS were developed to ensure developmental suitability and clarity regarding consent procedures, targeting: (a) adolescents aged ≥16 years, who could consent themselves into the study; and, (b) adolescents aged 11 to 15, who would require parental consent in addition to their own assent. A parent-version of the RIS was also enclosed for eligible adolescents

aged <16 years. Interested parties were asked to contact the researcher (KJ) by email, telephone, or text message, or by returning a *Consent to Share Information* form via their diabetes team. The signature and contact details of a parent were required for adolescents aged <16 to ensure nobody of this age range could participate without parental knowledge and consent.

Posters outlining the study aims, eligibility criteria, and contact information (Appendix M) were placed in waiting rooms and clinic spaces at the research sites. Site collaborators approached eligible patients under their care, where appropriate. Throughout the recruitment period (June to December 2017), the researcher also regularly attended outpatient clinics to promote awareness about the study among adolescents and their families. Finally, a summary of the research aims was presented to attendees of two 'Diabetes Fayre' events at NNUH. Overall, researcher attendance at outpatient clinics garnered the most expressions of interest (n = 39, 52 per cent), followed by the mail-out (n = 27, 36 per cent), and approaches by clinician (n = 9, 12 per cent).

Recruitment activity encountered a number of challenges, not least a relatively commonplace reticence toward research involvement among the target adolescent population. A substantial proportion of those approached declined to participate, citing a lack of time and/or motivation due to the demands of managing T1D and academic workloads. Furthermore, a number of adolescents highlighted extensive prior and/or concurrent participation in other research studies. A glance at the research section of the Juvenile Diabetes Research Foundation website (www.jdrf.org.uk/our-research) indicates 500 active research projects – perhaps some indication as to the source of this 'research fatigue'. Paediatric diabetes nurses at both research sites were actively recruiting for large-scale national projects

throughout this study's recruitment period, depleting both the patient pool disposed to participate and the nurses' own capacity to assist with study promotion. Clinical staff more generally (including site collaborators) reported inadequate time and resourcing to add recruitment activity to existing workloads, likely reflecting the general rise in demand for NHS services (NHS Improvement, 2018). The author's own capacity was also limited through balancing study recruitment with academic and clinical placement workloads, the latter in a separate geographic locale.

4.5.2 Options for data completion. Adolescents keen to get involved were offered a choice of online or paper completion of self-report questionnaires (see ERP). Adolescents selecting paper completion were provided with a questionnaire pack by the researcher (when in attendance) or site collaborators, which was completed and returned during outpatient clinics. Postal distribution was not viable due to budgetary constraints. Adolescents preferring online completion were provided with a hyperlink to the study website, and a unique username and access password (these details were sent to the parents of under-16s to prohibit participation without appropriate consent). In the event of non-completion, reminder emails were sent at intervals of two, four, and eight weeks after receipt of website access details.

4.5.3 Consent procedures. Consent forms were provided to all participants aged ≥16, prior to questionnaire administration. For those aged <16, a parental consent form <u>and</u> a participant assent form were completed, in accordance with ethical guidelines stipulating that children should indicate their own willingness to take part in research as well as their parents' (Royal College of Paediatrics and Child Health, 2000). The language on the assent form for under-16s was adapted for developmental suitability to ensure all participants understood the study conditions. Paper consent forms required the wet-ink signature of the participant or parent (as

applicable). Those using the study website reviewed the same information in electronic format and were required to type their name (in lieu of signature). Consent forms included permission to access a recent HbA_{1c} value and diabetes diagnosis date from clinical records, and information about the right to withdraw at any point prior to data analysis. Preferences around receiving a summary of research findings and/or entry into a prize draw were also gathered. Copies of consent/assent forms can be viewed in Appendices N - P.

4.5.4 Data collection. A set of instructions (Appendix Q) was provided to explain that study questionnaires should be completed independently, in the given order, and answered truthfully. The confidentiality of responses was also noted. Participants were observed to complete the self-report questionnaires in approximately 15 to 30 minutes. A final document (Appendices R - S) thanked the participant for taking part, outlined next steps, and provided details about who to contact with any queries or concerns.

Once self-report questionnaires were complete, the most recent HbA_{1c} reading and diagnosis date for the corresponding participant were requested for extraction by the relevant diabetes team. This information was collated and shared with the researcher via telephone or encrypted (nhs.net) email. This process was handled slightly differently at the two research sites; the collaborator at West Suffolk Hospital provided relevant data on a monthly basis for any new participants, whereas the team at NNUH provided data for all participants immediately following study closure.

4.6 Ethical Issues

In light of the minimal time required for questionnaire completion and utilisation of blood data (HbA_{1c} values) collected in routine clinical practice, the

ERP was considered by the present author to be a relatively low burden study; this was agreed by the *Inspire* service user panel. The main ethical issue considered in the study's design was how to respond to participants scoring in the indicative range for emotional distress on the PI-ED. An action plan was developed in conjunction with site collaborators and is outlined below.

A small risk of confidentiality breaches was noted in the event of manual (paper) files being accessed during transportation from research sites to secure (filing cabinet) storage; to minimise this, all documentation was carried in combination-locked case during transit. Ethical issues regarding incentives for CYP in research were also considered, with a decision to offer all participants the chance to enter a prize draw for a £25 Amazon voucher. A gift certificate prize of this financial value was considered appropriate to the developmental level of participants, the burden involved, and the necessity to recruit from the adolescent population specifically, without being coercive (Rice & Broome, 2004).

4.6.1 Ethical approvals. As previously noted, the study was approved by the Health Research Authority and North of Scotland Research Ethics Committee (REC) (see Appendices T – U). Approvals were sought via the Integrated Research Approvals System (IRAS). As part of the approvals process, the REC requested the addition of contact details for a national child helpline (e.g., Childline) to all RIS; this amendment was duly applied. Local permissions were also obtained to confirm the research sites had the capacity and capability to deliver the study. An amendment was approved by all parties in August 2017, allowing the distribution of reminder emails to non-responders (see Appendix V).

4.6.2 Management of self-reported emotional distress. Participants whose summed PIED score fell above the indicative cut-off for clinically relevant

emotional distress (≥20) were informed by letter (see Appendices W – X). Consent forms included a clause giving the researcher permission to access participants' postal addresses from clinical records (via the relevant diabetes service) in this eventuality (see Appendices O - P). Notification letters were addressed direct to participants aged ≥16 but to the consenting parent of under-16s, in accordance with guidelines recommending parents are informed where the welfare of a child aged <16 is at risk (British Medical Association, 1994).

The letter content encouraged recipients to access support from their diabetes team Clinical Psychologist and provided relevant contact details. The clinical team were also informed of the summed PI-ED score for all participants scoring ≥20. This action plan was outlined on all RIS. Site collaborators noted that the majority of participants scoring above clinical cut-off were already known to experience emotional difficulties and were in receipt of the appropriate psychological input. The PI-ED does not include any items assessing risk of harm to self or others so this issue was not addressed as an ethical consideration within this study.

4.6.3 Confidentiality and management of personal data. All participants were required to provide either their hospital number or name and date of birth in order for clinical data (HbA_{1c} and diagnosis date) to be extracted from the correct patient record. This personal data was collected on consent forms and logged in a password-protected Microsoft Excel spreadsheet, stored on an encrypted memory stick.

Manual (paper) files were securely transported from the research sites in a locked bag and stored in a locked filing cabinet inside the research supervisor's office at the University of East Anglia. Consent forms were stored separate to study data (e.g., questionnaire packs). Any temporary storage of manual files at the

research sites was within a locked filing cabinet inside diabetes team offices. Data collected via Jisc (the study website provider) was encrypted during transmission and stored on secure servers provided by Amazon Web Services, in the Republic of Ireland. Access to these servers is limited to Jisc technical staff, whose contracts of employment contain a confidentiality clause, and permitted only for investigation of operational issues or when required by law. All back-up copies of study data stored on Jisc servers were destroyed after three months elapsed.

All study data was anonymised but linked to person-identifiable data (e.g., consent forms) by a unique identity number. Anonymisation had to be broken for any participant scoring above clinical cut-off on the PI-ED in order for the relevant clinical team and participant/parent to be informed; this was noted on RIS and consent forms. Once study findings have been disseminated to participants, all person-identifiable data will be destroyed. Anonymised research data is retained in secure storage for 10 years by the University of East Anglia.

4.7 Dissemination Plans

The present author intends to disseminate the findings of this portfolio through a variety of mediums. Where requested, participants and consenting parents will be sent a brief summary of the main findings; e-mail addresses were collected on consent forms for this purpose. Manuscripts pertaining to Chapter 1 (systematic review) and Chapter 3 (ERP) have been prepared for submission to the peer-reviewed journals *Applied Psychology: Health and Wellbeing* and the *Journal of Pediatric Psychology*, respectively. A presentation outlining the results of the ERP is due to be given to the East of England branch of the Children and Young People's Diabetes Network, a best-practice group for diabetes clinicians and other

stakeholders. The findings will also be shared with the collaborating clinical teams, and displayed via posters in participating clinics.

Chapter 5

Additional Results

This chapter provides an overview of the assessment of power, bias and assumptions for the statistical models computed in the Empirical Research Paper (ERP; Chapter 3). It also includes some additional exploratory analyses based on research gaps and limitations identified by the ERP.

5.1 Post hoc Power Analyses

In light of the noted discrepancy between the planned (*a priori*) sample size and the number of participants recruited (see 4.2), a series of post hoc power calculations were performed to tentatively evaluate achieved power. Power attained was estimated given the final sample size (N = 52), number of predictors, and observed effect sizes (R^2); results are displayed in Table 10 (below).

Table 10. Results of post hoc power analyses (power achieved)

Model	SCS-FS		SCS-P		SCS-N	
T1DM outcomes	First equation	Final equation	First equation	Final equation	First equation	Final equation
HbA_{1c}	0.94	0.97	0.99	0.99	0.86	0.95
SCI	0.97	0.99	0.99	1.00	0.91	0.98

Notes: SCS-FS = Self-Compassion Scale, full-scale. SCS-P = Self-Compassion Scale, positive items. SCS-N = Self-Compassion Scale, negative items. SCI = Self-Care Inventory.

According to this analysis, the multiple regression analyses presented in the ERP might be adequate to detect effects of the observed size, with alpha held at .05. However, all conclusions must be considered tentative due to the sample size falling

below minimum rule-of-thumb criteria (e.g., 10m or 50 + 8m where m is the number of predictors) and the use of post hoc power analysis being a highly contested practice (e.g., Kelley, 2014; Levine & Ensom, 2001).

5.2 Statistical Assumptions

Further detail is presented below regarding the meeting of statistical assumptions for the tests computed in the ERP (Chapter 3). Visual inspection of histograms and normal Q-Q plots (see Appendix Y) indicated that all study variables approximated a normal distribution. A small degree of positive skew was detectable in the histogram of diabetes duration data, but *z*-scores for skew and kurtosis (Z_{skew} = 1.48, $p > .05$, $Z_{kurtosis}$ = -1.40, $p > .05$) indicated the distribution was not significantly non-normal. HbA_{1c} values exhibited significant positive skew (Z_{skew} = 3.42, $p < .001$), attributable to the influence of two outlying cases (see Appendix Y). Advice was sought from a statistician (D. Peck, personal communication, 20 February 2018) who endorsed the retention of these cases due to reported values being less than three times the upper limit of the interquartile range. Outliers of this magnitude are generally considered not to exert undue influence on the parameters of linear statistical models (Field, 2013). Furthermore, these cases were considered to have clinical relevance as a reflection of the wide variability in glycaemic control exhibited by adolescents with type 1 diabetes (T1D).

Regarding multiple regression analyses, there were no outliers of concern in the data for any of the reported models, with no case in any model exhibiting a standardised residual exceeding 3.29. Maximum Cook's distance values were substantially below 1 for all analyses, indicating no single case exerted undue influence and all models provided a good fit of the observed data. All Variance Inflation Factor (VIF) values were well below 10 and tolerance statistics above 0.2,

suggesting that the assumption of no multicollinearity was tenable for all reported models. When calculated across all predictors, average VIF values were slightly above 1.0 for some models (maximum = 1.69) but this did not represent a major cause for concern given the magnitude of the other collinearity statistics. Visual inspection of histograms and normal P-P plots of regression standardised residuals revealed near-normal distributions for all computed models; the assumption of normality of errors was therefore met. Scatterplots of standardised residuals against standardised predicted values exhibited data points that were relatively randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity were also met for all regression models. Durbin-Watson statistics ranged from 1.95 to 2.14; the proximity of these values to 2 inferred that the assumption of independent errors was likewise likely to have been met. All computed regression models therefore appeared to meet the assumptions that allow generalisation beyond the sample.

5.3 Additional Mediation Analysis

The following analysis addresses a limitation identified within the ERP (Chapter 3) regarding explanatory pathways between self-compassion and T1D management (T1DM) outcomes. In light of the relationships identified between self-compassion and both regimen adherence and glycaemic control, an additional mediation analysis was conducted to examine whether improved adherence mediated the association between a self-compassionate/reassuring mindset and better glycaemic control (lower HbA_{1c}), controlling for age and insulin delivery method as covariates. Evidence of mediation by regimen adherence would lend support to the notion that a self-compassionate attitude leads to improved glycaemic control via a

behavioural pathway (improved self-regulation of T1D self-management behaviours).

Bias-corrected mediation analysis using 5000 bootstrapped samples indicated partial mediation (see Figure 4). There was a significant indirect effect of SCS-P on HbA_{1c} through regimen adherence (SCI scores), b = -5.04, BCa CI [-8.65, -1.52]. This represents a large effect size, β = -.27, 95% BCa CI [-.44, -.09]. Within this sample, the better glycaemic control observed among adolescents with a more self-compassionate/reassuring mindset was explained by greater adherence to T1DM regimens.

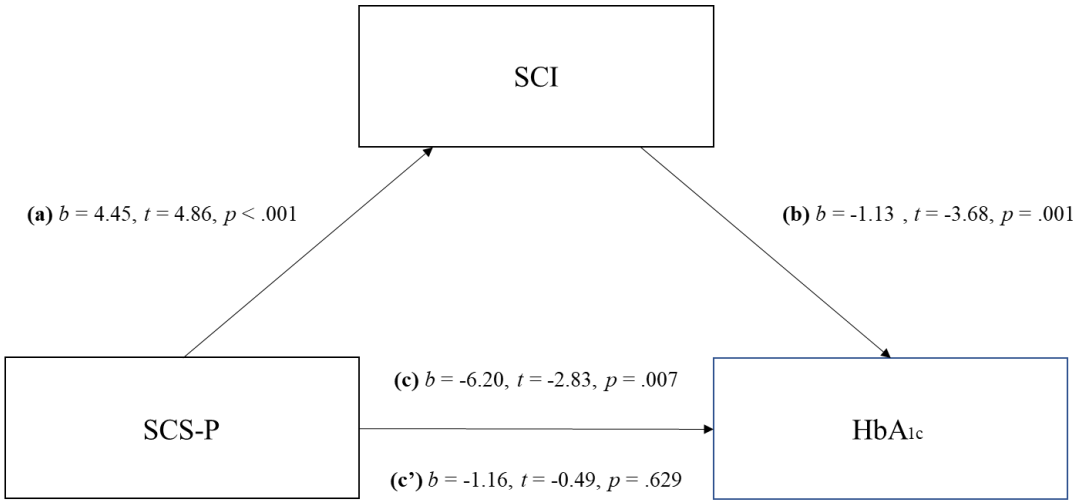

Figure 4. Mediation of the relationship between self-compassion (positive items) and glycaemic control by adherence, controlling for age and insulin delivery method.

5.4 SCS Subscale Analysis

The SCS conceptualises self-compassion via the measurement of six components, three representing a self-compassionate/reassuring mindset (self-kindness, common humanity, mindfulness), and three a more self-critical/judgmental mindset (self-judgment, isolation, over-identification) (Neff, 2003b). The following analysis explores which among these six components best predicted T1DM

outcomes in the present sample. This information may assist anyone developing compassion-based programmes for adolescents with T1D to target the aspects of a self-compassionate approach that are most strongly related to improved adherence and glycaemic control.

Bivariate correlations are presented in Table 11. Glycaemic control was significantly associated with self-kindness and mindfulness, both components exhibiting inverse correlations of moderate size with HbA_{1c} values. Regimen adherence was significantly related to all six self-compassion components, exhibiting positive associations with self-kindness, common humanity, and mindfulness, and negative correlations with self-judgment, isolation, and over-identification. Effect sizes were comparatively larger for the three positive subscales relative to the three negative subscales.

Table 11. Bivariate correlations between T1DM outcomes and six SCS components

	SCS components					
T1DM outcomes	Self-kindness	Self-judgment	Common humanity	Isolation	Mindfulness	Over-identification
HbA_{1c}	-.31*	.18	-.23	.15	-.37**	.18
SCI	.55***	-.34*	.41**	-.30*	.49***	-.36**

*p < .05. **p < .01. ***p < .001. *Notes:* SCI = Self-Care Inventory.

Regression analyses using backward-entry modelling were computed to examine the best predictors of glycaemic control and regimen adherence when the six SCS components were assessed alongside covariates. All statistical assumptions relevant to multiple regression were again met. Regarding glycaemic control, predictors remaining in the final model were age, $\beta = .39$, $t = 3.37$, $p = .001$, insulin

delivery method, $\beta = -.23$, $t = -1.94$, $p = .058$, and SCS mindfulness, $\beta = -.36$, $t = -3.10$, $p = .003$. Better glycaemic control (lower HbA_{1c}) was associated with younger age, insulin pump use, and higher levels of mindfulness. Together, these three variables explained 36.8 per cent of the variance in HbA_{1c} within the sample (adjusted $R^2 = .33$). Regarding regimen adherence, predictors remaining in the final model were age, $\beta = -.28$, $t = -2.51$, $p = .015$, and SCS self-kindness, $\beta = .53$, $t = 4.71$, $p < .001$. Better T1D regimen adherence was associated with younger age and elevated self-kindness. Together these variables explained 38.2 per cent of the variance in adherence (SCI scores) within the sample (adjusted $R^2 = .36$).

Chapter 6

Discussion and Critical Evaluation

This chapter provides a discussion and critical evaluation of the research presented in Chapters 1 to 5. Research findings will be summarised, then synthesised in the context of previous literature in the field. Theoretical and clinical implications will also be discussed, along with the strengths and weaknesses of the portfolio. The chapter closes with some suggested directions for future research.

6.1 Research Aims

This thesis portfolio was designed with an overall objective of examining self-compassion as an intrapersonal resource that may help young people navigate transitions and challenges during the adolescent period. As a body of work, it is theoretically aligned with the domain of positive psychology and draws upon the concepts of resilience, positive functioning, and wellbeing (Diener & Suh, 1997; Luthar, Cicchetti, & Becker, 2000; Seligman, 2011). Two primary research aims were identified: (a) to examine the association between self-compassion and subjective wellbeing (SWB) in studies of adolescents; (b) to investigate self-compassion as a correlate of effective disease management in adolescents with type 1 diabetes (T1D), as indicated by measures of glycaemic control and regimen adherence.

6.2 Overview of Results

The systematic review (Chapter 1) located nine peer-reviewed studies examining the cross-sectional association between self-compassion and SWB in adolescents aged 10 to 19 years. Meta-analytic modelling revealed a large positive association between self-compassion and overall SWB (r = .46) among the healthy

adolescents constituting this sample (*N* = 1345). The direction and magnitude of relationships was found to differ among the three constructs that comprise SWB, such that self-compassion exhibited a moderate positive correlation with positive affect (*r* = .33), a large inverse association with negative affect (*r* = -.47), and a large positive correlation with life satisfaction (*r* = .49). Methodological quality did not influence the strength of these relations, with eight of the nine included studies showing low risk of bias.

Extending the examination of self-compassion to a youth population with chronic illness, the empirical project (Chapter 3) detected a relationship with improved type 1 diabetes management (T1DM) outcomes among adolescents aged 11 to 18 (*n* = 52). Correlational analyses revealed a moderate inverse association between self-compassion and HbA_{1c} levels (*r* = -.27), and a large positive correlation with self-reported regimen adherence (*r* = .48), indicating that more self-compassionate adolescents had better glycaemic control and reported more frequent observance of diabetes management tasks. Linear regression modelling positioned self-compassion as a significant predictor of both glycaemic control and regimen adherence, along with younger age, and (for HbA_{1c} only) insulin delivery via subcutaneous pump. Self-compassion was also found to mediate the relationship between emotional distress and regimen adherence, an association reported in several previous studies (e.g., Gonzalez et al., 2008; Holmes et al., 2006). This suggests that impaired self-soothing capacities may be a pathway through which emotional distress is linked to poorer adherence in adolescents with T1D. No direct association was identified between emotional distress and glycaemic control, and critical/intrusive parental behaviours were uncorrelated with all study variables of interest.

The empirical project also presented incidental findings demonstrating that the positive items of the Self-Compassion Scale (SCS) explained a greater proportion of the variance in T1DM outcomes than the combined full scale, but that no relationship emerged when negative SCS items were examined in isolation. This implies that an inner dialogue characterised by soothing and self-acceptance may have unique benefits for T1DM in adolescence, which cannot be explained by variation in self-criticism.

Additional analyses (see 5.3) identified regimen adherence as a significant mediator of the reported association between self-compassion and glycaemic control (HbA_{1c}). A self-compassionate mindset thus seems to foster physiological resilience via a behavioural pathway (greater adherence to treatment), rather than having a direct effect on glycaemic control. Chapter 5 also presented SCS subscale analyses exploring which components of self-compassion predicted more robust T1DM in the present sample (see 5.4). At the bivariate level, regimen adherence was significantly related to all six SCS subscales, and HbA_{1c} to 'self-kindness' and 'mindfulness'. Linear regression modelling identified mindfulness as the subscale best predicting glycaemic control, while self-kindness explained the most variation in adherence.

6.3 Relations with Previous Literature

Overall, the findings of this research portfolio lend weight to the general proposition that self-compassion may be associated with positive mental and physical health outcomes (Neff, 2003a). Measured as a dispositional resource, self-compassion appears to be a correlate of experiential wellbeing among healthy adolescents, as well as having potential implications for behavioural and physiological resilience among CYP living with a chronic health condition. These findings are in keeping with previous empirical research demonstrating links

between self-compassion and a range of adaptive outcomes, including elevated wellbeing, happiness, optimism, initiative, curiosity and exploration, conscientiousness, engagement with adaptive coping strategies and health-promoting behaviours, fewer symptoms of illness, and less negative affect in response to ill-health or injury (Hall, Row, Wuensch, & Godley, 2013; Neff, Rude, & Kirkpatrick, 2007; Sirois, Kitner, & Hirsch, 2014; Sirois, Molnar, & Hirsch, 2015; Terry, Leary, Mehta, & Henderson, 2013; Zessin, Dickhäuser, & Garbade, 2015). Thus, the research presented herewith adds to a growing body of evidence conceptualising self-compassion as an intrapersonal protective factor for optimal health and wellbeing.

To date, most self-compassion research adopting a positive psychology stance has focused on adults or university/college-age students. The present portfolio augments a small pool of studies examining relations between self-compassion and favourable psychological and physical outcomes in adolescents (e.g., Bluth & Blanton, 2015; Bluth, Campo, Futch, & Gaylord, 2017; Kemper, Heyer, Pakalnis, & Binkley, 2016; Mosewich, Kowalski, Sabiston, Sedgwick, & Tracy, 2011; Neff & McGehee, 2010). As a population subset who must negotiate a raft of developmental transitions together with overall trends toward deteriorating mental health (Grant et al., 2003), adolescents stand to gain substantially from any resource that promotes optimal functioning. The correlational nature of this thesis project prohibits any firm conclusions about whether self-compassion contributes directly to the cultivation of positive health and wellbeing during adolescence. However, the identified associations with elevated SWB and improved T1DM outcomes do suggest that a compassionate inner dialogue may be present to a greater extent among those adolescents who continue to thrive, even in the face of

significant daily struggles. This positions self-compassion alongside other within-person protective factors, as conceptualised by models of psychosocial and physiological resilience in youth (Hilliard, Harris, & Weissberg-Benchell, 2012; Tusaie, Puskar, & Sereika, 2007).

6.3.1 Systematic review. The findings presented in Chapter 1 contribute to existing literature by demonstrating that self-compassion is related to *positive* indicators of emotional health and wellbeing among adolescents, as well as reduced levels of psychopathology – the latter relationship recently meta-analysed by Marsh, Chan, and MacBeth (2017). This discovery is consistent with prior research examining these associations in adults, where the dual-factor model of mental health has already been substantiated (e.g., MacBeth & Gumley, 2012; Zessin et al., 2015). The pattern of relationships identified between self-compassion and the three components of SWB (positive affect, negative affect, and life satisfaction) was similar to that previously reported among adults (Zessin et al., 2015), suggesting some degree of developmental constancy over time. However, the magnitude of the self-compassion/positive affect association was slightly weaker in adolescents compared to adults. This finding requires replication to establish whether it represents a genuine distinction in the positive affect-promoting properties of self-compassion between youth and adulthood, or a by-product of adolescents' lower introspective capacities for identifying pleasant emotions (Bluth & Blanton, 2014). In addition, while a causal association cannot be verified, SR results do complement the findings of recent intervention trials showing that aspects of SWB can be fostered in adolescence through education and training in compassion and mindfulness-based techniques (e.g., Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016; Galla, 2016).

6.3.2 Empirical research paper and additional analyses. The primary contribution of the research presented in Chapter 3 is in extending previous findings in the adult diabetes literature to an adolescent sample. Consistent with studies of adults with diabetes (e.g., Friis et al., 2015b; Ferrari et al., 2017), elevated self-compassion was discovered to be associated with better diabetes management among the sampled adolescents, at both the physiological and behavioural level. These findings build upon other recent attempts at identifying individual difference variables that help explain why some adolescents are able to sustain a stable pattern of good glycaemic control, despite general trends in the opposing direction (Helgeson et al., 2010). Replication of these results in a more robust sample would imply that a compassionate or reassuring way of relating to oneself may join positive affect, benefit finding, and adaptive coping, as among these resilience resources (Jaser & White, 2011; Lord, Rumburg, & Jaser, 2015; Tran, Wiebe, Fortenberry, Butler, & Berg, 2011).

Among the extensive literature examining correlates of T1DM in adolescence, emotional distress and critical, non-supportive, or intrusive parental input are commonly reported risk factors (de Groot et al., 2001; Gonzalez et al., 2008; Lewin et al., 2006; Wiebe et al., 2005). The absence of an association between critical/intrusive parental behaviours and T1DM outcomes in the ERP therefore stands in contrast with previous studies. Whilst no conclusive explanation is viable, the present author considers this finding a potential artefact of the self-selecting recruitment process and requirements for parental consent, which may have generated a sample skewed toward having more supportive family dynamics. Emotional distress emerged as a correlate of regimen adherence but not glycaemic control; whilst unexpected, the latter is consistent with previous research positioning

depressive symptoms as a predictor of deterioration in glycaemic control *over time*, rather than concurrently (e.g., Helgeson, Siminerio, Escobar, & Becker, 2009). Thus, a possible pathway might be that self-compassion exerts a concomitant influence on adherence behaviours, which, in turn, has longitudinal implications for glycaemic control. Mediation analyses of the significant inverse association between emotional distress and regimen adherence indicated that self-compassion might be an explanatory mechanism in this relationship. This finding extends previous research on the links between emotional distress, self-compassion, and T1DM outcomes, which in past studies has positioned self-compassion as a moderator of the diabetes-specific stress/glycaemic control relationship, or examined emotional wellbeing as an outcome (not predictor) variable influenced by self-compassion (e.g., Ferrari et al., 2017; Friis et al., 2015b).

The ERP findings add to a very limited pool of research examining potential benefits of self-compassion for adolescents with chronic illness, with only one other study within this population identified by the present author (Kemper et al., 2016), and none specific to paediatric diabetes. Furthermore, additional analyses (see 5.3) indicate that more frequent adherence behaviours might be a pathway through which self-compassion is linked to improved glycaemic control, replicating the mediating function of health-promoting behaviours on illness symptoms observed among healthy adults with higher self-compassion levels (Dunne, Sheffield, & Chilcot, 2016). Although other potential pathways from self-directed compassion to T1DM outcomes were not explicitly tested, theoretically plausible mechanisms are discussed below (see 6.4).

Previous studies investigating self-compassion among adults with diabetes have not deconstructed the SCS into its six component subscales (e.g., Ferrari et al.,

2017; Friis et al., 2015b), thus the subscale analyses presented in Chapter 5 (see 5.4) are unique in examining which specific components of a self-compassionate approach might be most relevant to T1DM outcomes. The components most strongly associated with dependent variables (mindfulness and self-kindness) have previously been linked with enhanced self-efficacy in young adults, and reductions in perceived stress and negative affect among healthy adolescents, suggesting several further theoretical pathways by which self-compassion might facilitate improved adherence and diabetes control in youth (Bluth & Blanton, 2015; Ying, 2009).

Finally, incidental ERP findings regarding the variance in predictive power of regression models utilising the full-scale SCS vs. positive and negative items in isolation build on recent scholarly critique of the single factor conceptualisation of this questionnaire (e.g., Costa et al., 2016; Lopez et al., 2015). SCS positive items, representing a more self-compassionate mindset, were more strongly associated with T1DM outcomes than negative items, representing a self-critical mindset. A reverse pattern of associations was identified by Muris and Petrocchi (2016) in a meta-analysis examining the prediction of psychopathology symptoms. The results of both papers infer that self-compassion and self-criticism are separate, but related constructs with potentially divergent endpoints for psychological and physical health outcomes, the former perhaps contributing most to optimal wellbeing and functioning, and the latter to suboptimal outcomes.

6.4 Theoretical Implications

The papers presented in this portfolio were designed to extend the empirical investigation of self-compassion correlates among adolescents, rather than as theory-generating research. Nevertheless, there are a number of implications arising from the reported findings, primarily with regard to existing hypotheses about the

downstream consequences of a self-compassionate mindset and associated mechanisms of action. It should be noted that all propositions discussed below are hypothetical and require further empirical validation, particularly in light of this portfolio's exploratory nature.

6.4.1 Main findings. Firstly, the reported findings corroborate the theoretical positioning of self-compassion as an attitudinal construct predictive of enhanced wellbeing, functioning, and health (Neff et al., 2007). Over the past 15 to 20 years, the two most prominent scholars in this field – Kristin Neff and Paul Gilbert – have championed self-compassion as an adaptive emotion regulation strategy, giving rise to affective equanimity and behaviours that foster optimal wellbeing (Gilbert, 2013; Neff, 2003a). The work presented is consistent with this theoretical reasoning, demonstrating empirically that self-compassion appears related to enhanced SWB in adolescence, as well as proactive T1DM behaviours (regimen adherence) directed toward a physiological health indicator (glycaemic control). Thus, this portfolio provides further empirical evidence that the way in which we relate to ourselves may have significant implications for our emotional and physical wellbeing, including during adolescence.

While the mechanisms connecting self-compassion to SWB and T1DM were not explicitly addressed in the present work, the findings are consistent with a number of proposals regarding how self-compassion might function to promote or maintain wellbeing. For example, Neff (2003b) suggests that the intensity of negative emotions should be lessened when an individual treats his or herself with kindness, instead of judgment and criticism. The meta-analytic findings presented in Chapter 1 echo this conceptualisation, demonstrating that self-compassion seems to be strongly associated with reduced negative affectivity among adolescents.

Furthermore, Neff's (2003a) description of the mindfulness component of self-compassion involves holding emotions in balanced awareness, neither avoiding or suppressing them, nor engaging in strategies that amplify their subjective intensity (e.g., rumination). The present meta-analytic findings are again consistent with this description, indicating that adolescents with higher levels of self-compassion exhibit a greater balance of positive and negative affect, the latter not being eradicated but offset against higher levels of positive emotion. Neff (2003b) also argues that in recognising experiences of hardship or suffering as universal, self-compassionate people are able to evaluate difficult situations from a more objective perspective, lessening the perceived impact upon overall quality of life. Sensitivity analyses presented in Chapter 1 are congruous with this explanation, highlighting that adolescents with higher levels of self-directed compassion report increased life satisfaction, perhaps because they are better able to put the personal challenges they experience during this transitional period into perspective.

Researchers in this field also argue that self-compassionate people should treat themselves with greater care and concern at times of difficulty, including when they are sick or hurt, for example by seeking out and following medical advice (Neff, 2003a; Terry & Leary, 2011). This claim is based upon the theoretical premise that directing compassion toward the self necessarily involves attempts to minimise discomfort and behave in ways that enhance long-term health, wellbeing, and happiness (Neff et al., 2007). Once again, the results of this portfolio map neatly with underlying theory, the ERP indicating that more the compassionate among the sampled adolescents exhibited greater adherence to treatment regimens, presumably in an effort to maintain glycaemic control and minimise the risk of complications.

6.4.2 Theoretical pathways. The preceding discussion clarifies the theoretical implications of this portfolio in the context of speculative benefits of self-compassion discussed within scholarly reviews. Over recent years, a number of more specific theoretical pathways have been proposed (and empirically examined) that may link a self-compassionate mindset with increased psychological and physical wellbeing. One such example neatly connects the findings reported in Chapters 1 and 3 by proposing affective modulation as a pathway through which self-compassion relates to increased engagement in health-promoting behaviours. Sirois et al. (2014) provided preliminary evidence of an indirect effect of self-compassion on the practice of positive health behaviours through increased positive affectivity and reduced negative affectivity. They, and others (e.g., Terry & Leary, 2011), suggest self-compassionate individuals are more capable of holding their emotions in balance during times of stress or setback, freeing up self-regulatory resources and boosting motivation in the pursuit or maintenance of health goals. For adolescents with T1D, or indeed many other chronic health conditions, these goals would specifically entail adherence to medical advice, treatments, and disease management regimens. Thus, the finding that self-compassionate adolescents seem to exhibit more efficacious T1DM (Chapter 3) may be a downstream effect of the way self-soothing impacts upon on the experience of positive and negative affect (as reported in Chapter 1), and in turn how this emotional balance promotes self-regulation (Baumeister, Zell, & Tice, 2007).

A further mechanism theorised to explain how self-compassion may relate to positive psychological and behavioural functioning is the use of effective coping strategies. In a review of evidence, Allen & Leary (2010) concluded that self-compassionate people are more likely to use adaptive strategies (e.g., cognitive

restructuring) than maladaptive strategies (e.g., avoidance or escape) to cope in stressful situations. This link between self-compassion and adaptive coping may be highly relevant in the context of adolescence, which (as discussed) is a time of life when exposure to stressors typically increases (Arnett, 1999). Sirois et al. (2014) suggest that the three qualities of self-compassion (self-kindness, common humanity, and mindfulness) promote cognitive appraisals that are less threatening. An adolescent-typical example might be something along the lines of *"I'm upset I did badly in my science homework, but nobody's good at everything and I had lots of other work this week."* This example indicates how self-compassion-based appraisals hypothetically foster engagement with coping strategies that effectively reduce the stressor (here, positive reframing and acceptance), rather than defensive escape-avoidance strategies or self-blame (Sirois et al., 2015). This, in turn, is proposed to engender reductions in perceived stress and negative affect, as well as increases in positive affect and – extrapolating from the results in Chapter 1 – perhaps life satisfaction.

This theoretical pathway may also be relevant to the empirical findings outlined in Chapter 3. Sirois et al. (2015) demonstrated that self-compassion predicts increased use of adaptive coping strategies (e.g., acceptance, active coping) and decreased use of maladaptive strategies (e.g., behavioural disengagement, denial) among people with arthritis and inflammatory bowel disease, which, in turn, improved coping self-efficacy. Adaptive coping has also been empirically established as a predictor of improved glycaemic control in adolescents with T1D (Jaser & White, 2011). Thus, the better regimen adherence seen among more self-compassionate adolescents with T1D in this study may be attributable to a pattern of engagement with more effective and appropriate coping strategies, and perhaps the

consequent impact upon self-efficacy (itself a correlate of effective T1DM in adolescence; Iannotti et al., 2006).

6.4.3 Secondary findings. ERP secondary analyses (Chapter 3) identified an indirect effect of emotional distress on T1D regimen adherence through self-compassion, implying that impaired self-soothing may be one pathway explaining why distressed adolescents exhibit problematic T1DM (Gonzalez et al., 2008). This finding makes theoretical sense in so far as emotional distress is linked with a self-deprecating mindset, which may inhibit motivation and self-regulation (Terry & Leary, 2011). Friis, Consedine, and Johnson (2015) hypothesised that these variables might interact in the opposing direction, such that self-compassion lowers distress, in turn having a beneficial effect on T1DM. The present findings proffer an alternative theoretical pathway, at least among adolescents, with the direct relationship between emotional distress and regimen adherence becoming non-significant once self-compassion is accounted for.

The additional mediation analyses reported in Chapter 5 (see 5.3) revealed an indirect effect of self-compassion on glycaemic control through regimen adherence; in fact, the direct relationship between self-compassion and HbA_{1c} was substantially reduced once adherence was accounted for. This signals that a behavioural pathway appears to be the primary route through which self-compassion may influence glycaemic control among adolescents with T1D. This finding echoes proposals by Friis et al. (2015a) that self-compassion may improve physiological outcomes in people with diabetes by motivating greater self-care and self-regulatory capacities (e.g., re-engagement with treatment regimens following a temporary lapse). Friis and colleagues (2015a) further hypothesise that this relationship may be attributable to the motivational influence of a self-relating context characterised by warmth and

acceptance, which supports goal pursuit without threat of self-criticism or attack. In contrast, the results of this mediation analysis are inconsistent with the hypothesised existence of a *direct* pathway from self-compassion to glycaemic control via the calming effects self-soothing upon metabolic and autonomic processes involving inflammatory arousal (Friis et al., 2015a). Thus, the present findings imply that potential benefits of a compassionate self-approach for the physiological resilience of adolescents with T1D occur through influencing regimen adherence. Theoretically speaking, this is an important extension to previous research because glycaemic control is affected by factors besides regimen adherence, as indicated by an imperfect average correlation in meta-analyses examining these variables (e.g., Hood et al., 2009).

In further analyses of ERP data, the SCS subscales most strongly associated with dependent variables were mindfulness and self-kindness (see 5.4). Having been linked with increased self-efficacy in young adults (Ying, 2009), these self-compassion components might foster an enhanced sense of capability to cope with the demands of T1D, and to persevere in the face of setbacks or periods of suboptimal glycaemic control (Bandura, 1997). Interestingly, mindfulness emerged as the strongest predictor of HbA_{1c} levels (along with age and insulin pump use), while self-kindness best predicted regimen adherence (together with age): what might explain this distinction? The mindfulness subscale has previously demonstrated an association with lower levels of perceived stress and negative affect among adolescents (Bluth & Blanton, 2015). Perhaps, then, the capacity to hold painful feelings in balanced awareness has some beneficial effect on stress-related inflammatory processes, which have been implicated in the onset and progression of diabetes (Breines et al., 2014). That self-kindness – a warm, accepting, non-

judgmental inner dialogue – strongly predicted regimen adherence makes theoretical sense; T1DM inevitably involves occasional self-regulatory lapses or glycaemic instability, so treating oneself kindly in these circumstances may promote re-engagement over defensive denial and avoidance (Terry & Leary, 2011).

6.4.4 Incidental findings (SCS). Analyses reported in Chapter 3 identified substantial differences in the predictive capacity of the SCS when analysed as a full-scale or two 'subscales' composed of positive and negative items, respectively. This suggests self-compassion (as measured by SCS positive items) and self-criticism (as measured by negative items) are distinct constructs with potentially divergent implications for T1DM endpoints. This incidental finding is consistent with recent neuroimaging studies demonstrating activation of different brain regions under conditions of self-soothing and self-criticism (e.g., Longe et al., 2010). As recommended by Muris and Petrocchi (2016), these findings also infer that the protective capacities of a self-compassionate mindset may be best assessed using SCS positive items only.

6.5 Clinical Implications

The findings of this exploratory research portfolio tentatively suggest that self-compassion may be related to a range of adaptive outcomes in youth, including higher levels of SWB, and more behavioural and physiological resilience among those living with T1D. Perhaps the most obvious clinical implication of these discoveries is that cultivating a self-compassionate mindset during adolescence might be advantageous for health and wellbeing. The empirical status of self-compassion as a trainable resource is fundamental to this proposition (Kirby, Tellegen, & Steindl, 2017; Neff & Germer, 2013). Gilbert (2014) suggests that because self-compassion skills can be nurtured through taught and self-guided

practice, an opportunity exists for typically harshly self-relating individuals to access associated benefits. Thus – if replicated in larger, more diverse samples – potential implications of the research presented herewith might extend beyond those adolescents whose disposition is readily orientated toward self-directed kindness.

6.5.1 Compassion-based interventions for adolescents. Adolescence seems to provide an ideal window of opportunity for self-compassion training, given the concomitant development of metacognitive abilities (e.g., mentalizing) required for self-to-self relating (Mills, Lalonde, Clasen, Giedd, & Blakemore, 2014). As an empirical research objective, the evaluation of self-compassion interventions with young people is in its relative infancy. However, increased self-compassion has been found in adolescents following interventions incorporating mindfulness, self-compassion, and loving-kindness meditation (e.g., Bluth & Eisenlohr-Moul, 2017; Bluth et al., 2016; Bluth, Roberson, & Gaylord, 2015; Galla, 2016, 2017); this suggests that self-compassion is a modifiable trait in youth, as in adults. Furthermore, within-person changes in self-compassion across the course of these interventions have been substantiated as concomitant with changes in emotional distress and wellbeing, including reductions in perceived stress, depressive and anxiety symptoms, and negative affect, and improvements in resilience, curiosity and exploration, life satisfaction, and gratitude-related emotions (Bluth & Eisenlohr-Moul, 2017; Bluth et al., 2016; Galla, 2016, 2017).

These preliminary findings suggest that young people can be explicitly taught to practice a more soothing, non-judgmental self-approach, and in doing so may develop a greater sense of resilience and wellbeing, as well as experiencing less emotional suffering. Viewed alongside the preliminary research findings presented in this portfolio, these studies highlight a promising avenue for clinical research

involving further trials of compassion-based interventions with youth. While the focus to date has been on mental health and wellbeing outcomes in non-clinical settings, these interventions may also have particular utility for youth populations at increased risk of declines in emotional health, including those with chronic health conditions (Edwards & Titman, 2010). The research presented in Chapter 3 also locates improved regimen adherence and glycaemic control as two possible *disease-specific* targets for self-compassion interventions in a paediatric diabetes setting, although replication in a larger sample is required to further substantiate this proposition. Given the significant health risks and complications associated with poor glycaemic control, compassion-based interventions might provide a vital means of enhancing not only emotional but physical wellbeing in this population.

In the United States, Lorraine M. Hobbs and Karen Bluth have already developed an adolescent-appropriate mindful self-compassion (MSC) intervention, "Making Friends with Yourself" (MFY; www.mindfulselfcompassionforteens.com), based on Neff and Germer's (2013) MSC programme for adults. School-based trials have verified MFY as both feasible and acceptable to youth aged 11 to 17, with psychosocial outcomes including reductions in perceived stress and gains in resilience, gratitude, and exploration, maintained at six weeks post-intervention (Bluth & Eisenlohr-Moul, 2017; Bluth et al., 2016). Consisting of just eight 1.5 hour classes, and available for teacher training and delivery, this programme seems to have considerable utility as a cost-effective intervention for the promotion of SWB among adolescents in educational or community settings.

The MFY programme also conveniently brings together content pertaining to the two SCS components – mindfulness and self-kindness – identified as the strongest predictors of T1DM outcomes in the present research. Hence, the MFY

programme may have additional clinical utility for adolescents with T1D as a resource for enhancing those self-compassion skills related to effective diabetes control. While untested in a paediatric setting, a recent randomised controlled trial of a comparable 8-week MSC intervention among adults with type 1 and type 2 diabetes documented clinically meaningful reductions of >10 mmol/mol in HbA_{1c} from baseline to 3-month follow-up, as well as decreases in depressive symptoms and diabetes-related distress (Friis, Johnson, Cutfield, & Consedine, 2016). Furthermore, young adult cancer survivors (aged 18 to 29) participating in a MSC videoconferencing intervention have shown improvements in body image, anxiety, depression, and social isolation (Campo et al., 2017), which are also common areas of psychosocial disturbance among youth with T1D (Freeborn et al., 2013; Howe, Jawad, Kelly, & Lipman, 2008; Reynolds & Helgeson, 2011). Age-appropriate MSC interventions, like MFY, thus seem to show promise not only for promoting SWB in adolescence *per se*, but also for key psychological, behavioural, and metabolic metrics among those coping with the added challenges of T1D.

6.5.2 Communicating with adolescents. If self-compassion appears related to positive outcomes in adolescence then how might a benevolent self-relating style be fostered during this period, beyond direct training or intervention? As highlighted by Christie (2007), the conversations we have with young people are critical, particularly during times of heightened stress or hardship. The development of the social brain during this period means adolescents are particularly sensitive to indicators of status and acceptance, and may feel criticised, blamed, ashamed, or rejected if conversations become excessively problem-focused, leading to behavioural disengagement or resistance (Gilbert & Irons, 2009). By contrast, Gilbert (2013) suggests that experiences of reassurance, encouragement,

understanding, and patience help activate the self-soothing system, increasing the individual's capacity for and motivation to engage in compassionate self-correction. As roles typically central to adolescents' interpersonal contexts, adults who are parents, teachers, health and social professionals, sports coaches, and activity leaders (to name but a few) can thus act as sources of criticism or compassion, either of which may be internalised into self-relating dialogues. Those with experience in implementing compassion-focused principles in paediatric settings suggest that acknowledging constructive behaviours (instead of just problematic ones) and validating young people's emotional experiences are key to encouraging a sense of being 'good enough' and a capacity for self-soothing (Carona, Rijo, Salvador, Castilho, & Gilbert, 2017).

This line of argument has particular implications for the conduct of clinical encounters with adolescents with T1D. As noted in the ERP, the challenges of T1DM offer a context ripe for feelings of failure, shame, and self-degradation, particularly with regard to 'falling short' of strict HbA_{1c} or blood glucose monitoring targets (Wolpert & Anderson, 2001). As glycaemic control is influenced by factors beyond adherence (e.g., hormonal balance), even those adolescents (and families) who work extremely hard at sticking to treatment plans may be informed that their HbA_{1c} level is suboptimal upon professional review (Goran & Gower, 2001). Commentators note the high levels of frustration, defensiveness, and demoralisation that can result from conversations perceived by CYP as blaming or critical with regard to this near-impossible balancing act (e.g., Christie, 2007, 2013). Praise metered out by professionals and parents for obtaining particular numerical measurements may also inadvertently escalate the extent to which adolescents with T1D link their conditions of worth to diabetes-related behaviours (Archer, 2014).

Several revisions to the professional-patient consultation might be helpful within diabetes care, consistent with a more compassionate approach. These include reconciling recommended clinical targets with patients' own goals and concerns, as well as developing a regimen that fits with individual circumstances instead of constraining life choices (Christie, 2007). For adolescents, this process might involve identifying social barriers to adherence (e.g., bullying by peers, feelings of difference), in recognition that adolescent risk-taking, including T1D treatment non-adherence, is substantially more prevalent in 'hot' contexts with conditions of high emotional arousal and perceived social pressure (e.g., when acceptance amongst peers is considered to be at stake) (Blakemore & Mills, 2014). Crucially, as demonstrated in other arenas of health promotion, adolescents are more likely to modify their behaviour to gain proximal rewards than to avoid punishment or adverse complications (Palminteri, Kilford, Coricelli, & Blakemore, 2016; Pechmann & Reibling, 2000). Thus, collaborative, solution-focused clinical encounters centred around the principles of acceptance, validation, and compassionate self-correction may have potentially greater benefits for T1DM than conversations that chastise poor adherence and stress the long-term repercussions of suboptimal glycaemic control.

6.6 Critical Evaluation

The findings of this research portfolio should be considered in the context of a number of strengths and limitations. These are examined in the following critical evaluation, focusing upon those applicable to the whole portfolio. The SR (Chapter 1) and ERP (Chapter 3) provide more detailed commentary regarding the strengths and weaknesses uniquely applicable to each paper. In summary, key strengths of the SR as a standalone report included the recognition of wellbeing as being distinct

from psychopathology, as per the dual-factor model of mental health (Keyes, 2005), and low risk of bias among included studies. For the ERP, the investigation of self-compassion as a potential protective factor for T1DM outcomes in adolescents was considered a valuable extension of previous research among adults with diabetes. Furthermore, the extraction of HbA_{1c} values from clinical records provided a reliable, objective indicator of glycaemic control, an improvement on previous studies assessing self-reported HbA_{1c} (e.g., Ferrari et al., 2017) The two papers share several common limitations (see 6.6.2); however, the SR is singularly constrained by a narrow focus on SWB, meaning conclusions cannot be drawn regarding the implications of self-compassion for other forms of wellbeing that may affect quality of life (e.g., eudaimonia and social connectedness). Manuscripts meeting eligibility criteria also emanated from just three research groups, potentially introducing undue homogeneity into the calculation of pooled effect sizes. Meanwhile, the generalisability of the ERP findings is limited by the small sample size and possibility of systematic variation between participants and non-responders, which could not be statistically analysed due to research permissions prohibiting access to NHS data for non-participating patients at the research sites.

6.6.1 Portfolio strengths. The main overall strength of this thesis portfolio is its specific focus on adolescents. This decision was made early in the research process, in acknowledgement that adolescence is now generally considered a discrete developmental period, biologically separate from both adulthood and earlier childhood (Giedd, 2008). Blakemore (2018) emphasises this distinction in her recently-published book on the teenage brain, pointing out that adolescent-typical behaviours (e.g., risk-taking, self-consciousness) are demarcated across cultures, species, and history. By adopting an exclusive focus on this age-group, the present

author has thus been able to consider the research findings in the context of changing social expectations, emotional competence, and metacognitive maturation that characterises this period. Furthermore, it has permitted the development of recommendations that recognise adolescence as an often challenging transitional period, during which vulnerability to adverse outcomes (e.g., declines in general psychological health, and in glycaemic control in T1D) is somewhat increased (Grant et al., 2003; Helgeson et al., 2010).

A further, related strength is in the use of research instruments suitable for this age-group. The meta-analysed studies (Chapter 1) and empirical research paper (Chapter 3) all utilised questionnaire measures that have previously been psychometrically validated in adolescent samples. This reduces the likelihood of results being attributable to measurement error from a mismatch between adolescents' language abilities and those required for questionnaire comprehension. Overall, the findings of this research portfolio are strongly reliant on self-report data, which presents potential issues with motivational or social desirability biases, impaired memory retrieval, and lack of introspective access (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, many of the examined constructs are conditional on subjective experience, perception, and/or evaluation (e.g., positive and negative affect, life satisfaction, self-compassion, emotional distress), a context where self-report measures arguably provide greater construct validity than non-self-report measures (Chan, 2009). The potential for unreliable reporting of diabetes adherence behaviours in the ERP was also offset by cross-checking the association with HbA_{1c} as an objective (blood-based) metric. Nevertheless, inclusion of a non-self-report measure of adherence, such as frequency of blood glucose monitoring, within the ERP may have further enhanced the overall quality of this portfolio.

Furthermore, the portfolio model provided an opportunity to perform additional analyses exploring some of the questions posed in the empirical paper, such as which aspects of a more self-compassionate mindset might be most relevant to T1DM among adolescents. The findings highlight potential mechanisms of interest for future researchers and clinicians considering the implementation of compassion-based interventions with this population (see 6.5.1).

6.6.2 Portfolio limitations. Whilst specific attention to adolescence is a strength of this portfolio, the age limits by which this developmental period has been defined (10 to 19 in the SR; 11 to 18 in the ERP) might be considered a limitation. Sawyer, Azzopardi, Wickremarathne, and Patton (2018) recently published a viewpoint article arguing that a definition spanning ages 10 to 24 years more accurately reflects the adolescent phase of life. This proposition is based on evidence from neuroimaging studies demonstrating ongoing brain development to the mid (or possibly even late) twenties (e.g., Giedd, 2008), as well as delayed role transitions (e.g., marriage, parenthood) that have shifted popular perceptions of entry to adulthood. The age parameters selected for the present work were influenced by the current World Health Organization (2014) definition of adolescence (ages 10 to 19), and, for the ERP, the criteria of up to 19th birthday applied in the current Paediatric Diabetes Best Practice Tariff (NHS Improvement, 2016). The more narrow age-based inclusion criteria in this portfolio was also hoped to reduce potential heterogeneity relating to the different sociocultural influences upon younger and older adolescents (e.g., living arrangements, degree of separation-individuation from parents, stage of education). Future research might valuably explore whether results of the present portfolio are replicated in youth aged 20+.

The ability to generalise from this research portfolio is also limited by sample homogeneity. The findings of both the SR and ERP are based on self-report data provided by predominantly White, English-speaking adolescents living in developed, Western countries, hence may not be applicable to youth among other geographic regions and ethnic backgrounds. Particular caution should be applied in extrapolating from these studies to communities with markedly different cultural features, in light of evidence that self-compassion levels vary systematically across societies (Neff, Pisitsungkagarn, & Hsieh, 2008).

Small sample size was perhaps the most notable methodological weakness of both the SR and ERP. Regarding the former, the sample available for meta-analytic modelling (N = 1345) was constrained by the limited extant literature examining self-compassion as a predictor of adolescent SWB. This reflects the relative novelty of scientific interest in this field and the predominance of research by Karen Bluth and colleagues, which resulted in several crossed samples (although all duplicate data was excluded from meta-analytic models). Adolescents have also been identified as a 'hard-to-reach' research group *per se*, due to issues of motivation, consent, and confidentiality (Claveirole, 2004). The recruitment of young people is noted to be particularly challenging in studies exploring deviant or risk-taking behaviour (McCormick et al., 1999). The ERP could be considered to fall within this category, given the potential for reporting non-adherence to diabetes treatment. The present author certainly experienced participant recruitment as the most challenging element of the research process, subjectively due to low response rates to initial advertising, limited opportunities to connect with adolescents due to working (clinically) in a different field, and complexity around gaining consent for CYP under 16. Small sample sizes may increase risk of bias, thus must be borne in

mind as a limitation applicable to all presented data and conclusions. Replication of ERP findings in a larger clinical sample and continued evaluation of the self-compassion/wellbeing association in youth may help address this weakness.

A further methodological limitation stems from the cross-sectional design applied in both papers, which prohibits causal inference. Thus, while this research portfolio suggests some degree of dependency in the relationship between self-compassion and adolescent health and wellbeing outcomes, the direction of effects cannot be determined. Further research of a longitudinal and experimental nature is required to establish whether self-compassion is directly implicated as a determinant of SWB in adolescence, and in promoting positive behavioural and physiological outcomes among those with T1D. As noted above, the use of self-report data could also be considered a constraint on the validity of data pertaining to constructs where social desirability responding might be expected (e.g., regimen adherence or perceived parental criticism/intrusion). Furthermore, for both the SR and ERP, inflation of the reported correlation coefficients between self-report measures is possible due to common method variance (Chan, 2009).

As noted in the introduction to this portfolio, the research presented is vulnerable to the current lack of scientific consensus regarding how self-compassion is defined. Having explicitly adopted Kristin Neff's (2003a) tripartite model, all conclusions regarding the potential protective function of self-compassion are applicable only in-so-far as the construct is accurately represented by this definition. Strauss et al. (2016) recently proposed a novel, five-element definition of compassion that integrates common elements from existing conceptualisations. While this definition remains (as yet) subject to empirical testing, previous research

in this field (the present study included) will require future replication, should an alternative conceptualisation become more widely accepted.

This research portfolio is also susceptible to the shortcomings of the SCS (Neff, 2003b) as an instrument for measuring self-directed compassion. In illustration, the validity of the meta-analytic findings in Chapter 1 depends upon the accuracy with which the SCS, together with its short-form version (SCS-SF; Raes et al., 2011), tap into this construct. The SCS was also selected for use in the ERP being more psychometrically robust than the SCS-SF, which is the only other quantitative, self-report questionnaire measure of self-compassion currently available (Elices et al., 2017). This is potentially problematic in light of the ongoing scholarly debate about the empirical status of this questionnaire, particularly regarding its reporting at full-scale level, which some argue conflates self-compassion with self-criticism (Costa et al., 2015; Lopez et al., 2015). There is also some suggestion that SCS negative items might directly measure aspects of psychopathology (e.g., the self-deprecatory thinking style that forms part of depression) or be redundant with facets of neuroticism, thus artificially inflating relationships with emotional distress and minimising associations with positive mental health and wellbeing variables (Muris & Petrocchi, 2016; Pfattheicher, Geiger, Hartung, Weiss, & Schindler, 2017). This limitation was addressed to some extent within the ERP by analysing the associations between self-compassion and T1DM outcome variables at both full- and sub-scale levels (see Chapters 3 and 5). However, for the SR, self-compassion was represented by SCS full-scale scores only, due to the minimal extant literature reporting SCS subscales. In light of what was found in the ERP regarding effect size variance when SCS positive and negative items were examined separately, it seems possible that the SR might underestimate the strength of the relationship between

self-compassion and SWB among adolescents. Despite this being a methodological flaw, it may be promising news for the potential protective effects of self-compassion for optimal functioning and mental health among young people.

6.7 Future Research Directions

Noting the research implications and limitations outlined above, several avenues for future research can be delineated. Replication of the current findings in larger-scale studies is a necessary first step, in light of the small meta-analytic and empirical samples examined in this portfolio. Furthermore, research of longitudinal and experimental design will be necessary to investigate direction of causation in the relationships between self-compassion and dependent variables. The present author suggests that interventional studies may be successful in recruiting larger samples due to conferring potential direct benefits upon participants. Embedding research within school, youth, or clinical settings may also create greater opportunity for relationship-building with adolescents as part of the recruitment process.

Beyond causal direction, the theoretical pathways proposed to link self-compassion with the present outcomes of interest also require empirical validation. For example, do psycho-behavioural phenomena like affect regulation and adaptive coping function as intermediary mechanisms? Are there other factors in play? This portfolio cannot provide answers as to *why* self-compassion relates to SWB and T1DM outcomes in adolescence, only that these patterns appear to exist. This objective could be met with further quantitative research but qualitative designs may add greater depth of understanding regarding how adolescents experience the process of self-to-self relating, and what meaning this has for their physical and psychological wellbeing.

Further research in this area might also examine potential moderators, such as gender, chronological age, developmental stage, socioeconomic status, cultural background, and (among clinical populations) diagnosis or disease status. Bluth and Blanton (2015) have already demonstrated variability in the association between self-compassion and positive affect across early and later adolescence, and the present ERP (Chapter 3) found self-compassion to be significantly lower among female participants. Exploring such patterns may help pinpoint target groups likely to benefit most from compassion-based interventions or compassionate skills development. This work might also be extended to incorporate young people aged 20 to 24 years (as per the revised definition of adolescence), investigating any differences between this later developmental stage and the period between 10 and 19 years. More cross-cultural research is also required to establish whether correlates of self-compassion are consistent across adolescents of varying cultural, ethnic, spiritual, and social backgrounds.

Finally, incidental findings regarding the capacity of SCS positive and negative items to predict positive T1DM outcomes suggest there may be merit in calls for the development of a novel measure that more accurately taps into the apparent protective and resilience-boosting functions of a compassionate self-relating style (e.g., Muris & Petrocchi, 2016). Alternatively, replication of existing studies utilising the two-factor solution may help clarify the psychological sequelae resulting from a self-compassionate vs. self-critical mindset.

6.8 Concluding Remarks

This exploratory thesis portfolio set out to examine self-compassion as a correlate of subjective wellbeing and optimal T1DM among adolescents. The findings suggest that, as theorised, self-compassion may have a protective function

in adolescence, being associated with several positive psychological, behavioural, and physical health outcomes. Further, larger-scale research is needed to substantiate whether the development of a compassionate self-approach is an effective means of boosting resilience and fostering adaptive outcomes during this often turbulent transition.

In closing, the author refers back to Rousseau's (1762/1979) musings upon this phase of life:

> *A mute fermentation warns of danger's approach. A change in humour, frequent anger, a mind in constant agitation, makes the child almost unmanageable. He becomes deaf to the voice that made him docile. His feverishness turns him into a lion. He disregards his guide; he no longer wishes to be governed.* (p. 175)

Perhaps, then, it is through fostering a self-compassionate inner dialogue that the 'lion' can learn to **self**-govern – and, in doing so, to flourish and thrive in the face of whatever developmental challenges adolescence throws.

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(Excludes Chapters 1 and 3)

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Appendix A

Author Guidelines for *Applied Psychology: Health and Well-being*

Author Guidelines

Applied Psychology: Health and Well-Being is one of the two official journals of the International Association of Applied Psychology (IAAP), the oldest worldwide association of scholars and practitioners of the discipline of psychology (founded in 1920).

Applied Psychology: Health and Well-Being is a peer-reviewed outlet for the scholarly dissemination of scientific findings and practical applications in the domains of health and well-being. Articles are encouraged from all areas of applied psychology including clinical, health, counseling educational, sport, cross-cultural and environmental psychology. The mission of the journal is to provide readers with outstanding articles that present the latest data and best practices in the application of psychology to the promotion of well-being and optimal functioning.

Applied Psychology: Health and Well-Being publishes empirical work, theoretical papers, model intervention programs, case studies, debates, and reviews. Of particular interest are intervention studies (e.g., randomized controlled trials) and meta-analytic reviews.

Special Sections are occasionally published. These are composed by guest editors who invite contributions with a particular thematic or regional focus for the section.

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Manuscripts should not ordinarily exceed 30 double-spaced pages. Manuscripts should be prepared in accordance with the format prescribed by the American Psychological Association. For details see the Publication Manual of the APA.

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Authored Book:Bandura, A. J. (1977). Social learning theory. Englewood Cliffs, NF: Prentice Hall.

Chapter in edited book:Baker, F. M., & Lightfoot, O. B. (1993). Psychiatric care of ethnic elders. In A. C. Gaw (Ed.), Culture ethnicity, and mental illness (pp. 517-552). Washington, DC: American Psychiatric Press.

Journal article: Klimoski, R., & Palmer, S. (1993). The ADA and the hiring process in organizations. Consulting Psychology Journal: Practice and Research, 45(2), 10-36.

References in Articles
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Appendix B

Guidance Notes for the Quality Assessment Tool for Studies with Diverse Designs

Sirriyeh, Lawton, Gardner, & Armitage (2011, p. 749)

Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
Explicit theoretical framework	No mention at all.	Reference to broad theoretical basis.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.
Statement of aims/objectives in main body of report	No mention at all.	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report.	Explicit statement of aims/objectives in main body of report.
Clear description of research setting	No mention at all.	General description of research area and background, e.g. 'in primary care'.	General description of research problem in the target population, e.g. 'among GPs in primary care'.	Specific description of the research problem and target population in the context of the study, e.g. nurses and doctors from GP practices in the east midlands.
Evidence of sample size considered in terms of analysis	No mention at all.	Basic explanation for choice of sample size. Evidence that size of the sample has been considered in study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical requirements.	Explicit statement of data being gathered until information redundancy/saturation was reached or to fit exact calculations for analytical requirements.
Representative sample of target group of a reasonable size	No statement of target group.	Sample is limited but represents some of the target group or representative but very small.	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.
Description of procedure for data collection	No mention at all.	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail, or states some stages in details but omits others.	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered.
Rationale for choice of data collection tool(s)	No mention at all.	Very limited explanation for choice of data collection tool(s).	Basic explanation of rationale for choice of data collection tool(s), e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool(s), e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for reliability & validity, or relevant qualitative assessment.
Detailed recruitment data	No mention at all.	Minimal recruitment data, e.g. no. of questionnaire sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used.	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all.	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test–retest reliability is unsuccessful but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tool(s) with reference to the quality of evidence as a result of the measures used.
Fit between stated research question and method of data collection (Quantitative)	No research question stated.	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used or used in addition.	Method of data collection selected is the most suitable approach to attempt answer the research question
Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative)	No research question stated.	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure & content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure & content allows for detailed data to be gathered around all relevant issues required to address the stated research question(s).
Fit between research question and method of analysis	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt answer the research question in detail, e.g. for qualitative IPA preferable for experiences vs. content analysis to elicit frequency of occurrence of events, etc.
Good justification for analytical method selected	No mention at all.	Basic explanation for choice of analytical method	Fairly detailed explanation of choice of analytical method.	Detailed explanation for choice of analytical method based on nature of research question(s).
Assessment of reliability of analytical process (Qualitative only)	No mention at all.	More than one researcher involved in the analytical process but no further reliability assessment.	Limited attempt to assess reliability, e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.
Evidence of user involvement in design	No mention at all.	Use of pilot study but no involvement in planning stages of study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.
Strengths and limitations critically discussed	No mention at all.	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.

Appendix C

Author Guidelines for the *Journal of Pediatric Psychology*

Instructions to Authors

The *Journal of Pediatric Psychology* is an official publication of the Society of Pediatric Psychology, Division 54 of the American Psychological Association. *JPP* publishes articles related to theory, research, and professional practice in pediatric psychology.

Author Guidelines

We would like to inform our authors that we now detect plagiarism easily. The journal to which you are submitting your manuscript employs the CrossCheck plagiarism screening system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

Journal of Pediatric Psychology will not consider papers that have been accepted for publication or published elsewhere. Copies of existing manuscripts with potentially overlapping or duplicative material should be submitted together with the manuscript, so that the Editors can judge suitability for publication. The Editors reserve the right to reject a paper on ethical grounds.

Organization of manuscripts

Manuscript Central will guide authors through the submission steps, including: Abstract, Keyword selection, and the Manuscript. The manuscript must contain an Introduction, Methods, Results, Discussion, Acknowledgements and Reference List.

Length of manuscript: Original research articles should not exceed 25 pages, in total, including title page, references, figures, tables, etc. In the case of papers that report on multiple studies or those with methodologies that necessitate detailed explanation, the authors should justify longer manuscript length to the Editor in the cover letter. Case reports should not exceed 20 pages. Review articles should not exceed 30 pages. Invited commentaries should be discussed with the Editor. The *Journal of Pediatric Psychology* no longer accepts brief reports but will accept manuscripts that are shorter in length than the 25 page manuscript.

Manuscripts (text, references, tables, figures, etc.) should be prepared in detailed accord with the Publication Manual of the American Psychological Association (6th ed.). There are two exceptions:

The academic degrees of authors should be placed on the title page following their names, and a structured abstract of not more than 250 words should be included. The abstract should include the following parts:

1. Objective (brief statement of the purpose of the study);
2. Methods (summary of the participants, design, measures, procedure);
3. Results (the primary findings of this work); and
4. Conclusions (statement of implications of these data).

Key words should be included, consistent with APA style. Submissions should be double-spaced throughout, with margins of at least 1 inch and font size of 12 points (or 26 lines per page, 12-15 characters per inch). Authors should remove all identifying information from the body of the manuscript so that peer reviewers will be unable to recognize the authors and their affiliations.

Informed consent and ethical treatment of study participants: Authors should indicate in the Method section of relevant manuscripts how

informed consent was obtained and report the approval of the study by the appropriate Institutional Review Board(s). Authors will also be asked to sign a statement, provided by the Editor that they have complied with the American Psychological Association Ethical Principles with regard to the treatment of their sample.

Clinical relevance of the research should be incorporated into the manuscripts. There is no special section on clinical implications, but authors should integrate implications for practice, as appropriate, into papers.

Terminology should be sensitive to the individual who has a disease or disability. The Editors endorse the concept of "people first, not their disability." Terminology should reflect the "person with a disability" (e.g., children with diabetes, persons with HIV infection, families of children with cancer) rather than the condition as an adjective (e.g., diabetic children, HIV patients, cancer families). Nonsexist language should be used.

Special Instructions for Types of Manuscripts

Manuscript types include:

- Original research
- Review articles
- Topical reviews
- Systematic reviews
- Invited commentaries

Original Research

(1) Randomized controlled trials/Non-randomized trials: *JPP* is committed to enhancing the transparent reporting of all intervention studies. If you are submitting a manuscript of a randomized clinical trial (RCT) to *JPP*, you are required to submit the CONSORT checklist and a flowchart of your research showing the steps found in the Consort E-Flowchart. Both the Consort E-Flowchart and a checklist of

items to be included when reporting a randomized trial can both be found here which also describes several CONSORT checklist extensions for different designs and types of data beyond two group parallel trials. At minimum, your article should report the content addressed by each item of the checklist. Meeting these basic reporting requirements will greatly improve the value of your trial report and may enhance its chances for eventual publication.

If you are submitting a non-randomized trial to *JPP*, you are required to follow the reporting elements of the TREND statement.

For each submission (original and any revisions), authors should use and submit the appropriate checklist with their manuscript. Please use this one for RCTs, and this checklist for non-randomized trials. Please clearly indicate the page numbers where each checklist item is reported in the manuscript. Please upload this checklist as supplementary material when you submit your manuscript for consideration.

All intervention studies (RCTs and non-randomized trials) will undergo an additional review for transparent reporting conducted by the *JPP* Student Editorial Liaison. Review comments will be provided on the corresponding checklist. Authors will be required to address any identified reporting issues prior to publication.

Authors are also encouraged to visit the Equator Network for additional information on transparent reporting of all manuscript types.

(2) *Single Subject Studies*: As a journal that encourages submission of intervention studies, the Journal does accept, and encourages submission of, well-conducted single subject studies (N-of-1 designs). Case studies and narrative reports of special cases that are more descriptive will not be considered for review. It is important to note that rigorous single subject designs are considered logical equivalents

of Randomized Controlled Trials and include control conditions that support conclusions of causality. Previously published examples can be found in this journal including: Bernard, Cohen, & Moffett (2009); Powers et al. (2006). Authors considering submissions of case reports adopting N-of-1 methodology should consult the following sources within this journal: Cohen, Feinstein, Masuda, & Vowles (2014); Cushing, Walters, & Hoffman (2014); Rapoff & Stark (2008); Case reports that adopt formal N-of-1 methodology should not exceed 20 pages.

References:

Bernard, R. S., Cohen, L. L., & Moffett, K. (2009). A token economy for exercise adherence in pediatric cystic fibrosis: A single-subject analysis. Journal of Pediatric Psychology, 34, 354-365.

Cohen, L. L., Feinstein, A., Masuda, A., & Vowles, K. E. (2014). Single-case research design in pediatric psychology: Considerations regarding data analysis. Journal of Pediatric Psychology, 39, 124-137.

Cushing, C. C., Walters, R. W., & Hoffman, L. (2014). Aggregated N-of-1 randomized controlled trials: Modern data analytics applied to a clinically valid method of intervention effectiveness. Journal of Pediatric Psychology, 39, 138-150.

Powers, S. W., Piazza-Waggoner, C., Jones, J. S., Ferguson, K. S., Daines, C., & Acton, J. D. (2006). Examining clinical trial results with single-subject analysis: An example involving behavioral and nutrition treatment for young children with cystic fibrosis. Journal of Pediatric Psychology, 31, 574-581.

Rapoff, M., & Stark, L. (2008). Editorial: Journal of Pediatric Psychology statement of purpose: Section on single-subject studies. Journal of Pediatric Psychology, 33, 16-21.

(3) Measurement development and validation articles: For additional guidance please read, Holmbeck, G. & Devine, K. (2009) Editorial: An Author's Checklist for Measure Development and Validation Manuscripts.

(4) Historical Analysis in Pediatric Psychology: This is a special series of papers devoted to the history of pediatric psychology. Authors interested in submitting a paper for this series should contact the Editor of *JPP* to discuss potential papers prior to submission. There is no deadline for these papers (they may be submitted anytime). All submissions will be peer reviewed and should comply fully with the *JPP* Instructions to Authors. Papers in this series should be tightly focused contributions that expand our understanding of the roots, evolution, and/or impact of pediatric psychology as a discipline. Manuscripts may focus on the influence of individuals, published works, organizations, conceptualizations, philosophies or approaches, or clinical and professional activities. Successful papers should articulate a clear purpose/question and develop a compelling argument for the topic. Contributions should include a breadth of coverage, such that contradictory data are included and potential biases acknowledged. Historical analysis is more than a recounting of the "facts" and should include a thoughtful and scholarly interpretation of the subject matter. Papers should rely on primary sources and must be clearly and appropriately referenced. Supplemental materials to accompany the article may be posted online.

Review articles:

(a) Topical reviews: Topical reviews summarize contemporary findings, suggest new conceptual models, or highlight noteworthy or controversial issues in pediatric psychology. They are limited to 2,000 words, contain no more than 2 tables or figures, and have an upper limit of 30 references. Supplementary online material (e.g., additional tables) may be considered on a case by case basis.

(b) Systematic reviews: Systematic reviews should not exceed 30 pages. Authors are required to attach the PRISMA checklist and flow diagram as supplementary material for each submission. Authors can find the PRISMA checklist and flow diagram in downloadable templates that can be re-used here. Authors of systematic reviews that do not include a meta-analysis must provide a clear statement in the manuscript explaining why such an analysis is not included for all or relevant portions of the report.

Please consult editorial (New Guidelines for Publishing Review Articles in *JPP*) which further describes guidelines for review articles, and the Checklist for Preparing and Evaluating Review Articles.

Invited commentaries

- Commentaries are invited on all topics of interest in pediatric psychology, and the page length and scope should be discussed with the Editor. Un-invited commentaries will not be considered.

Additional Guidance

The following links provide additional guidance for authors and reviewers: Editorial Policy, Authors' Checklist, Guidelines for Reviews, Suggestions for Mentored Reviews, "People First," NIH policy, Replication of research, Duplicate and redundant policies, Conflict of interest.

See the following articles for detailed guidance concerning preparation of manuscripts: Editorial: Thoughts in Improving the Quality of Manuscripts Submitted to the *Journal of Pediatric Psychology*: How to Write a Convincing Introduction; Methods: Editorial: How to Report Methods in the *Journal of Pediatric Psychology*; Results and Discussion: Editorial: How to Write an Effective Results and Discussion Section for the *Journal of Pediatric Psychology*.

Funding

Details of all funding sources for the work in question should be given in a separate section entitled "Funding." This should appear before the "Acknowledgements" section.

The following rules should be followed:

- The sentence should begin: "This work was supported by . . ."
- The full official funding agency name should be given, i.e. "the National Cancer Institute at the National Institutes of Health" or simply "National Institutes of Health," not "NCI" (one of the 27 subinstitutions) or "NCI at NIH" (full RIN-approved list of UK funding agencies)
- Grant numbers should be complete and accurate and provided in parentheses as follows: "(grant number xxxx)"
- Multiple grant numbers should be separated by a comma as follows: "(grant numbers xxxx, yyyy)"
- Agencies should be separated by a semi-colon (plus 'and' before the last funding agency)
- Where individuals need to be specified for certain sources of funding the following text should be added after the relevant agency or grant number "to [author initials]."

Oxford Journals will deposit all NIH-funded articles in PubMed Central. See this page for details. Authors must ensure that manuscripts are clearly indicated as NIH-funded using the guidelines above.

Color Figure Charges

Authors are charged for the print reproduction of color figures. The cost is $600 / €525 / £325 per color page. Figures can be published in black and white in the print edition and in color online for free. If you choose this option, please ensure that your figures are clear and readable in both black and white and color.

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Language editing, if your first language is not English, to ensure that the academic content of your paper is fully understood by journal editors and reviewers is optional. Language editing does not guarantee that your manuscript will be accepted for publication. For further information on this service, please click here. Several specialist language editing companies offer similar services and you can also use any of these. Authors are liable for all costs associated with such services.

PREPARING YOUR MANUSCRIPT

- The *Journal of Pediatric Psychology* offers authors high-quality print and online publication. To ensure rapid and efficient publication, please follow the step-by-step instructions below.
- Follow the journal's instructions to authors regarding the format of your manuscript and references.
- Prepare your manuscript, including tables, using a word-processing program and save it as a .doc or .rtf file. All files in these formats will be converted to .pdf format upon submission.

- Prepare your figures at print publication quality resolution, using applications capable of generating high-resolution .tif files (1200 d.p.i. for line drawings and 300 d.p.i. for color and halftone artwork). The printing process requires your figures to be in this format if your paper is accepted for publication. For useful information on preparing your figures for publication, go to here. For online submission, please also prepare a second version of your figures at low-resolution for use in the review process; these versions of the figures can be saved in .jpg, .gif, .tif, or .eps format.
- Prepare any other files that are to be submitted for review. The permitted formats for these files are the same as for manuscripts and figures. Other file types, such as Microsoft Excel spreadsheets and Powerpoint presentations, may be uploaded and will be converted to .pdf format. It is also possible to upload LaTeX files, but these will not be automatically converted to .pdf format.
- When naming your files, please use simple file names and avoid special characters and spaces. If you are a Macintosh user you must type the three-letter extension at the end of the file name you choose (e.g. .doc, .rtf, .tif, .pdf).

SUBMITTING YOUR MANUSCRIPT

Note: Before you begin, you should be sure you are using an up-to-date version of Netscape or Internet Explorer. The submission site will not work optimally if you are using a browser other than those recommended by Scholar One:

- Internet Explorer 9
- Internet Explorer 10
- Internet Explore 11
- Firefox 32
- Chrome 37
- Safari 6

- Safari 7

  You can download a free upgrade using the icons found at the bottom of the 'Instructions and Forms' section of the online submission web site. If you are using one of the recommended browsers and still experiencing problems, clear your browser cache and try reloading the site. Users should have cookies enabled in their browsers when they access the site.

- First, you will need to log into ScholarOne Manuscripts.
- If you know your login details (i.e., you have submitted or reviewed a manuscript in this journal before), use your User ID and Password to log on. (Your user ID will usually be your email address.)
- If you do not know your login details, check to see if you are already registered by clicking on the 'Forgot your password' button and following the on-screen instructions. If you are not already registered, you can register by clicking on the 'Create account' button on the login screen and following the on-screen instructions.
- If you have trouble finding your manuscripts or have other problems with your account, do not create another account. Instead, please contact the journal's editorial office.
- To submit a new manuscript, go to the 'Author Centre', and click on “Click here to submit a new manuscript', and then follow the on-screen instructions. There are up to 7 steps for you to follow to submit your manuscript. You move from one step to the next by clicking on the 'Next' button on each screen or back to the previous screen by clicking on the 'Previous' button. Please note that if you click on the 'Back' or 'Forward' buttons on your browser, the information you have entered will not be saved. At any stage you can stop the submission process by clicking on the 'Main Menu' button. Everything you have typed into the system will be saved, and the partially completed submission will appear under 'unsubmitted manuscripts' in your 'Author Centre'. To return to the submission process you will need to click on the button 'Continue Submission' against the relevant manuscript title.

- When submitting your manuscript, please enter your manuscript data into the relevant fields, following the detailed instructions at the top of each page. You may like to have the original word-processing file available so you can copy and paste the title and abstract into the required fields. You will also be required to provide email addresses for your co-authors, so please have these to hand when you log onto the site.
- When you come to upload your manuscript files via the 'File Upload' screen:
- Enter individual files using the 'Browse' buttons and select the appropriate 'File type' from the pull-down menu. The choices may vary from journal to journal but will always include a 'Main Document' (your manuscript text).
- Upload your files by clicking on the 'Upload files' button. This may take several minutes. Click on the SAVE button to confirm the upload. Repeat these steps until you have uploaded all your files.
- If you have uploaded any figures or tables you will be prompted to provide figure/table captions and 'file tags' that will link figures to text in the HTML proof of your main document.
- Once you have uploaded all your files, indicate the order in which they should appear in your paper. This will determine the order in which they appear in the consolidated PDF used for peer review.
- After the successful upload of your text and images, you will need to view and proofread your manuscript. Please do this by clicking on the blue HTML button or a PDF button.
- If the files have not been uploaded to your satisfaction, go back to the file upload screen where you can remove the files you do not want and repeat the process.
- When you are satisfied with the uploaded manuscript proof click on 'Next' which will take you to the 'Review & Submit' screen. The system will check that you have completed all the mandatory fields and that

you have viewed your manuscript proof. It will also present you with a summary of all the information you have provided and give you a final chance to edit it. If there is a red cross next to any section this will indicate that not all the fields have been filled in correctly. You may either go back to the relevant page or click the nearest ‘edit’ button.

- When you have finished reviewing this information press 'Submit'.
- After the manuscript has been submitted you will see a confirmation screen and receive an email confirmation stating that your manuscript has been successfully submitted. This will also give the assigned manuscript number, which is used in all correspondence during peer review. If you do not receive this, your manuscript will not have been successfully submitted to the journal and the paper cannot progress to peer review. If this is the case your manuscript will still be sitting in the 'Unsubmitted Manuscripts' section of your 'Author Centre' awaiting your attention.
- If you return to your 'Author Centre' you will notice that your newly submitted manuscript can be found in the 'Submitted Manuscripts' area. The ‘Status' section provides information on the status of your manuscript as it moves through the review process.

SUBMITTING A REVISED MANUSCRIPT

- Log on to the online submission web site as before and, in the 'Author Centre', click on 'Manuscripts with Decisions'. At the bottom of the screen you will see those manuscripts that require a revision (or that have been revised). Create a revision of this manuscript by clicking on 'create a revision' under Actions. You will now be able to see the editor and reviewer comments and will be able to respond to these.
- You will need to upload the files that constitute your revised manuscript. To facilitate the production process, it is essential that you upload your revised manuscript as a .doc, .rtf, or .tex file, and not in

.pdf format. If you wish to finish this another time, you will find the manuscript in your 'Revised manuscripts in draft' list.

- Please be sure to upload a title page with your article containing the title, author group, author affiliations, corresponding author, corresponding author's physical and e-mail address, key words, and any acknowledgments.
- If you click on 'View comments/respond' you will see the editor's letter to you together with the referees' comments. You may cut and paste your responses into the text areas at the bottom of the screen.

IMPORTANT. Your images are required as high-resolution .tif files (1200 d.p.i. for line drawings and 300 d.p.i. for colour and half-tone artwork). For useful information on preparing your figures for publication, go here. Please note that publication of your manuscript will not proceed until figures suitable for reproduction are received.

Getting Help

If you experience any problems during the online submission process, please consult the Author's User Guide which provides more detailed submission instructions and 'movie tutorials' explaining how to submit your paper. You can also email the journal editorial office at jpepsy@gmail.com who will be pleased to assist you with any question/problem you might have.

Crossref Funding Data Registry

In order to meet your funding requirements authors are required to name their funding sources, or state if there are none, during the submission process. For further information on this process or to find out more about the CHORUS initiative please click here.

Appendix D

Self-Care Inventory (La Greca, Swales, Klemp, and Madigan, 1988)

The Self-Care Inventory (La Greca, Swales, Klemp, & Madigan, 1988)

Please rate each of the items according to HOW WELL YOU FOLLOWED YOUR **PRESCRIBED REGIMEN** FOR DIABETES CARE in the *past month*. Use the following scale:

1 = Never do it
2 = Sometimes follow recommendations; mostly not
3 = Follow recommendations about 50% of the time
4 = Usually do this as recommended; occasional lapses
5 = Always do this as recommended without fail
NA = Cannot rate this item/ Not applicable

In the *past month*, how well have you followed recommendations for:

1. Glucose testing	1	2	3	4	5	NA
2. Glucose recording	1	2	3	4	5	NA
3. Ketone testing	1	2	3	4	5	NA
4. Administering correct insulin dose	1	2	3	4	5	NA
5. Administering insulin at right time	1	2	3	4	5	NA
6. Adjusting insulin intake based on blood glucose values	1	2	3	4	5	NA
7. Eating the proper foods; sticking to meal plan	1	2	3	4	5	NA
8. Eating meals on time	1	2	3	4	5	NA
9. Eating regular snacks	1	2	3	4	5	NA
10. Carrying quick-acting sugar to treat reactions	1	2	3	4	5	NA
11. Coming in for appointments	1	2	3	4	5	NA
12. Wearing a medic alert ID	1	2	3	4	5	NA
13. Exercising regularly	1	2	3	4	5	NA
14. Exercising strenuously	1	2	3	4	5	NA

Note: This measure is copyrighted by Annette M. La Greca, and may be used only with the written permission of the author. The author does not grant permission for publishing norms, alterations, or translations of the instrument without her written permission or collaboration in such efforts.

Appendix E

Self-Compassion Scale (Neff, 2003b)

The Self-Compassion Scale (Neff, 2003)

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I’m really struggling, I tend to feel like other people must be having an easier time of it.

_____ 19. I’m kind to myself when I’m experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I’m tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix F

Diabetes Family Behaviour Checklist (Schafer, McCaul, & Glasgow, 1986)

Diabetes Family Behaviour Checklist (Schafer, McCaul, & Glasgow, 1986)

We want to know how often people's parents do each of the following things.

Think about the parent (or person caring for you) that you are closest to and spend the most time with day-to-day. Write down one number from the scale below that best shows how often that person does each of the following things.

1 = never

2 = twice a month

3 = once a week

4 = several times a week

5 = at least once a day

How often does your closest parent or guardian:

1.	Nag you about testing your glucose level?	
2.	Criticize you for not exercising regularly?	
3.	Nag you about following your diet?	
4.	Argue with you about your diabetes self-care activities?	
5.	Criticize you for not recording the results of glucose tests?	
6.	Let you sleep late rather than getting up to take your insulin?	
7.	Eat foods that are not part of your diabetic diet?	

Appendix G

'About You' Form

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

'ABOUT YOU'

1. **How old are you (in years)?**

_____

2. **What is your gender? (Please tick the relevant box)**

Male (boy)	Female (girl)

3. **How do you give yourself insulin? (Please tick the relevant box)**

Injections	Insulin pump

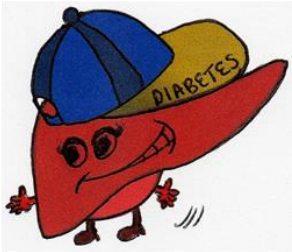
Appendix H

Research Information Sheet (Ages 11-15)

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust



Information Sheet for Research (Ages 11-15)
Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, Trainee Clinical Psychologist
Research Supervisor: Kiki Mastroyannopoulou, Consultant Clinical Psychologist

I am writing to invite you to take part in a research study about young people with type 1 diabetes. We want to find out more about the 'psychology' behind good diabetes care, especially what helps young people stick to their diabetes management routines and keep good control of their blood sugar levels.

This information sheet is to help you think about whether you would like to take part. Please read it carefully and discuss it with your parents (they know about the study too).

If you would like to know more about the study, please ask one of your parents to contact me. I'll be happy to answer any of your questions!

What is the research study about?
We want to find out about the things that help young people with type 1 diabetes to have good diabetes care. We would particularly like to know if something called **self-compassion** (being kind to yourself) is helpful.

Other research studies have shown us that young people with type 1 diabetes sometimes find it hard to stick to their treatment plans and control their blood sugar levels. So we think it is important to find out what helps young people manage their diabetes well.

We already know that self-compassion (being kind to yourself) seems to make it easier for adults to manage their diabetes. So we'd really like to know if it also makes a difference for younger people like you! We hope other researchers can use this information in future to develop new psychological treatments for helping young people with type 1 diabetes keep up good diabetes care.

Why have I been asked to take part?
We have sent you this invitation because you come in for appointments with the diabetes team at either Norfolk and Norwich University Hospital or West Suffolk Hospital, where this research study is taking place. We've sent an invite to everyone aged 11 to 18 who has been diagnosed with type 1 diabetes for a year or more – but you don't have to take part if you don't want to!

Do I have to take part?
No, this is a voluntary study so you don't have to take part. If you decide not to take part, this will not affect the care you get from the diabetes team. Even if you decide to take part now, you can change your mind later on and we will take your information out of the study.

What would taking part involve?
People who take part in the study will be asked to fill out some questionnaires. This can be done at home online (using a website) or on paper at your usual diabetes clinic. It takes about 30 minutes to answer all the questions. We will also need to get your most recent HbA_{1c} reading and the date you were diagnosed with diabetes from your hospital notes.

If you take part in this study, you can choose to get a summary of the research findings. You can also enter a prize draw for a £25 Amazon gift voucher, if you would like to. The winner will be chosen at random on 27 February 2018.

What are the possible benefits of taking part?
The study may not benefit you directly. However, we hope that the information we gather will help other people develop helpful treatments to support young people with type 1 diabetes.

Are there any risks or downsides to taking part?
We don't think there will be any risks to you if you decide to take part in this research. One of the questionnaires we are using (the PI-ED: Paediatric Inventory of Emotional Distress) looks at emotional distress (anxiety and low mood). It is possible that some young people may find it upsetting to answer these questions but most people seem to find it ok. If you did feel upset or need any extra support, you could call Childline free on telephone 0800 1111.

What will you do with my information?
The information that you give us will be stored privately and securely. No personal information about you (e.g., your name or date of birth) will go into the report we write about what the study finds out.

Who has reviewed this study?
The North of Scotland Research Ethics Committee (2) has reviewed this study.

I am interested in taking part – what should I do next?
If you would like to take part, please talk to your parents about the study. If you are under 16, we will need their permission for you to take part. If your parents are happy for you to be involved, they can contact the researcher, Katherine Jackson (Trainee Clinical Psychologist), by email, telephone, or postal mail.

Thank you for taking the time to read this information sheet.

Yours sincerely,

Katherine Jackson
Trainee Clinical Psychologist
University of East Anglia

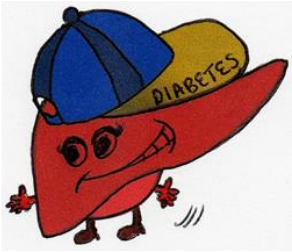
Appendix I

Research Information Sheet (Ages 16-18)

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust



Information Sheet for Research (Ages 16+)

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, Trainee Clinical Psychologist
Research Supervisor: Kiki Mastroyannopoulou, Consultant Clinical Psychologist

I am writing to invite you to take part in a research study about young people with type 1 diabetes. We want to find out more about the 'psychology' behind good diabetes care, especially what helps young people stick to their diabetes management routines and keep good control of their blood sugar levels.

This information sheet has been designed to provide you with details about the study so you can decide if you would like to participate.

Please do not hesitate to contact me if you have any questions or would like to know more about the study – contact details can be found at the end of this information sheet.

Why are we doing this research?
This research study aims to help us understand more about the 'psychology' that affects how well young people with type 1 diabetes stick to their diabetes tasks and routines (e.g., giving insulin) and control their blood sugar levels. We are particularly interested in whether **self-compassion** (having a kind and non-judgmental attitude about yourself) is helpful.

Previous research suggests that adolescents with type 1 diabetes sometimes find it difficult to stick to their treatment plans. Studies also show that HbA_{1c} levels tend to be higher during adolescence, which increases the risk of diabetes-related complications. As a result, we think it is important to find out what helps young people manage their diabetes well.

We already know that self-compassion seems to make it easier for adults to manage their diabetes. This research study will investigate if this applies to younger people under 18, like you! We hope other researchers can use this information in future to develop new psychological treatments for helping young people with type 1 diabetes maintain good diabetes care.

Why am I being invited to participate?
You have received this invitation because you are under the care of the diabetes team at either Norfolk and Norwich University Hospital or West Suffolk Hospital, where the research study is taking place. We have invited every patient aged 11-18 with type 1 diabetes, who has been diagnosed for one year or more, to participate. However, this is a voluntary study.

Do I have to take part?
Participation in this research is entirely voluntary – you are not obliged to take part. If you decide not to participate, this will not affect your medical care. You also have the right to withdraw from the study at any time prior to when data is analysed (it may not be possible or practicable to remove your data after this point).

What would taking part involve?
People who take part in the study will be asked to complete some questionnaires about their diabetes care routine, self-compassion, emotional wellbeing, and the support they get from parents in managing their diabetes. The questionnaires can be done at home via a website (Bristol Online Surveys) or on paper at your usual diabetes clinic. It takes around 30 minutes to answer all the questions. We will also need to obtain your most recent HbA_{1c} reading and date of diagnosis from your medical notes. This data will be accessed by a member of your diabetes clinical team and shared with the researcher.

If you participate in this study, you will be offered an opportunity to receive a summary of the research findings. There is also a chance to enter a prize draw for a £25 Amazon gift voucher. The winner will be chosen at random on 27 February 2018.

What are the possible advantages of taking part?
The study may not benefit you directly. However, we hope that the information gathered will help inform future treatments aimed at improving diabetes control in young people.

Are there any risks or disadvantages to taking part?
We do not expect there to be any risks posed by participating in this research. One of the questionnaires we are using (the PI-ED: Paediatric Inventory of Emotional Distress) examines symptoms of emotional distress (anxiety and low mood) in children and adolescents. It is possible that some young people may find it upsetting to answer these questions.

If your score on this measure shows elevated distress levels, we will notify your clinical team and send you a letter with details of how to access the diabetes team psychologist. In this circumstance only, the researcher would need to request your home address from the clinical team. If you need any extra support, you could call Childline free on telephone 0800 1111.

How will my information be stored?
The information that you provide to us will be stored privately and securely. Paper documents will be stored in locked filing cabinets and reviewed only by the researcher and research supervisor. If you use the study website, your answers will be 'encrypted' (so no-one except the researcher can read them) and stored electronically on secure servers at the University of Bristol. In exceptional circumstances – such as technical failure – it is possible that the I.T. team at Bristol Online Surveys might need access to these servers. All I.T. team members have confidentiality clauses in their contracts of employment. Any electronic (computer) files used for this study that contain your information will be stored on an 'encrypted' memory stick, which can only be accessed by the researcher. No identifiable

information about you (e.g., name, date of birth) will be included in the report outlining the study's findings.

Who is organising and funding this research?
This study has been organised collaboratively by the Department of Clinical Psychology at the University of East Anglia (UEA), Norfolk and Norwich University Hospital, and West Suffolk Hospital. The paper produced outlining the study findings will form part of a doctoral thesis for Katherine Jackson, a trainee Clinical Psychologist at UEA.

Who has reviewed this study?
The North of Scotland Research Ethics Committee (2) has reviewed this study.

I am unhappy about an element of this study – who should I speak to?
If you have concerns or would like to complain about any aspect of this study, please contact Professor Ken Laidlaw via e-mail: k.laidlaw@uea.ac.uk. Professor Laidlaw is Head of Clinical Psychology at the University of East Anglia, where the researcher studies.

You could also contact PALS (Patient Advice and Liaison Service) at the hospital providing your diabetes care. PALS provide free, confidential support to patients and their relatives.

- **Norfolk & Norwich University Hospital PALS**. Telephone: 01603 289036 or 01603 289045, e-mail: pals@nnuh.nhs.uk, or ask in person at the main reception desks at the Inpatient and Outpatient entrances to make an appointment.
- **West Suffolk Hospital PALS**. Telephone: 01284 712555, e-mail: pals@wsh.nhs.uk, or drop-in to the PALS office in the main reception area.

I am interested in taking part – how do I get more information?
If you have any questions about the study, are interested in participating, or would just like to find out more, please contact the researcher, Katherine Jackson, Trainee Clinical Psychologist, on:

- E-mail: k.jackson@uea.ac.uk
- Telephone or text message: 07935 377292

Please provide your preferred time and method of contact (e-mail address or telephone number) when contacting the researcher. Contact with the researcher does not create any obligation to participate.

Thank you for taking the time to read this information sheet.

Yours sincerely

Katherine Jackson
Trainee Clinical Psychologist
University of East Anglia

Appendix J

Research Information Sheet (for Parents)

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust

Information Sheet for Research (for Parents)
Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, Trainee Clinical Psychologist
Research Supervisor: Kiki Mastroyannopoulou, Consultant Clinical Psychologist

I am writing to invite your child to take part in a research study about young people with type 1 diabetes. We want to find out more about the 'psychology' behind good diabetes care, especially what helps young people stick to their diabetes management routines and keep good control of their blood sugar levels.

This information sheet has been designed to provide you with details about the study so you can decide if you would like your child to participate. I have also enclosed a separate information sheet – with more straightforward language – for your child to read.

Please do not hesitate to contact me if you have any questions or would like to know more about the study – contact details can be found at the end of this information sheet.

Why are we doing this research?
This research study aims to help us understand more about the 'psychology' that affects how well young people with type 1 diabetes stick to their diabetes tasks and routines (e.g., giving insulin) and control their blood sugar levels. We are particularly interested in whether **self-compassion** (having a kind and non-judgmental attitude about yourself) is helpful.

Previous research suggests that adolescents with type 1 diabetes sometimes find it difficult to stick to their treatment plans. Studies also show that HbA_{1c} levels tend to be higher during adolescence, which increases the risk of diabetes-related complications. As a result, we think it is important to find out what helps young people manage their diabetes well.

We already know that self-compassion seems to make it easier for adults to manage their diabetes. This research study will investigate if this applies to younger people under 18. We hope other researchers can use this information in future to develop new psychological treatments for helping young people with type 1 diabetes maintain good diabetes care.

Why is my child being invited to participate?
You have received this invitation because your child is under the care of the diabetes team at either Norfolk and Norwich University Hospital or West Suffolk Hospital, where the research study is taking place. We have invited every patient aged 11-18 with type 1 diabetes, who has been diagnosed for one year or more, to participate. However, this is a voluntary study.

Does my child have to take part?
Participation in this research is entirely voluntary – your child is not obliged to take part. If you or your child decide he/she will not participate, this will not affect his/her medical care. Your child also has the right to withdraw from the study at any time prior to when data is analysed (it may not be possible or practicable to remove his/her data after this point).

What would taking part involve?
Young people who take part in the study will be asked to complete some questionnaires about their diabetes care routine, self-compassion, emotional wellbeing, and the support they get from parents in managing their diabetes. The questionnaires can be done at home via a website (Bristol Online Surveys) or on paper at your child's usual diabetes clinic. It takes around 30 minutes to answer all the questions. We will also need to obtain your child's most recent HbA_{1c} reading and date of diagnosis from his/her medical notes. This data will be accessed by a member of your child's diabetes clinical team and shared with the researcher.

If your child participates in this study, you will be offered an opportunity to receive a summary of the research findings. There is also a chance for your child to enter a prize draw for a £25 Amazon gift voucher. The winner will be chosen at random on 27 February 2018.

What are the possible advantages of taking part?
The study may not benefit your child directly. However, we hope that the information gathered will help inform future treatments aimed at improving diabetes control in young people.

Are there any risks or disadvantages to taking part?
We do not expect there to be any risks posed by participating in this research. One of the questionnaires we are using (the PI-ED: Paediatric Inventory of Emotional Distress) examines symptoms of emotional distress (anxiety and low mood) in children and adolescents. It is possible that some young people may find it upsetting to answer these questions.

If your child's score on this measure shows elevated distress levels, we will notify his/her clinical team and send you a letter with details of how to access the diabetes team psychologist. In this circumstance only, the researcher would need to request your child's home address from the clinical team. If your child needs any extra support, he/she could call Childline free on telephone 0800 1111.

How will my child's information be stored?
The information that your child provides to us will be stored privately and securely. Paper documents will be stored in locked filing cabinets and reviewed only by the researcher and research supervisor. If your child uses the study website, his/her answers will be 'encrypted' (so no-one except the researcher can read them) and stored electronically on secure servers at the University of Bristol. In exceptional circumstances – such as technical failure – it is possible that the I.T. team at Bristol Online Surveys might need access to these servers. All I.T. team members have confidentiality clauses in their contracts of employment. Any electronic (computer) files used for this study that contain your child's information will be stored on an 'encrypted' memory stick, which can only be accessed by the researcher. No identifiable information about your child (e.g., name, date of birth) will be included in the report outlining the study's findings.

Who is organising and funding this research?
This study has been organised collaboratively by the Department of Clinical Psychology at the University of East Anglia (UEA), Norfolk and Norwich University Hospital, and West Suffolk Hospital. The paper produced outlining the study findings will form part of a doctoral thesis for Katherine Jackson, a trainee Clinical Psychologist at UEA.

Who has reviewed this study?
The North of Scotland Research Ethics Committee (2) has reviewed this study.

I am unhappy about an element of this study – who should I speak to?
If you have concerns or would like to complain about any aspect of this study, please contact Professor Ken Laidlaw via e-mail: k.laidlaw@uea.ac.uk. Professor Laidlaw is Head of Clinical Psychology at the University of East Anglia, where the researcher studies.

You could also contact PALS (Patient Advice and Liaison Service) at the hospital providing your diabetes care. PALS provide free, confidential support to patients and their relatives.

- **Norfolk & Norwich University Hospital PALS**. Telephone: 01603 289036 or 01603 289045, e-mail: pals@nnuh.nhs.uk, or ask in person at the main reception desks at the Inpatient and Outpatient entrances to make an appointment.
- **West Suffolk Hospital PALS**. Telephone: 01284 712555, e-mail: pals@wsh.nhs.uk, or drop-in to the PALS office in the main reception area.

My child is interested in taking part – how do I get more information?
If your child is interested in participating and you are in agreement with this, you have any questions about the research, or you would just like to find out a bit more, please contact Katherine Jackson, Trainee Clinical Psychologist, on:

- E-mail: k.jackson@uea.ac.uk
- Telephone or text message: 07935 377292
- By returning the enclosed 'consent to share information' form using the stamped-addressed envelope provided.

Please provide your preferred time and method of contact (e-mail address or telephone number) when contacting the researcher. Contact with the researcher does not create any obligation for your child to participate.

Thank you for taking the time to read this information sheet.

Yours sincerely

Katherine Jackson
Trainee Clinical Psychologist
University of East Anglia

Appendix K

Letter of Introduction

(Norfolk & Norwich University Hospitals NHS Foundation Trust)

Dear patients and families,

We are writing to let you know about an exciting research opportunity that is taking place in our diabetes services over the next few months.

Katherine Jackson – a Trainee Clinical Psychologist at the UEA – is doing some research with us to look at what helps young people with type 1 diabetes to manage their condition. In particular, this research hopes to find out if self-compassion (being kind to yourself) makes a positive difference for diabetes management.

This is valuable research because we know that managing type 1 diabetes can be really difficult, especially for young people. It will help us understand more about the 'psychology' behind diabetes care and target future psychological treatments.

Katherine is looking for young people aged 11 to 18 to take part. An information sheet about the research has been enclosed with this letter. This will tell you much more about the project and how you can get involved!

Please direct all queries about the research to Katherine Jackson – her contact details are given on the enclosed information sheet.

Kind regards

Dr Jo Derisley
Consultant Clinical Psychologist
Paediatric Diabetes Service
Norfolk & Norwich University Hospital

Dr Sarah Fish
Clinical Psychologist
Diabetes Transition Service
Norfolk & Norwich University Hospital

Appendix L

Letter of Introduction

(West Suffolk NHS Foundation Trust)

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust

Dear patients and families,

We are writing to let you know about an exciting research opportunity that is taking place in our diabetes services over the next few months.

Katherine Jackson – a Trainee Clinical Psychologist at the UEA – is doing some research with us to look at what helps young people with type 1 diabetes to manage their condition. In particular, this research hopes to find out if self-compassion (being kind to yourself) makes a positive difference for diabetes management.

This is valuable research because we know that managing type 1 diabetes can be really difficult, especially for young people. It will help us understand more about the 'psychology' behind diabetes care and target future psychological treatments.

Katherine is looking for young people aged 11 to 18 to take part. An information sheet about the research has been enclosed with this letter. This will tell you much more about the project and how you can get involved!

Please direct all queries about the research to Katherine Jackson – her contact details are given on the enclosed information sheet.

Kind regards

Dr Emily Baker
Consultant Clinical Psychologist
Children's Department
West Suffolk Hospital

Appendix M

Study Poster Advertisement

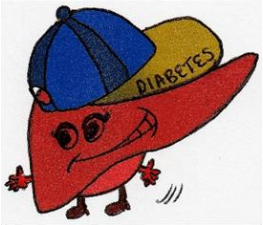
Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust

Research Participants Needed!

Managing type 1 diabetes in youth: Does self-compassion help?



What's the research about?

This is a research study about what helps young people with type 1 diabetes stick to their diabetes management routines and keep good control of their blood sugar levels. We want to find out if self-compassion (being kind and understanding to yourself) makes a difference!

Young people who take part in the study will be asked to fill out some questionnaires, which they can do online or on paper here at the diabetes clinic. This will take about 30 minutes. We will also find out their most recent HbA1c reading and date of diagnosis from their medical notes.

Who do we want to speak to?

- Young people with type 1 diabetes who are aged 11-18.
- Young people who have been diagnosed for 1 year or more.

Who would not be suitable?

- Young people with type 2 diabetes.
- Young people who do not speak English or find it hard to understand written English.

If you would like to learn more about the study, please contact me at: k.jackson@uea.ac.uk (email) or 07935 377292 (telephone).

Researcher: Katherine Jackson, Trainee Clinical Psychologist

Feel free to take a tear-off slip!

Version 1.3
17 February 2017

Project ID: 213711

Managing Diabetes in Youth Study k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**	**Managing Diabetes in Youth Study** k.jackson@uea.ac.uk **07935 377292**

Appendix N

Assent Form for Participants Aged 11 to 15

PARTICIPANT ASSENT FORM FOR UNDER 16s

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

I am doing a research study about what helps young people with type 1 diabetes stick to their diabetes management routines and keep good control of their blood sugar levels.

A research study is a way to learn more about people. If you would like to take part in this study, you will be asked to fill out some questionnaires. These will tell us a bit about you, the tasks you do to manage your diabetes, how kind you are to yourself, your wellbeing, and the help you get from your family with managing diabetes. This takes about 30 minutes.

I would also like to get some information from your hospital notes about when you were diagnosed with diabetes and your most recent HbA_{1c} reading. If you decide to take part in the study, the diabetes team staff will find this information and share it with me.

When I am finished with the study, I will write a report about what was learned. This report will not include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents know about the study and will also be asked to give their permission for you to take part.

If you decide you want to be in this study, please write your name below.

I, _____, want to be in this research study.

(Write your name here)

_____

(Today's date)

Appendix O

Consent Form for Participants Aged 16 to 18

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust

PARTICIPANT CONSENT FORM (FOR YOUNG PEOPLE AGED 16+)

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

Before you can take part in this study, we will need your permission. Please read this form carefully – it explains what we are asking you to agree to. If you would like to take part, please complete this form in full and provide your details where requested. Many thanks.

Please tick the boxes to indicate your understanding and agreement with the following statements:

I confirm that I have read the information sheet dated 31 March 2017 (Version 1.5) for the above study. ☐

I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

I understand that my participation is voluntary and that I am free to withdraw at any time prior to when data has been analysed, without giving any reason, without my medical care or legal rights being affected. ☐

I understand that my most recent HbA_{1c} reading and date of diagnosis will be obtained from my medical notes by a member of the NHS Trust diabetes clinical team and shared with the researcher. I give permission for my data to be accessed and shared in this capacity. ☐

Please turn over (form continues overleaf).

I understand that if my score on the Paediatric Index of Emotional Distress (PI-ED) is in the range associated with elevated distress, the researcher will inform my diabetes clinical team and notify me by letter. I give permission for my home address to be shared with the researcher for this purpose and in this circumstance only. ☐

I agree to take part in the above study. ☐

I would like to receive a summary of the study findings / be entered in the prize drawer for a £25 Amazon voucher (please delete as appropriate) and consent to the use of my e-mail address for these purposes. ☐

Preferred e-mail address:

……

_____	_____	_____
Name	Date of birth	Hospital number (if known)

_____	_____
Signature	Today's date

Thank you for agreeing to take part in this research!

Katherine Jackson
Trainee Clinical Psychologist
University of East Anglia

Appendix P

Consent Form for Parents of Participants Aged 11 to 15

Norfolk and Norwich University Hospitals NHS Foundation Trust

University of East Anglia

West Suffolk NHS Foundation Trust

PARENTAL CONSENT FORM

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

Before your child can take part in this study, we will need your permission. Please read this form carefully – it explains what we are asking your consent for. If you agree to your child's participation, please complete this form in full and provide your/your child's details where requested. Many thanks.

Please tick the boxes to indicate your understanding and agreement with the following statements:

I confirm that I have read the information sheet dated 31 March 2017 (Version 1.5) for the above study. ☐

I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

I understand that my child's participation is voluntary and that he/she is free to withdraw at any time prior to when data has been analysed, without giving any reason, without his/her medical care or legal rights being affected. ☐

I understand that my child's most recent HbA_{1c} reading and date of diagnosis will be obtained from his/her medical notes by a member of the NHS Trust diabetes clinical team and shared with the researcher. I give permission for my child's data to be accessed and shared in this capacity. ☐

Please turn over (form continues overleaf).

I understand that if my child's score on the Paediatric Index of Emotional Distress (PI-ED) is in the range associated with elevated distress, the researcher will inform my diabetes clinical team and notify me by letter. I give permission for my child's home address to be shared with the researcher for this purpose and in this circumstance only. ☐

I give consent for my child to take part in the above study. ☐

I would like to receive a summary of the study findings / be entered in the prize drawer for a £25 Amazon voucher (please delete as appropriate) and consent to the use of my e-mail address for these purposes. ☐

Preferred e-mail address:

……

_____	_____	_____
Name of child	Child's date of birth	Child's hospital number (if known)

_____	_____	_____
Name of parent	Parent signature	Today's date

Thank you for agreeing to your child's participation in this research!

Katherine Jackson
Trainee Clinical Psychologist
University of East Anglia

Appendix Q

Instructions for Questionnaire Completion

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

A HANDY GUIDE TO FILLING OUT THE QUESTIONNAIRES

We recommend finding somewhere quiet to fill out your questionnaires, if possible. Any place you can concentrate without too many interruptions will be fine!

This study is about young people so it is important you complete the questionnaires independently (on your own).

Please answer the questions as truthfully as possible. There are no right or wrong answers, just choose the option that best describes what you think or feel.

Your answers are confidential and will not be shared with your diabetes team or your parent or guardian. The only thing we might need to share is your total score on the PI-ED questionnaire (Paediatric Index of Emotional Distress) – if we're concerned that your distress levels are quite high. Even then, we won't pass on your actual answers.

Finally, please complete the questionnaires in the order they have been given to you.

Thank you for taking part in this study!

Appendix R

Thank You Document (Paper Version)

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

WHAT HAPPENS NEXT?

Thank you for taking part in this research study. Your time and input is really valuable and much appreciated by the research team.

Now that you have filled out the study questionnaires, your part is all done! The researcher – Katherine Jackson – will next request your most recent HbA_{1c} reading and the date you were diagnosed with diabetes from your clinical team. You do not need to do anything for this happen.

If you have any more questions about this research study, you can contact the researcher by email: k.jackson@uea.ac.uk or telephone: 07935 377292. If you have concerns or would like to complain about any aspect of the research, please contact Professor Ken Laidlaw, Head of Clinical Psychology at the University of East Anglia by email: k.laidlaw@uea.ac.uk or PALS (Patient Advice and Liaison Service) at your hospital. If you feel upset or need any extra support, you could call Childline free on telephone 0800 1111.

If you have asked to receive a summary of the research findings, you can expect to hear from the research team in spring/summer 2018.

Please seal your questionnaires inside the envelope provided and hand them back to the researcher (if she is there) or a member of your diabetes team.

Thanks again for your involvement in this research!

Katherine Jackson

Trainee Clinical Psychologist, University of East Anglia

Appendix S

Thank You Document (Online Version)

Managing type 1 diabetes in youth: Does self-compassion help?

Researcher: Katherine Jackson, University of East Anglia

WHAT HAPPENS NEXT?

Thank you for taking part in this research study. Your time and input is really valuable and much appreciated by the research team.

Now that you have filled out the study questionnaires, your part is all done! The researcher – Katherine Jackson – will next request your most recent HbA_{1c} reading and the date you were diagnosed with diabetes from your clinical team. You do not need to do anything for this happen.

If you have any more questions about this research study, you can contact the researcher by email: k.jackson@uea.ac.uk or telephone: 07935 377292. If you have concerns or would like to complain about any aspect of the research, please contact Professor Ken Laidlaw, Head of Clinical Psychology at the University of East Anglia by email: k.laidlaw@uea.ac.uk or PALS (Patient Advice and Liaison Service) at your hospital. If you feel upset or need any extra support, you could call Childline free on telephone 0800 1111.

If you have asked to receive a summary of the research findings, you can expect to hear from the research team in spring/summer 2018.

Thanks again for your involvement in this research! Please close your internet browser using the 'x' in the top right-hand corner to exit the study.

Katherine Jackson

Trainee Clinical Psychologist, University of East Anglia

Appendix T

Research Ethics Committee Approval Letter

North of Scotland Research Ethics Service
Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net

NHS Grampian

Please note: This is an acknowledgement letter from the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

10 April 2017

Mrs Katherine Jackson
Trainee Clinical Psychologist
Cambridgeshire and Peterborough NHS Foundation Trust
University of East Anglia
Department of Clinical Psychology, School of Medicine
NORWICH
NR4 7TJ

Dear Mrs Jackson

Study title: **Extending self-kindness: Self-compassion as a predictor of glycaemic control and regimen adherence in adolescents with type 1 diabetes.**
REC reference: **17/NS/0022**
Protocol number: **N/A**
IRAS project ID: **213711**

Thank you for your letter of 7 April 2017. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 14 March 2017.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
IRAS Checklist XML: Checklist 07042017		7 April 2017
Thank You Document (Online Version)	1.1	31 March 2017
Thank You Document (Paper Version)	1.1	31 March 2017
Cover Letter (Conditions of the Favourable Opinion)		7 April 2017
Participant Information Sheet (PIS): Ages 11-15	1.5	31 March 2017
Participant Information Sheet (PIS): Ages 16+	1.5	31 March 2017
Participant Information Sheet (PIS): Parents	1.5	31 March 2017

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants: Study Poster	1.3	17 February 2017
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only)		7 June 2016
IRAS Application Form: IRAS Form 24022017	213711/1060037/37/793	24 February 2017
IRAS Checklist XML: Checklist 07042017		7 April 2017
Letters of invitation to participant: Letter of Invitation to Potential Participants (NNUH version)	1.0	2 December 2016
Letters of invitation to participant: Letter of Invitation to Potential Participants (WSH version)	1.0	2 December 2016
Non-validated questionnaire: About You Form	1.2	4 December 2016
Statement of Activities	1.2	21 February 2017
Schedule of Events	1.2	15 January 2017
Letter to Participants Aged 16+ Informing of Elevated PI-ED score	1.0	15 January 2017
Letter to Parents of Participants Aged Under 16 Informing of Elevated PI-ED score	1.0	15 January 2017
Instructions for Questionnaire Completion	1.2	4 December 2016
Study Timeline	1.3	17 February 2017
Thank You Document (Online Version)	1.1	31 March 2017
Thank You Document (Paper Version)	1.1	31 March 2017
Cover Letter (Conditions of the Favourable Opinion)		7 April 2017
Participant Consent Form: Consent to Share Details Form for Potential Participants Aged 16+	1.3	17 February 2017
Participant Consent Form: Parental Consent to Share Details Form	1.2	27 November 2016
Participant Consent Form: Assent Form for Participants Aged Under 16	1.2	2 December 2016
Participant Consent Form: Consent Form for Participants Aged 16+	1.3	17 February 2017
Participant Consent Form: Parental Consent Form	1.2	2 December 2016
Participant Information Sheet (PIS): Ages 11-15	1.5	31 March 2017
Participant Information Sheet (PIS): Ages 16+	1.5	31 March 2017
Participant Information Sheet (PIS): Parents	1.5	31 March 2017
Referee's report or other scientific critique report: Scientific Critique Report	1.0	28 June 2016
Research protocol or project proposal	1.3	17 February 2017
Summary CV for Chief Investigator (CI): Katherine Jackson		17 February 2017
Summary CV for supervisor (student research): Kiki Mastroyannopoulou	1.0	1 November 2016
Validated questionnaire: Self-Care Inventory		24 February 2017*
Validated questionnaire: Self-Compassion Scale		24 February 2017*
Validated questionnaire: Diabetes Family Behaviour Checklist		24 February 2017*
Validated questionnaire: PI-ED Sample		01 March 2017*

* date received

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

17/NS/0022	**Please quote this number on all correspondence**

Yours sincerely

Carol Irvine

Carol Irvine
Senior Ethics Co-ordinator

Copy to: Tracy Moulton
Mr Andrew Holmes, Norfolk and Norwich University Hospitals NHS Foundation Trust

Appendix U

Health Research Authority Approval Letter

NHS
Health Research Authority

Mrs Katherine Jackson
Trainee Clinical Psychologist
Cambridgeshire and Peterborough NHS Foundation Trust
University of East Anglia
Department of Clinical Psychology, School of Medicine
Norwich
NR4 7TJ

Email: hra.approval@nhs.net

20 April 2017

Dear Mrs Jackson

Letter of HRA Approval

Study title:	**Extending self-kindness: Self-compassion as a predictor of glycaemic control and regimen adherence in adolescents with type 1 diabetes.**
IRAS project ID:	**213711**
Protocol number:	**N/A**
REC reference:	**17/NS/0022**
Sponsor	**University of East Anglia**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

IRAS project ID	213711

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The document *"After Ethical Review – guidance for sponsors and investigators"*, issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

In addition to the guidance in the above, please note the following:

- HRA Approval applies for the duration of your REC favourable opinion, unless otherwise notified in writing by the HRA.
- Substantial amendments should be submitted directly to the Research Ethics Committee, as detailed in the *After Ethical Review* document. Non-substantial amendments should be submitted for review by the HRA using the form provided on the HRA website, and emailed to hra.amendments@nhs.net.
- The HRA will categorise amendments (substantial and non-substantial) and issue confirmation of continued HRA Approval. Further details can be found on the HRA website.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

IRAS project ID	213711

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

Your IRAS project ID is **213711**. Please quote this on all correspondence.

Yours sincerely

Joanna Ho
Assessor

Email: hra.approval@nhs.net

Copy to: *Ms Kiki Mastroyannopoulou, Academic Supervisor, University of East Anglia*
Ms Tracy Moulton, Sponsor Representative, University of East Anglia
Mr Andrew Holmes, Lead NHS R&D Contact, Norfolk and Norwich University Hospitals NHS Foundation Trust

Appendix V

Research Ethics Committee Confirmation of Amendment

North of Scotland Research Ethics Committee (2)
Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net

04 August 2017

Mrs Katherine Jackson
Trainee Clinical Psychologist
Cambridgeshire and Peterborough NHS Foundation Trust
University of East Anglia
Department of Clinical Psychology, School of Medicine
NORWICH
NR4 7TJ

Dear Mrs Jackson

Study title:	**Extending self-kindness: Self-compassion as a predictor of glycaemic control and regimen adherence in adolescents with type 1 diabetes**
REC reference:	**17/NS/0022**
Protocol number:	**N/A**
Amendment number:	**1 (Study Ref) AM01 (REC Ref)**
Amendment date:	**28 July 2017**
IRAS project ID:	**213711**

- Approval was sought for the Chief Investigator to be allowed to send reminder emails at intervals of two, four and eight weeks after website access details have been provided. These would only be sent where the study remained incomplete after these delays. Proposed wording for reminder emails was given in the attached document. This change was requested because the study had encountered problems to date with participants/parents not completing the study after agreeing to do so via the online format. Correspondence from some participants/parents had indicated that forgetting about the study was relatively commonplace, suggesting reminders might be helpful. The majority of potential participants had, to date, selected the online completion option (in favour of paper-based). The sample size was therefore likely to be substantially lower if these parties did not complete. This had implications for statistical power and the implications/relevance of study findings.

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The researcher was contacted via e-mail to reply to queries raised by the Sub-Committee and provided the following clarifications.

The Sub-Committee was content with the proposal that the researcher issued a reminder, and the template email looked fine.

However, bearing in mind that these individuals had agreed to be contacted but had not yet consented to participate, three reminders [at intervals of two, four and eight weeks after website access details have been provided] may be a little much, perhaps send at intervals of just two and four weeks, if just agreeing to be contacted, but no consent.

The next paragraph mentioned consent/assent forms being provided for completion prior to questionnaire administration and it was unclear if they received the consent form/assent forms prior to online access details.

*You explained that the 'Methodology' section under question **A13** of the IRAS form gave a clear step-by-step guide that answered the question below. If a person had selected completion via Bristol Online Surveys, they provided consent/assent with the website (the first page of the site was the forms); it would therefore be impossible to receive consent/assent forms prior to online access details. Relevant IRAS extract as follows:*

"Option two: online completion via Bristol Online Surveys Participants preferring online completion will be sent an email containing a hyperlink ('clickable' electronic link) to the Bristol Online Surveys (BOS) website. The email will include a unique BOS username and password, which must be entered to access this study's specific BOS site. The email will recommend that questionnaires are completed somewhere quiet within the home for privacy and confidentiality. For participants under 16 years old, these details will be emailed to the consenting parent to prohibit participation by a child without appropriate consent. Two versions of the BOS study site will be created, identical in content except for the first page (the consent form). The hyperlink sent to participants aged 16 and above will open the participant consent form; the hyperlink provided to parents of participants under 16 will open the parental consent form. In both cases, the user will be unable to move past this initial screen until fully completed, giving informed consent. On the under-16s BOS site, after parental consent is provided, the participant assent form will appear. Written instructions will describe how consent/assent forms should be completed."

The individuals this amendment concerned had all completed a consent to share details form (see documentation submitted with IRAS) and engaged in follow-up communication via email with the researcher confirming their intention to participate. They had then been emailed the study website hyperlink (as per above) but not actioned this.

It was unclear to you whether there was a question or statement about sending a third reminder after 8 weeks. You (yourself/clinical supervisor/site collaborators) felt there was a need for all 3 based on experiences of participants to date and collaborators past experience of research with this clinical population.

The members of the Sub-Committee were satisfied with the response submitted by the researcher and were content to issue a Favourable Opinion for the Amendment.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Notice of Substantial Amendment (non-CTIMP) [1 (Study Ref)]	AM01 (REC Ref)	28 July 2017
Other [Reminder e-mail wording]	1.0	28 July 2017
Research protocol or project proposal	1.4	28 July 2017

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our Research Ethics Committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

17/NS/0022:	**Please quote this number on all correspondence**

Yours sincerely

Sarah Lovick

pp
On behalf of
Mrs Sophie Welch
Vice-Chair

Enclosures:	List of names and professions of members who took part in the review
Copy to:	Mr Andrew Holmes, Norfolk and Norwich University Hospitals NHS Foundation Trust Ms Tracy Moulton

Appendix W

Template Notification Letter for Participants (Aged 16 – 18) Scoring Above Clinical Cut-off on the PI-ED Questionnaire

[Participant address here]

[Date letter composed here]

Dear [participant name here],

Thank you for recently taking part in the 'Managing type 1 diabetes in youth: Does self-compassion help?' research study. You may remember that as part of the study you completed a questionnaire called the PI-ED (Paediatric Index of Emotional Distress), which asked questions about your feelings and emotional wellbeing.

I have now had the opportunity to look at your PI-ED questionnaire and you have scored within the range that indicates that you might be feeling distressed or having difficulties with low mood or anxiety. This suggests you might benefit from some additional support at this time.

I would therefore like to remind you of how to book an appointment with your diabetes team Clinical Psychologist [relevant professional name here] and would encourage you to do so. Appointments can be booked by contacting your diabetes team on [relevant telephone number here].

As outlined in the study Information Sheet, I have also shared your score on the PI-ED with your diabetes team.

Yours sincerely,

Katherine Jackson
Researcher – Managing type 1 diabetes in youth: Does self-compassion help?
University of East Anglia

Appendix X

Template Notification Letter for Parents of Participants (Aged 11 to 15) Scoring Above Clinical Cut-off on the PI-ED Questionnaire

[Consenting parent's address here]

[Date letter composed here]

Dear [consenting parent's name here],

Your child recently took part in the 'Managing type 1 diabetes in youth: Does self-compassion help?' research study. As part of this study, your child completed a questionnaire called the PI-ED (Paediatric Index of Emotional Distress), which asked questions about his/her feelings and emotional wellbeing.

I have now had the opportunity to look at your child's PI-ED questionnaire and he/she has scored within the range that indicates he/she might be feeling distressed or having difficulties with low mood or anxiety. This suggests he/she might benefit from some additional support at this time.

I would therefore like to remind you of how to book an appointment with your child's diabetes team Clinical Psychologist [relevant professional name here] and would encourage you to do so. Appointments can be booked by contacting your child's diabetes team on [relevant telephone number here].

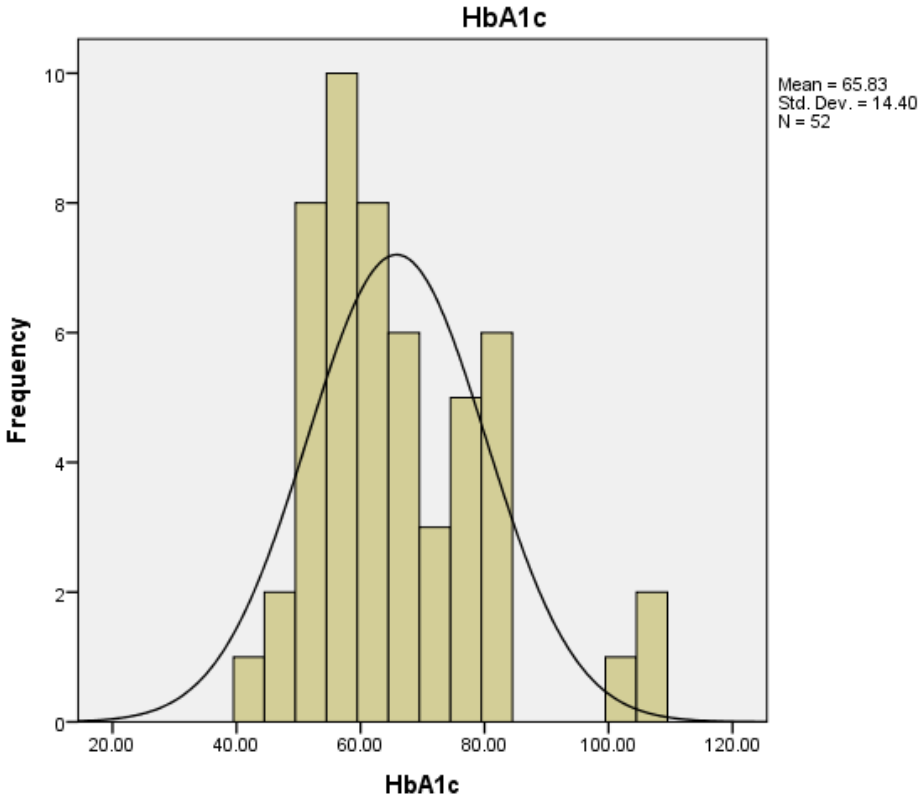
As outlined in the study Information Sheet, I have also shared your child's score on the PI-ED with his/her diabetes team.

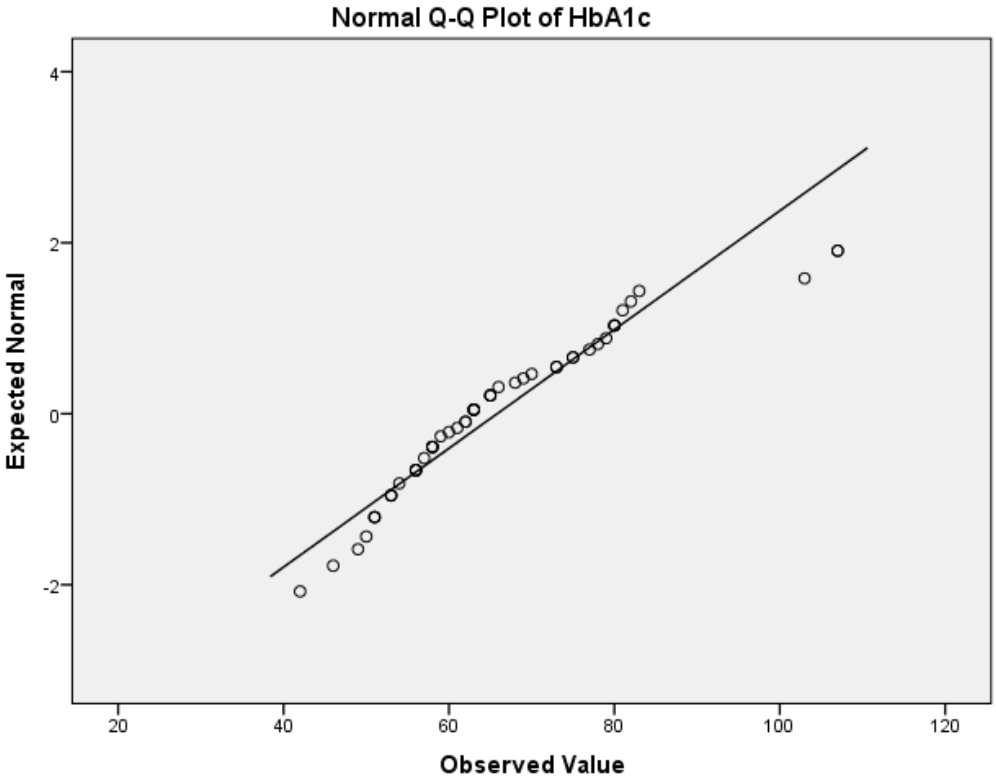
Yours sincerely,

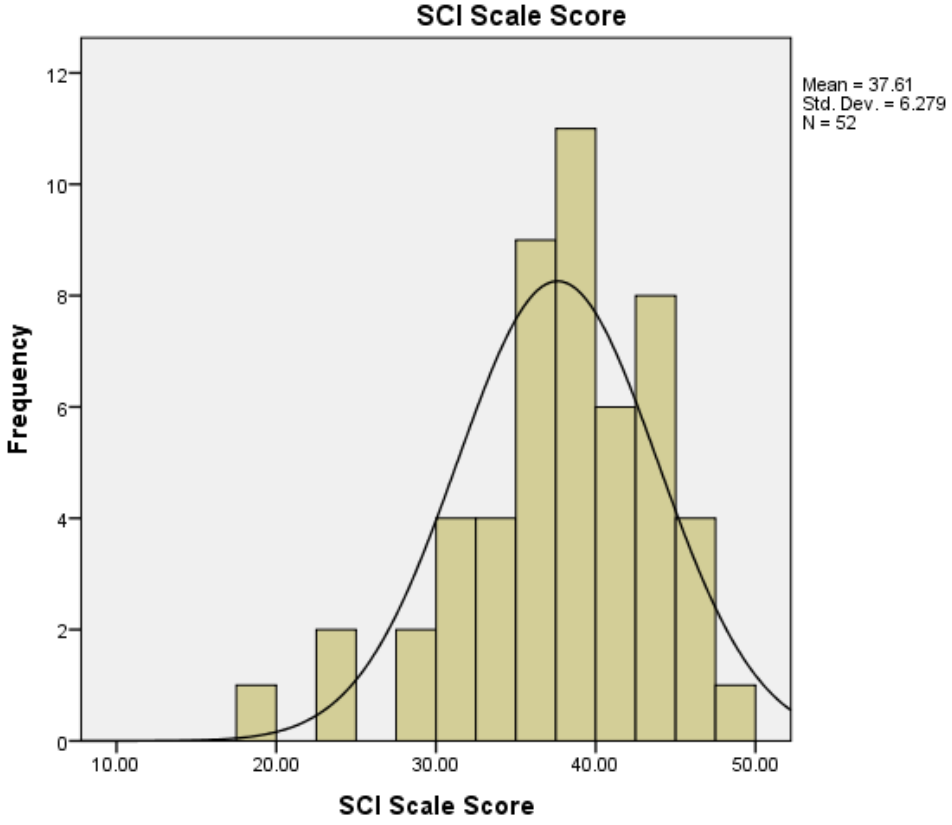
Katherine Jackson
Researcher – Managing type 1 diabetes in youth: Does self-compassion help?
University of East Anglia

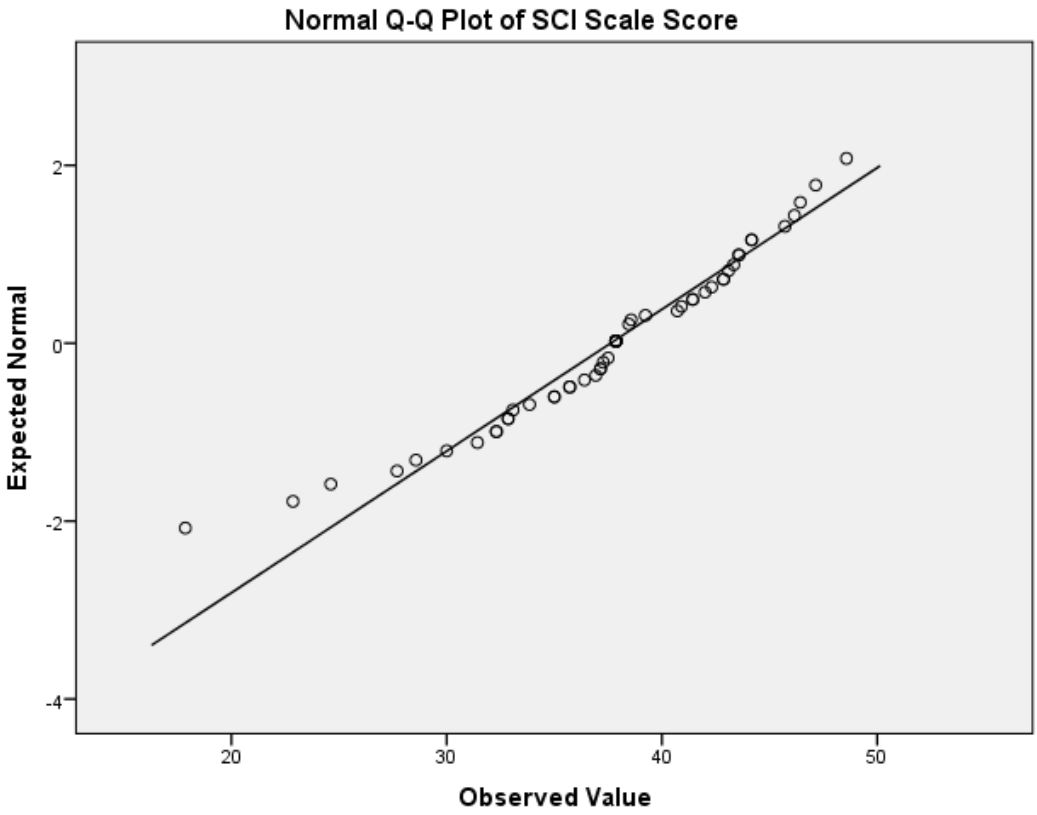
Appendix Y

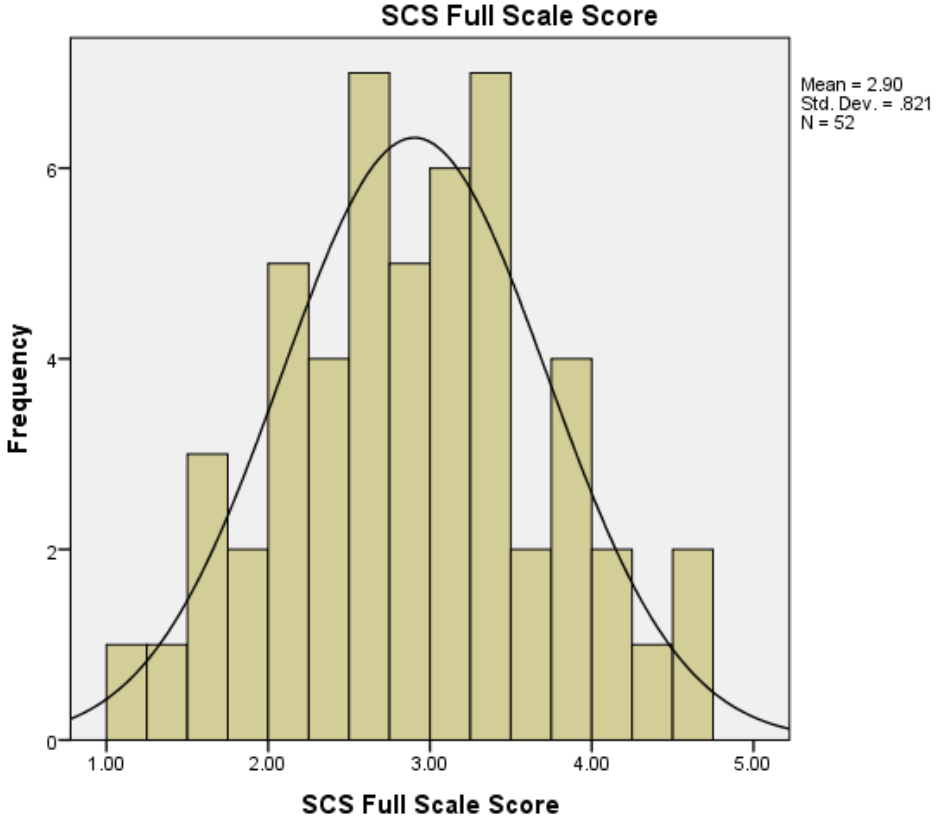
Histograms and Normal Q-Q Plots of Study Variables

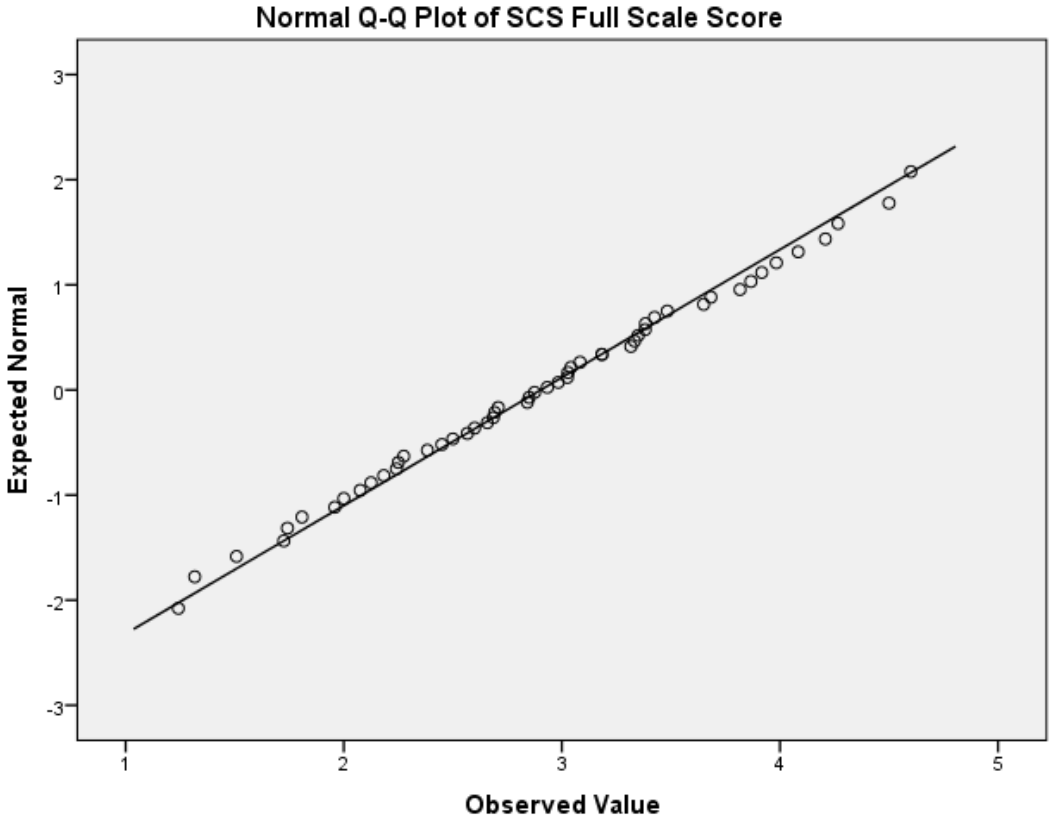


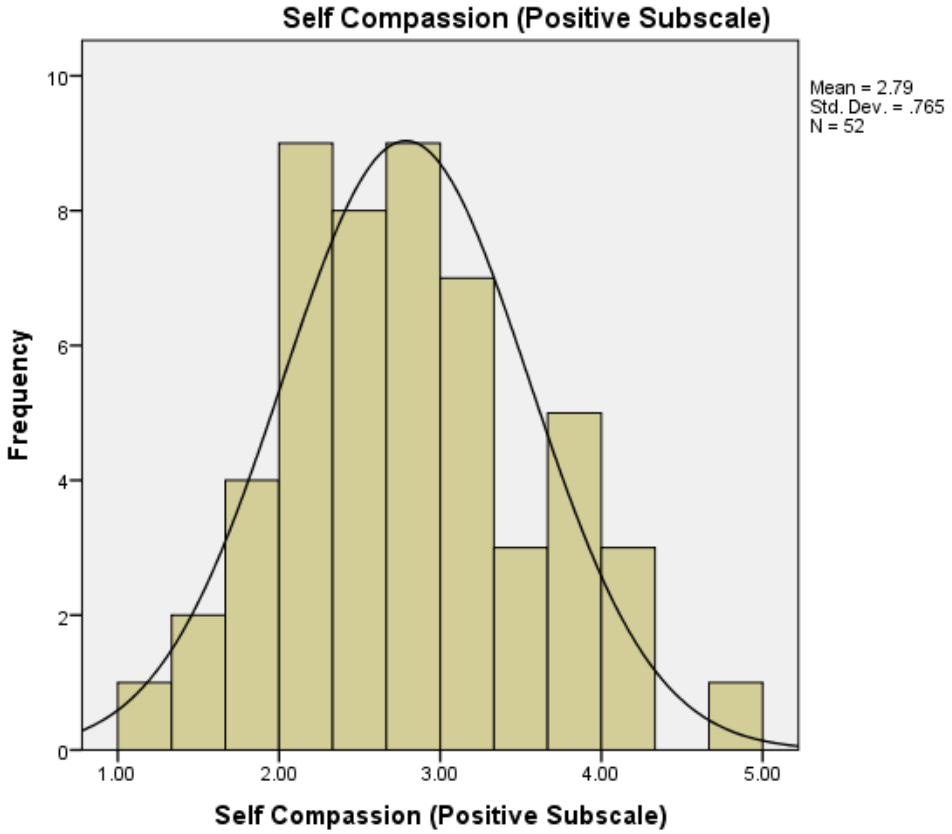


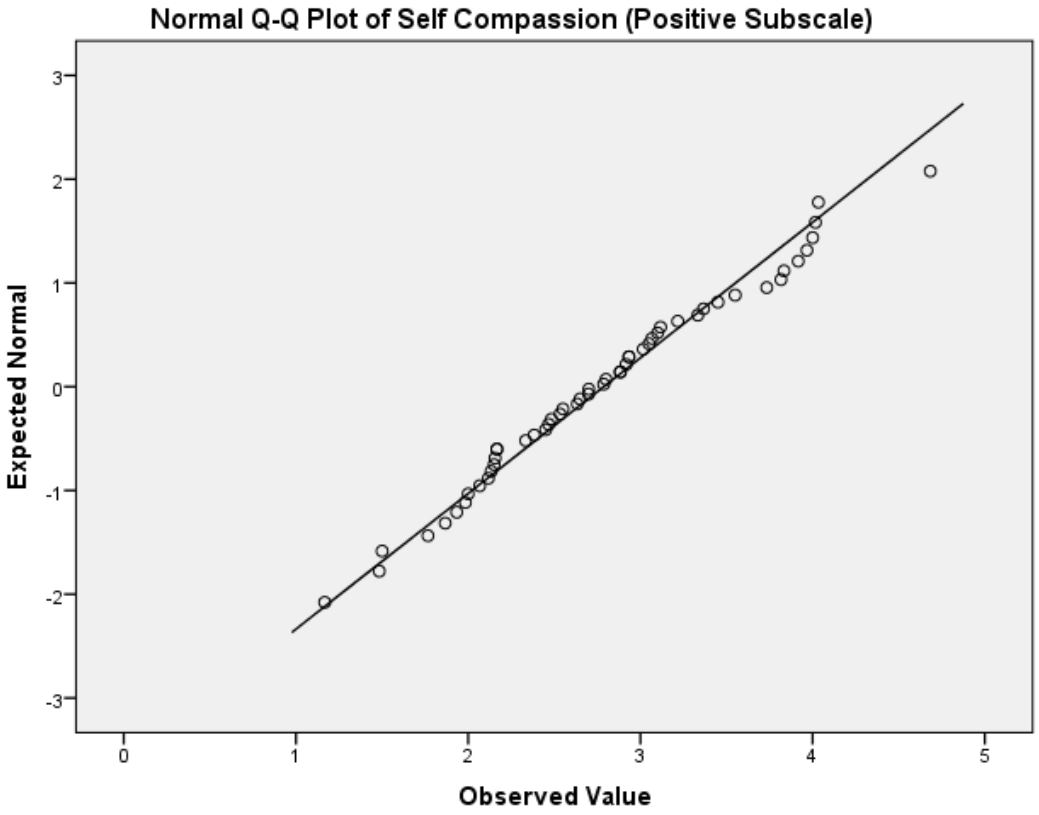

SCI Scale Score
Mean = 37.61
Std. Dev. = 6.279
N = 52
Frequency
0
2
4
6
8
10
12
10.00
20.00
30.00
40.00
50.00
SCI Scale Score

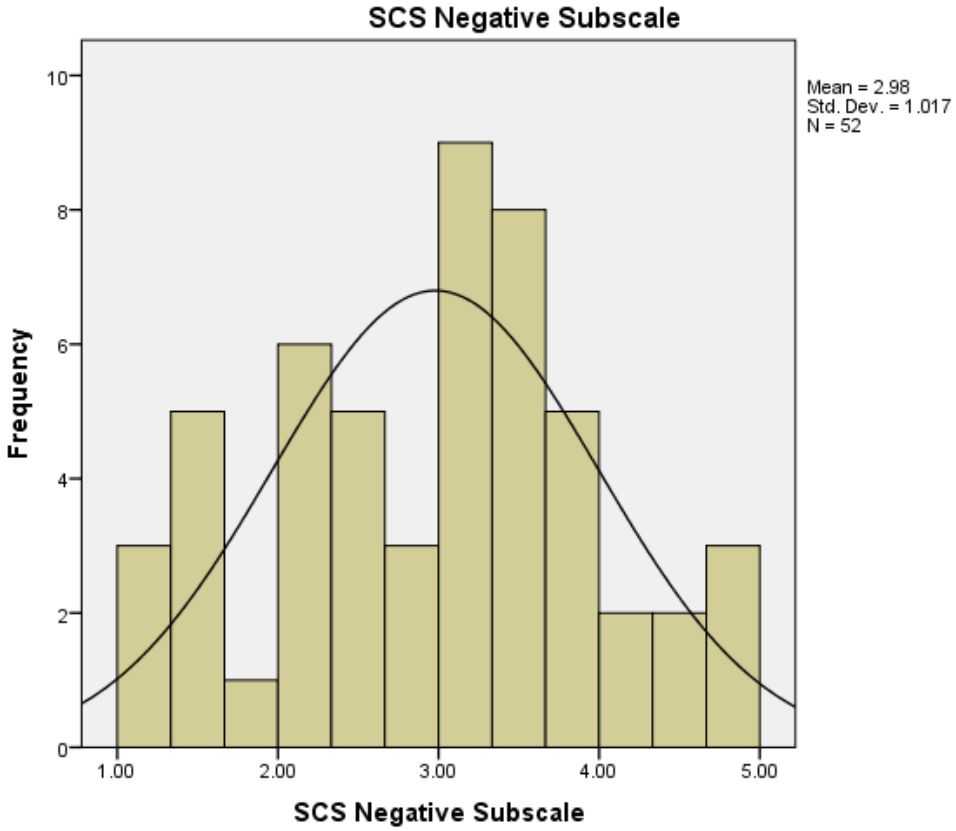

Normal Q-Q Plot of SCI Scale Score
Expected Normal
2
0
-2
-4
20
30
40
50
Observed Value

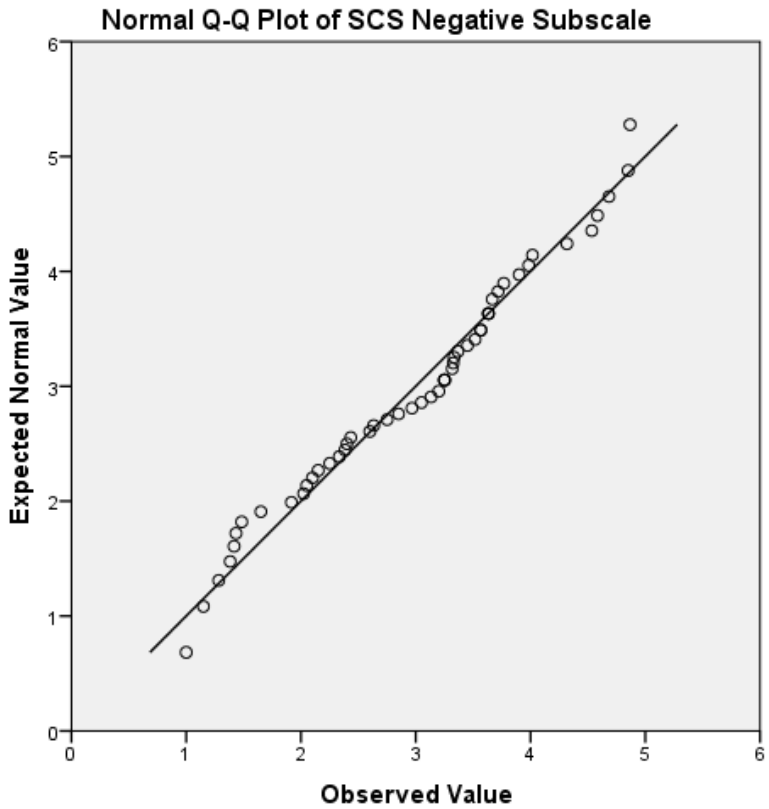

SCS Full Scale Score
Mean = 2.90
Std. Dev. = .821
N = 52
Frequency
0
2
4
6
1.00
2.00
3.00
4.00
5.00
SCS Full Scale Score

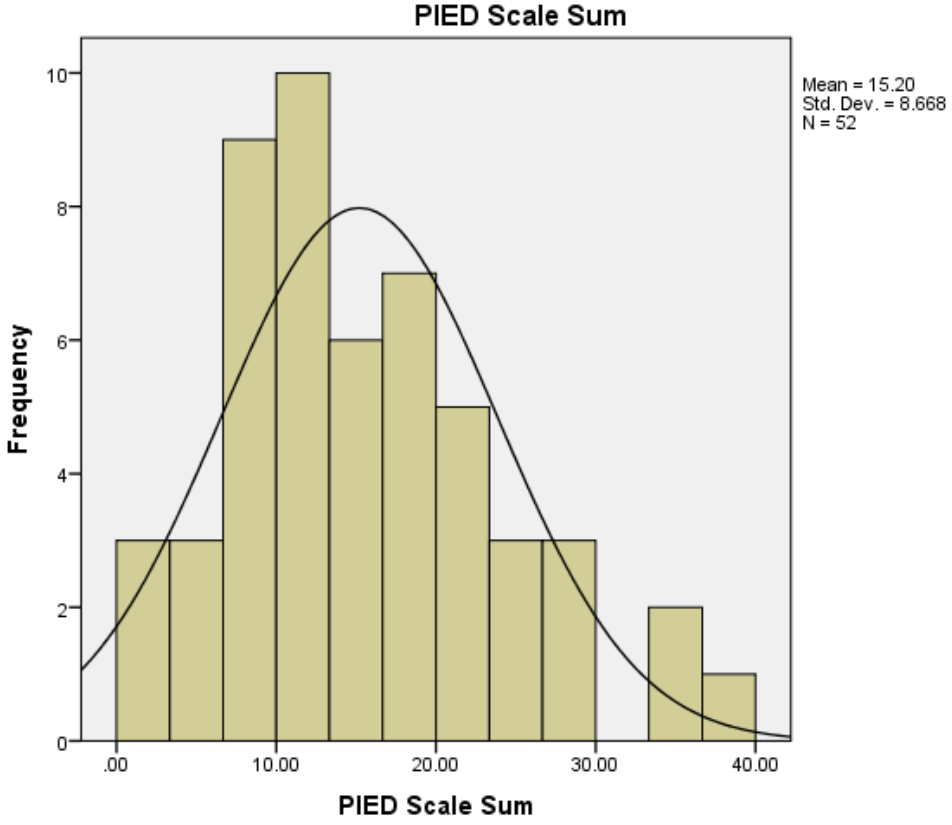

Normal Q-Q Plot of SCS Full Scale Score
Expected Normal
3
2
1
0
-1
-2
-3
1
2
3
4
5
Observed Value


Self Compassion (Positive Subscale)
Mean = 2.79
Std. Dev. = .765
N = 52
Frequency
10
8
6
4
2
0
1.00
2.00
3.00
4.00
5.00
Self Compassion (Positive Subscale)


Normal Q-Q Plot of Self Compassion (Positive Subscale)
Expected Normal
3
2
1
0
-1
-2
-3
0
1
2
3
4
5
Observed Value


SCS Negative Subscale
Mean = 2.98
Std. Dev. = 1.017
N = 52
Frequency
0
2
4
6
8
10
1.00
2.00
3.00
4.00
5.00
SCS Negative Subscale


Normal Q-Q Plot of SCS Negative Subscale
Expected Normal Value
0
1
2
3
4
5
6
Observed Value


PIED Scale Sum
Mean = 15.20
Std. Dev. = 8.668
N = 52
Frequency
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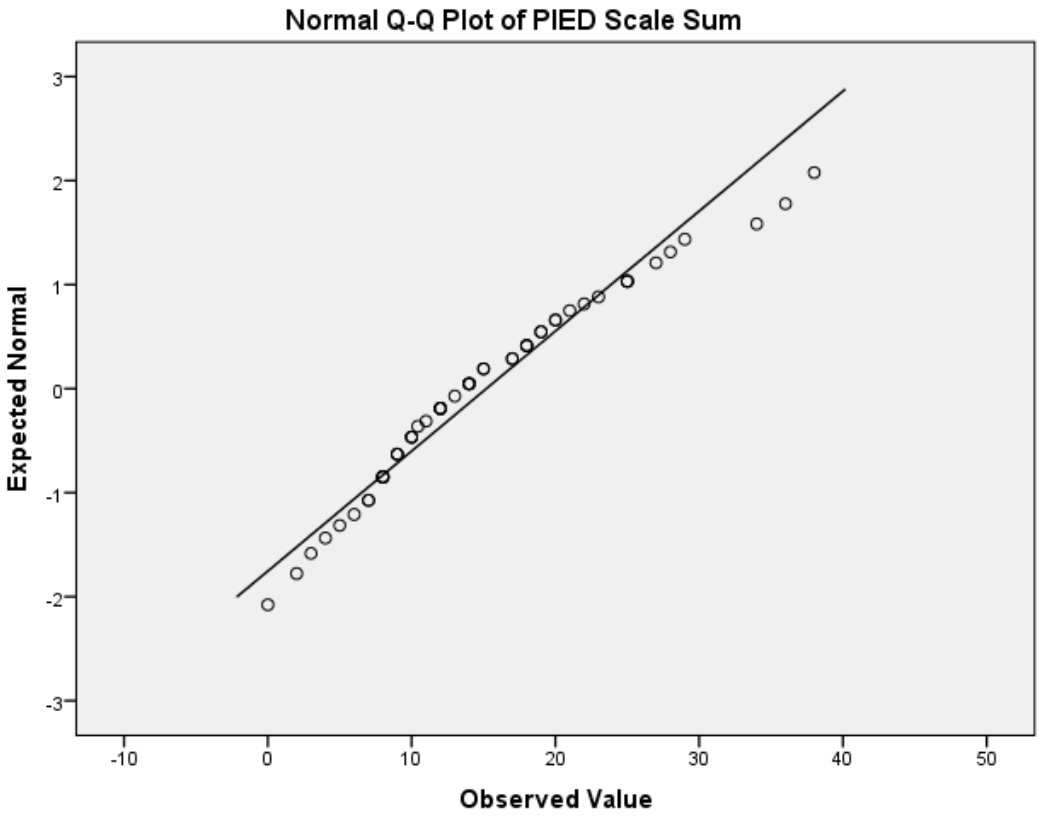
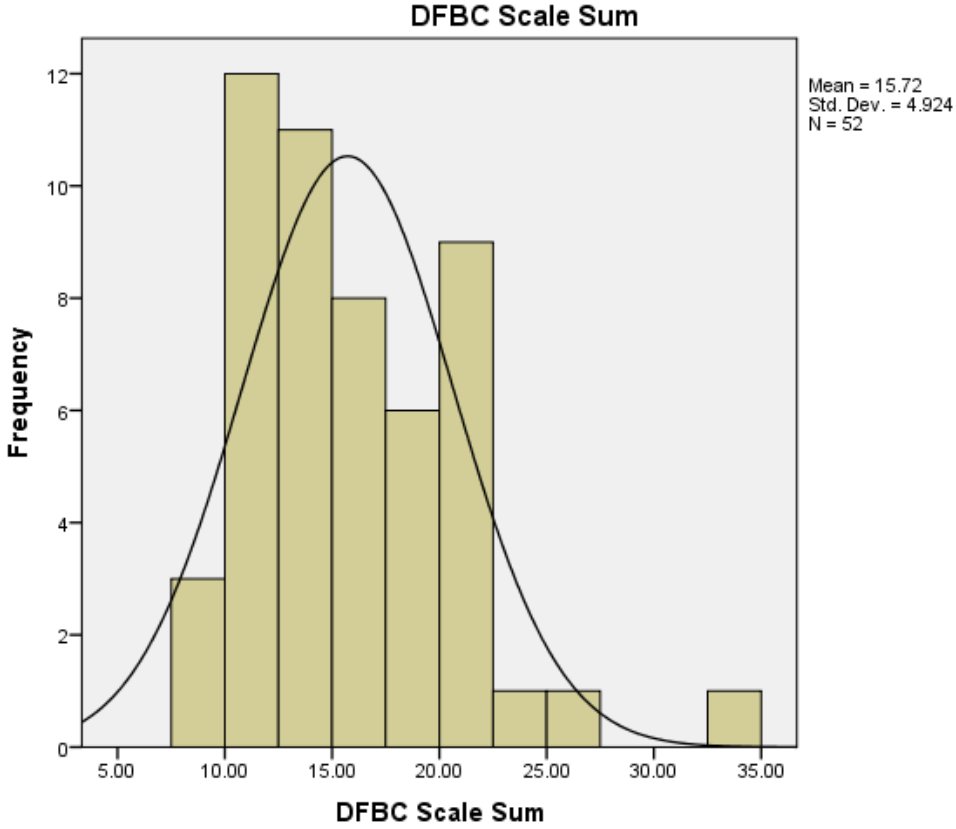
2
4
6
8
10
.00
10.00
20.00
30.00
40.00
PIED Scale Sum


Normal Q-Q Plot of PIED Scale Sum
Expected Normal
3
2
1
0
-1
-2
-3
-10
0
10
20
30
40
50
Observed Value


DFBC Scale Sum
Mean = 15.72
Std. Dev. = 4.924
N = 52
Frequency
0
2
4
6
8
10
12
5.00
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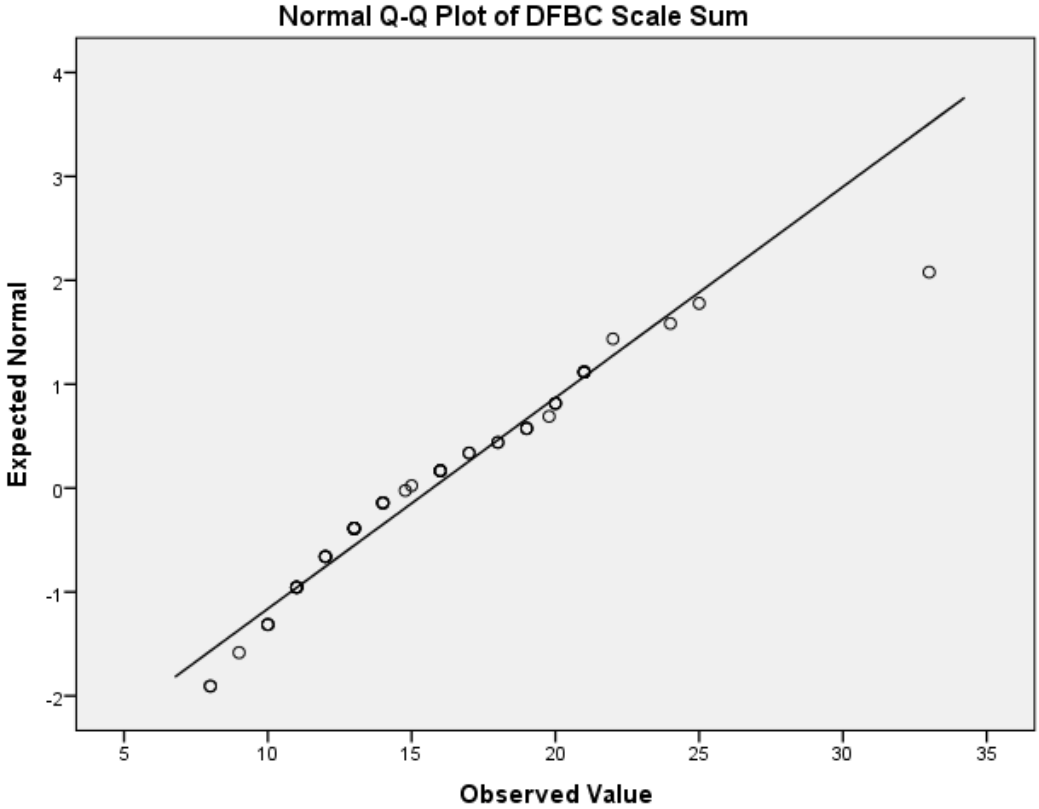
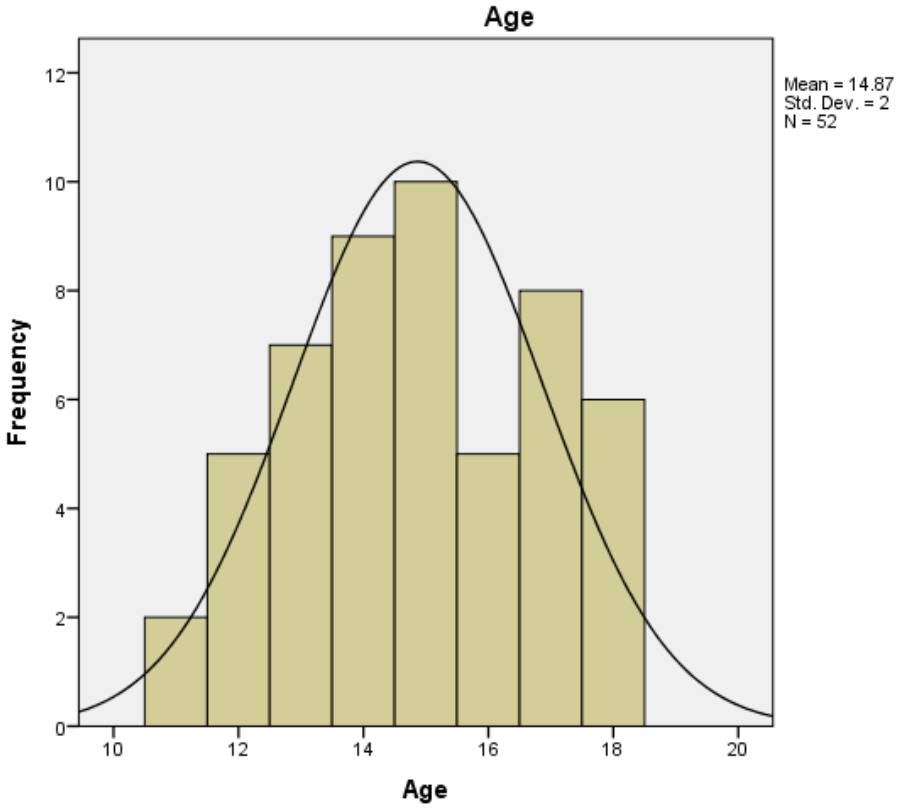
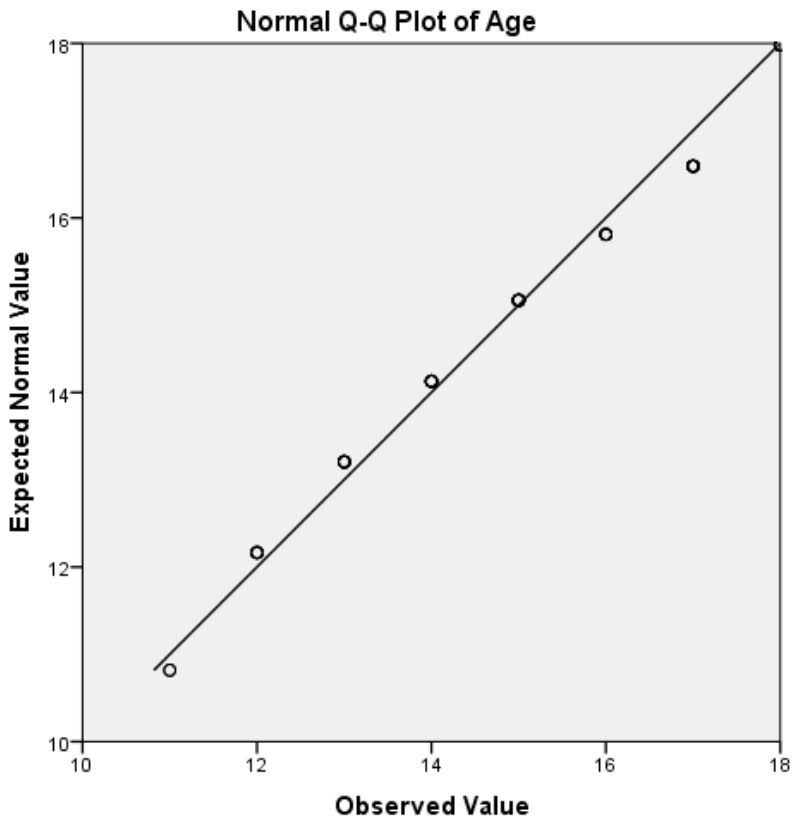
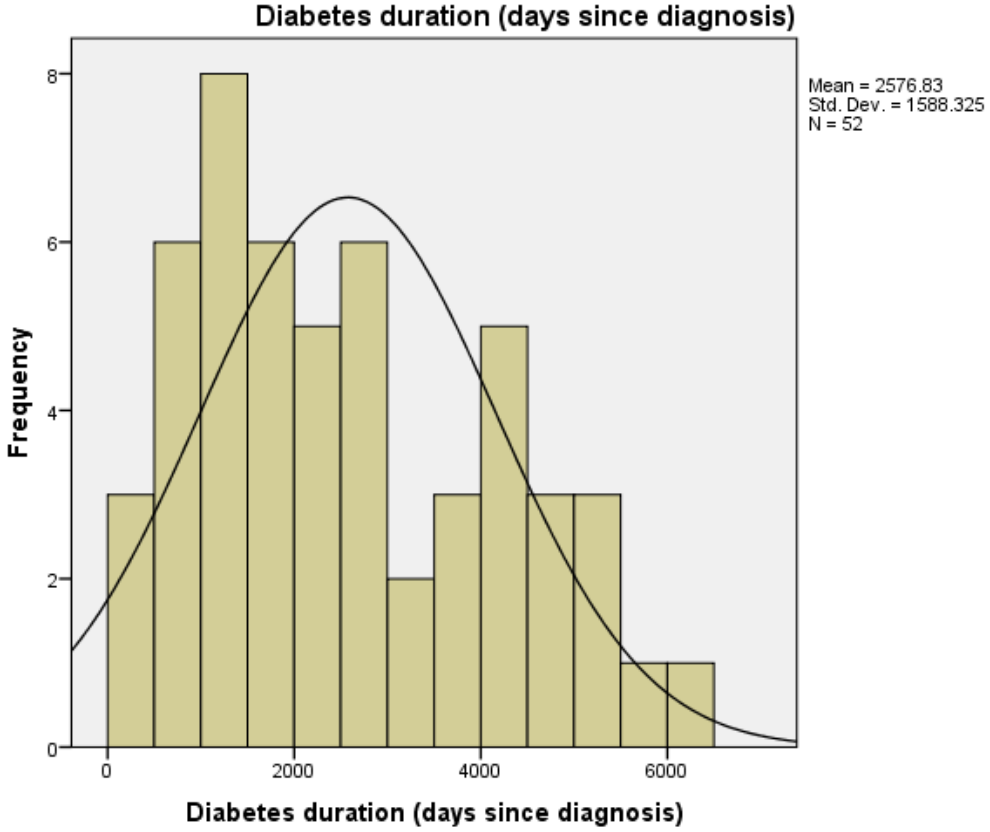
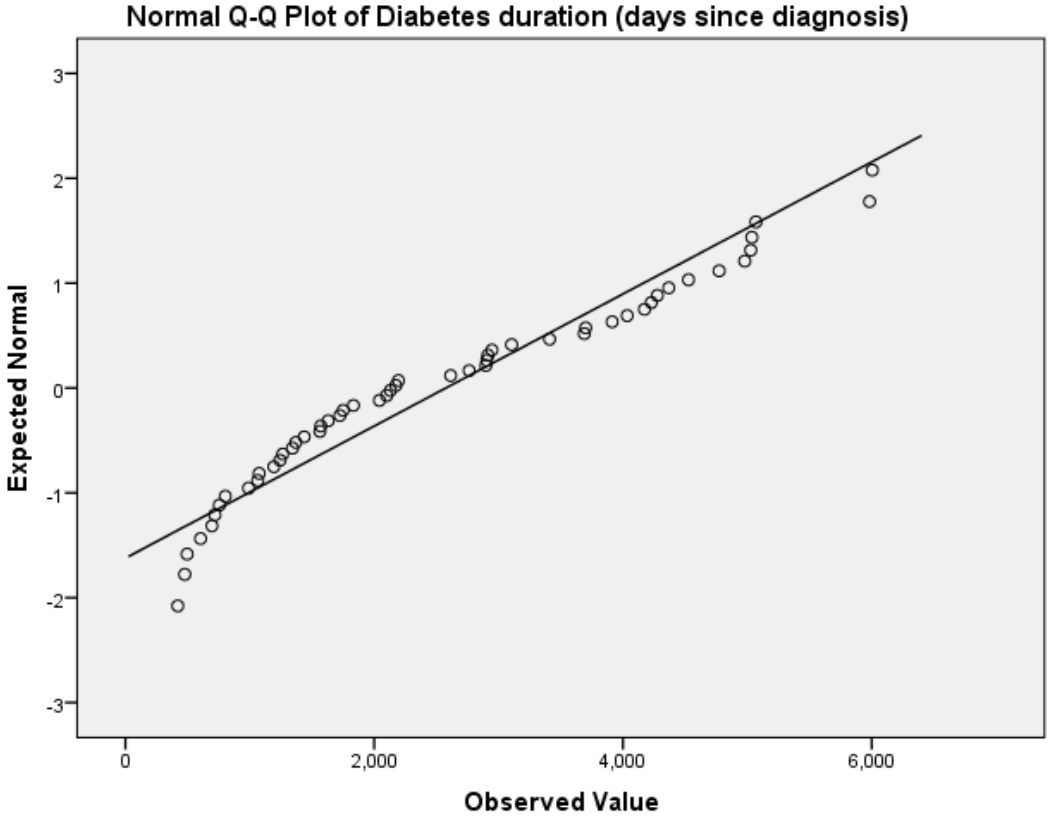
15.00
20.00
25.00
30.00
35.00
DFBC Scale Sum


Normal Q-Q Plot of DFBC Scale Sum
Expected Normal
-2
-1
0
1
2
3
4
5
10
15
20
25
30
35
Observed Value


Age
Mean = 14.87
Std. Dev. = 2
N = 52
Frequency
0
2
4
6
8
10
12
10
12
14
16
18
20
Age


Normal Q-Q Plot of Age
Expected Normal Value
10
12
14
16
18
10
12
14
16
18
Observed Value


Diabetes duration (days since diagnosis)
Mean = 2576.83
Std. Dev. = 1588.325
N = 52
Frequency
0
2
4
6
8
0
2000
4000
6000
Diabetes duration (days since diagnosis)


Normal Q-Q Plot of Diabetes duration (days since diagnosis)
Expected Normal
3
2
1
0
-1
-2
-3
0
2,000
4,000
6,000
Observed Value