Universidade do Minho
Escola de Psicologia

Ana Isabel Teixeira Vieira

Perturbações do comportamento alimentar e ferimentos autoinfligidos: avaliação dos fatores de risco e desenvolvimento de uma intervenção

outubro de 2020

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UMinho | 2020

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Tese de Doutoramento
Doutoramento em Psicologia Aplicada

Trabalho efetuado sob a orientação da
Professora Doutora Sónia Gonçalves

outubro de 2020

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AGRADECIMENTOS

"Estamos aqui, neste instante que esperou a sua vez desde o início dos tempos. Estamos aqui, o caminho também é um lugar.", in O Caminho Imperfeito, José Luís Peixoto

Agradeço à minha Orientadora, a Professora Doutora Sónia Gonçalves, pelos ensinamentos e conselhos transmitidos ao longo do meu percurso e pelo forte incentivo, ânimo, confiança e afeto com que primou a sua orientação. Agradeço-lhe por sempre ter acreditado em mim, mesmo quando eu própria tanto duvidei, e por querer e permitir que eu me desafiasse, evoluísse e traçasse o meu caminho.

Ao Centro Hospitalar Universitário de São João, inclusivamente aos Psiquiatras que colaboraram neste projeto: Dr.ª Isabel Brandão, Dr.ª Patrícia Nunes e Dr. Sertório Timóteo. Presto um agradecimento especial à Dr.ª Isabel Brandão, pelo apoio à concretização das atividades em meio hospitalar, por ter sido um elo basilar entre os investigadores e os pacientes, e pela estima com que sempre me acolheu.

Aos participantes, porque são eles o alvo e o cerne da presente investigação.

Ao Grupo de Estudos das Perturbações Alimentares (GEPA), nomeadamente à Tânia Rodrigues, Sílvia Félix e Elsa Louro pela cooperação na recolha de dados. Em especial, agradeço à Tânia Rodrigues, não só, pela grande dedicação à recolha de dados e pela parceria ímpar na condução da intervenção, mas também pelo seu companheirismo, compreensão e por tudo aquilo que comigo partilhou.

À Doutora Célia Moreira, pela colaboração de excelência no tratamento estatístico dos dados.

À Professora Doutora Bárbara Machado, pelos contributos a este trabalho e pelas oportunidades de participação e aprendizagem em outros projetos de relevo.

Às colegas do doutoramento: Ana, Rosana, Judite e Sara. Entre preocupações, desejos e risos partilhados, agradeço-lhes por terem acrescentado um terno valor a estes anos da minha vida.

Aos meus amigos, Diana, João, Xana, Lúcia e Helena, pelas constantes demonstrações de apoio e orgulho. Em particular, agradeço à Diana pelo suporte, carinho e conforto em momentos cruciais.

Aos meus pais, âncoras da minha vida, pelos sacrifícios feitos e todo o amor que me dedicam!

A tese foi suportada pela Fundação para a Ciência e a Tecnologia (FCT), através da Bolsa de Doutoramento SFRH/BD/116974/2016. Esta bolsa foi financiada por verbas do Orçamento de Estado do Ministério da Ciência, Tecnologia e Ensino Superior e por verbas do Fundo Social Europeu, ao abrigo do Quadro Estratégico Comum, através, nomeadamente, do Programa Operacional do Capital Humano.

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Perturbações do comportamento alimentar e ferimentos autoinfligidos: avaliação dos fatores de risco e desenvolvimento de uma intervenção

RESUMO

A frequente comorbilidade entre perturbações do comportamento alimentar (PCA) e ferimentos autoinfligidos sem intenção suicida (NSSI), sugere que fatores de risco comuns têm um papel na etiologia e manutenção de ambas as condições. Contudo, permanece por esclarecer quais são os fatores específicos a essa comorbilidade e que relações existem entre si. As evidências também apontam para a inexistência de tratamentos específicos e empiricamente suportados para os NSSI, nomeadamente no contexto das PCA. A presente tese inclui cinco estudos. Nos dois primeiros, com uma amostra clínica com PCA, pretendeu-se avaliar a frequência dos NSSI, identificar potenciais fatores de risco para esses comportamentos no contexto das PCA e testar um modelo de relações entre esses fatores. Cerca de 33% dos participantes reportaram NSSI ao longo das suas vidas. Fatores como o abuso na infância e a agressão pelos pares foram mais comuns nos participantes com NSSI do que naqueles sem NSSI. A relação desses fatores com a presença de NSSI também foi mediada por variáveis como a autoavaliação negativa, o uso de substâncias, as tentativas de suicídio e acontecimentos de vida negativos. No terceiro estudo, com uma amostra comunitária e uma amostra clínica com PCA, examinou-se a versão Portuguesa da *Invalidating Childhood Environment Scale*, que apresentou adequadas propriedades psicométricas. No quarto estudo, pretendeu-se avaliar as relações entre desregulação emocional, urgência negativa, invalidação parental e NSSI no contexto das PCA. Uma maior invalidação parental foi associada à presença de NSSI e esta relação foi moderada pelas dificuldades na consciência emocional e pela urgência negativa. O quinto estudo avaliou a viabilidade e aceitação de uma breve intervenção em grupo para pacientes com PCA e história de NSSI, desenvolvida a partir de estratégias baseadas na evidência. Teve como objetivo promover competências adaptativas para lidar com dificuldades em domínios de risco para as PCA e para os NSSI: desregulação emocional, impulsividade e limitadas aptidões de resolução de problemas, dificuldades na comunicação interpessoal e baixo investimento corporal. A maioria dos participantes permaneceu na intervenção e mostrou uma elevada satisfação com o grupo e com as estratégias promovidas. Houve também uma redução dos NSSI e melhorias em dimensões da regulação emocional e do investimento corporal. No global, os resultados são promissores e contribuem para a expansão do conhecimento científico e para a sua aplicação prática.

Palavras-chave: fatores de risco, ferimentos autoinfligidos sem intenção suicida, intervenção, perturbações do comportamento alimentar

Eating disorders and non-suicidal self-injury: assessment of risk factors and development of an intervention

ABSTRACT

The frequent comorbidity between eating disorders (ED) and non-suicidal self-injury (NSSI) suggests that common risk factors play a role in the aetiology and maintenance of both conditions. However, the specific factors for this comorbidity and the relationships between them remain unclear. The evidence also indicates a lack of specific and empirically supported treatments for NSSI, namely in the context of ED. The present thesis includes five studies. In a clinical sample with ED, the first two studies aimed to evaluate the frequency of NSSI, identify potential risk factors for these behaviors in the context of ED and test a model of relationships between these factors. About 33% of participants reported NSSI in their lifetime. Factors such as childhood abuse and peer aggression were more common in participants with NSSI than in those without NSSI. The relationship of these factors with the presence of NSSI was also mediated by variables such as negative self-evaluation, substance use, suicide attempts and stressful life events. In the third study, with a community sample and a clinical sample with ED, the Portuguese version of the Invalidating Childhood Environment Scale was examined, showing adequate psychometric properties. The fourth study aimed to evaluate the relationships between emotion dysregulation, negative urgency, parental invalidation and NSSI in the context of ED. A greater parental invalidation was associated with the presence of NSSI and this relationship was moderated by difficulties in emotional awareness and negative urgency. The fifth study evaluated the feasibility and acceptability of a brief group-based intervention for patients with ED and a history of NSSI, developed from evidence-based strategies. The intervention aimed to promote adaptive skills for dealing with difficulties in risk domains for ED and NSSI: emotion dysregulation, impulsivity and poor problem-solving skills, interpersonal communication difficulties and low body investment. Most participants remained in the intervention and showed high satisfaction with the group and the learned strategies. There was also a reduction in NSSI and improvements in emotion regulation and body investment domains. Overall, the results are promising and contribute to the expansion of scientific knowledge and its practical application.

Keywords: eating disorders, intervention, non-suicidal self-injury, risk factors

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LISTA DE ABREVIATURAS

PCA - Perturbações do Comportamento Alimentar

APA - American Psychiatric Association

DSM - Diagnostic and Satistical Manual of Mental Disorders

NSSI - Non-Suicidal Self-Injury

HBSC - Health Behaviour in School-Aged Children

BIS - Body Investment Scale

ICES - Invalidating Childhood Environment Scale

RFI - Oxford Risk Factor Interview

ED - Eating Disorders

BMI - Body Mass Index

EDE - Eating Disorders Examination

DBT - Dialectical Behaviour Therapy

CR - Composite Reliability

AVE - Average Variance Extracted

SEM - Structural Equation Modelling

WLSMV - Mean and Variance Adjusted Weighted Least Square

DWLS - Diagonally Weighted Least Square Estimator

CFI - Comparative Fit Index

TLI - Tucker-Lewis Index

IFI - Incremental Fit Index

RMSEA - Root Mean Square Error of Approximation

WRMR - Weighted Root-Mean-Square Residual

CI - Confidence Interval

ED-15 - Eating Disorder-15

KMO - Kaiser-Meyer-Olkin

BPD - Borderline Personality Disorder

SIQ-TR - Self-Injury Questionnaire-Treatment Related

DERS - Difficulties in Emotion Regulation Scale

CMP - Conway-Maxwell-Poisson

LRT - Likelihood Ratio Test

AIC - Akaike's Information Criterion

BIC - Bayesian Information Criterion

BN - Bulimia Nervosa

AN - Anorexia Nervosa

AN-R - Anorexia Nervosa Restrictive Type

AN-BP - Anorexia Nervosa Binge-Purge Type

BED - Binge-Eating Disorder

OSFED - Other Specified Eating Disorder

CBT - Cognitive-Behavioral Therapy

T-SIB - Treatment for Self-Injurious Behaviors

TAU - Treatment as Usual

CBT-E - Enhanced Cognitive-Behavioral Therapy for Eating Disorders

RCT - Randomized Controlled Trial

EDE-Q - Eating Disorder Examination Questionnaire

CSQ-8 - Client Satisfaction Questionnaire

FU - Follow-up

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INTRODUÇÃO

1. Perturbações do comportamento alimentar

1.1. Caraterização

As perturbações do comportamento alimentar (PCA)[1] constituem uma crescente preocupação e têm sido alvo de atenção da comunidade científica e clínica. Estas perturbações, incluindo a anorexia nervosa, bulimia nervosa, perturbação de ingestão alimentar compulsiva e PCA com outra especificação ou não especificada, são entendidas como problemas graves caraterizados por "*uma perturbação persistente na alimentação ou na ingestão que resulta na alteração do consumo ou absorção de alimentos e que provoca défice significativo na saúde física ou no funcionamento psicossocial*" (American Psychiatric Association [APA], 2013, p. 393).

De acordo com a quinta edição do *Manual de Diagnóstico e Estatística das Perturbações Mentais* (DSM-5; APA, 2013), a anorexia nervosa é caracterizada pela restrição do consumo de energia, levando a um peso corporal significativamente baixo, dada a idade, sexo, trajetória de desenvolvimento e saúde física. Os indivíduos diagnosticados com esta perturbação têm um medo intenso de ganhar peso ou um comportamento que interfere no ganho de peso. Há também uma influência indevida do peso ou da forma corporal na autoavaliação, ou uma falta de reconhecimento da gravidade do baixo peso corporal. Esta perturbação implica ainda dois subtipos de diagnóstico: tipo restritivo e tipo ingestão compulsiva/purgativo. O primeiro envolve uma perda de peso conseguida, principalmente, através da dieta, jejum e/ou exercício físico excessivo. O segundo tipo pressupõe comportamentos recorrentes de compulsão alimentar e/ou purga. A bulimia nervosa é caracterizada por episódios recorrentes de ingestão alimentar compulsiva, seguidos por comportamentos inapropriados para compensar esses episódios, como a indução de vómito, o uso de laxantes, diuréticos ou outros medicamentos, jejum e exercício físico excessivo. A autoavaliação também é indevidamente influenciada pelo peso ou forma corporal. Geralmente, na bulimia nervosa há um peso normal ou até acima do padrão normal. Contrariamente à bulimia nervosa, na perturbação de ingestão alimentar compulsiva, os episódios de compulsão alimentar não são seguidos por comportamentos compensatórios. Os indivíduos diagnosticados com esta perturbação podem também experimentar sentimentos intensos de vergonha e culpa, associados à ingestão alimentar compulsiva. Por último, a PCA não especificada ou com outra

[1] Ainda que se apresente a definição da secção "Perturbações da Alimentação e da Ingestão", incluída no DSM-5 (APA, 2013), ao longo da tese será usado o termo genérico "perturbações do comportamento alimentar". Esta terminologia prende-se com o facto de a presente investigação não focar as perturbações associadas à infância e caraterizadas por problemas na ingestão (e.g., pica, mericismo, perturbação de ingestão alimentar evitante/restritiva), cingindo-se a condições amplamente reconhecidas, como a anorexia nervosa, bulimia nervosa, perturbação de ingestão alimentar compulsiva e perturbação do comportamento alimentar com outra especificação ou não especificada.

especificação causa igualmente mal-estar clinicamente significativo ou défice no funcionamento social, ocupacional ou noutras áreas importantes do funcionamento, mas não preenche completamente os critérios de diagnóstico para qualquer uma das restantes PCA (APA, 2013).

1.2. Epidemiologia

A prevalência das PCA tem sido avaliada ao longo do tempo, sendo que a revisão dos seus critérios de diagnóstico, introduzida pelo DSM-5 (APA, 2013), levou a investigações adicionais. Por exemplo, Udo e Grilo (2018) avaliaram a prevalência ao longo da vida das PCA em 36306 adultos dos Estados Unidos da América. Encontraram taxas de 0.80%, 0.28% e 0.85% para a anorexia nervosa, bulimia nervosa e perturbação de ingestão alimentar compulsiva, respetivamente. Também num estudo levado a cabo numa coorte comunitária de 2230 adolescentes, 296 participantes estavam em elevado risco para as PCA (Smink et al., 2014). Nas mulheres provenientes desse grupo de risco, os dados obtidos indicaram que a prevalência ao longo da vida da anorexia nervosa foi de 1.7%, a da bulimia nervosa foi de 0.8% e a da perturbação de ingestão alimentar compulsiva foi de 2.3% (Smink et al., 2014).

Em Portugal, numa investigação com amostras do ensino secundário e superior (Machado et al., 2013), de 3048 participantes, foram identificados 118 casos (3.87%) com PCA. Aplicando os critérios propostos pelo DSM-5 (APA, 2013), desses 118 casos, 21 (17.8%) foram diagnosticados com anorexia nervosa, 18 (15.3%) com bulimia nervosa, 19 (16.1%) com perturbação de ingestão alimentar compulsiva e 60 (50.8%) com PCA não especificada ou com outra especificação (Machado et al., 2013).

A par das taxas de prevalência, dados sociodemográficos sustentam que as PCA são particularmente comuns entre mulheres jovens, embora os homens sejam também vulneráveis. Especificamente, a anorexia e a bulimia nervosa são muito frequentes em mulheres jovens. Comparativamente às outras PCA, a perturbação de ingestão alimentar compulsiva é aquela que apresenta a maior taxa de prevalência em homens e em indivíduos mais velhos. Isto é, embora a perturbação de ingestão alimentar compulsiva seja igualmente mais frequente no sexo feminino, a diferença nas taxas de prevalência em relação ao sexo masculino é menos pronunciada do que nas restantes PCA (APA, 2013; Smink et al., 2012). Quanto às diferenças culturais, uma revisão anterior concluiu que os resultados da investigação são inconsistentes e pouco claros, sendo principalmente focados em países Ocidentais, onde os grupos de minorias étnicas parecem estar em menor risco de desenvolver psicopatologia alimentar, o que pode ser explicado pelo baixo nível de aculturação desses grupos à sociedade em que se inserem (Soh et al., 2006).

1.3. Gravidade e psicopatologia comórbida

As PCA têm sido associadas a elevado risco de morte e morbilidade (Kostro et al., 2014), sendo que a anorexia nervosa apresenta a maior taxa de mortalidade entre as perturbações mentais (Arcelus et al., 2011). No estudo de Fichter e Quadflieg (2016), as causas de morte mais frequentes na anorexia nervosa estiveram relacionadas com complicações médicas, como o colapso circulatório, a desnutrição multifatorial e a falência de órgãos, e o suicídio foi a causa não natural de morte mais comum em dois terços dos pacientes com anorexia nervosa e em todos os pacientes com bulimia nervosa.

Em relação às comorbilidades psiquiátricas associadas às PCA, as mais frequentes incluem as perturbações depressivas e de ansiedade, a perturbação de *stress* pós-traumático, as perturbações de uso de substâncias, as perturbações da personalidade, os comportamentos suicidários (ideação suicida, planos e tentativas de suicídio) e os ferimentos autoinfligidos sem intenção suicida (*non-suicidal self-injury* [NSSI], Kostro et al., 2014; Spindler & Millos, 2007; Swanson et al., 2011).

A presente tese tem como principal foco a comorbilidade entre PCA e NSSI. Por conseguinte, estes últimos comportamentos, a sua ocorrência com as PCA, os fatores associados e o respetivo tratamento serão, de seguida, alvo de atenção.

2. Ferimentos autoinfligidos sem intenção suicida

2.1. Caraterização

Os NSSI[2] têm sido considerados como um problema de saúde pública (Green et al., 2011) e caraterizam-se como o dano direto e deliberado da própria superfície corporal, sem intenção suicida, que não é social ou culturalmente aceite (International Society for the Study of Self-injury, 2018). Cortar e arranhar a pele são apontados como os atos mais comuns, mas outros métodos incluem magoar ou provocar escoriações, queimar e morder o próprio corpo (Claes & Vandereycken, 2007; Wilkinson & Goodyer, 2011; Robinson et al., 2019). Investigações anteriores mostraram que os indivíduos com uma história de NSSI recorreram a mais do que um método (Black & Mildred, 2014; Smithuis et al., 2018) e tiveram mais do que um episódio desses comportamentos ao longo da vida (Zetterqvist et al., 2013). Geralmente, os braços, mãos e unhas são as partes do corpo mais afetadas (Claes & Vandereycken, 2007).

[2] Embora no DSM-5 (APA, 2013), estes comportamentos sejam designados como "autolesão não sucida", ao longo da tese será usado o conceito "ferimentos autoinfligidos sem intenção suicida" (*non-suicidal self-injury* [NSSI]), conforme a terminologia adotada em estudos previamente conduzidos pela equipa de investigação. Mais à frente, as questões em torno da terminologia serão também abordadas.

2.2. Terminologia e classificação

Ainda que o interesse em torno dos NSSI possa ter aumentado nas últimas décadas, estes comportamentos não constituem um fenómeno recente, já que a primeira formulação clínica dos NSSI consta na década de 30 do século XX (Menninger, 1938). Portanto, ao longo do tempo, o conhecimento e compreensão dos NSSI evoluiu consideravelmente, ainda que uma das maiores limitações na investigação seja a inconsistência na terminologia usada para operacionalizar e avaliar esses comportamentos (Nock, 2010).

Vários estudos usam diferentes termos, como *self-mutilation* (e.g., Favazza et al., 1989), *self-harm behavior* (e.g., Sansone & Levitt, 2002), *deliberate self-harm* (e.g., Fliege et al., 2009) ou *self-injurious behaviors* (e.g., Duffy et al., 2019), sendo importante diferenciar os NSSI destes conceitos. Geralmente, *self-mutilation* implica um maior dano (e.g., amputação) e está associada a problemáticas graves, como as perturbações psicóticas, enquanto os NSSI envolvem lesões com um menor grau de letalidade, como os arranhões da pele (Klonsky et al., 2011; Wilkinson & Goodyer, 2011). Outras categorias, como *deliberate self-harm* e *self-injurious behaviors*, são mais abrangentes e incluem outros comportamentos para além da lesão da própria superfície corporal (e.g., uso de substâncias, saltar de uma altura elevada), não sendo claro se ocorrem com ou sem intenção suicida (Guerreiro, 2014; Klonsky et al., 2011; Muehlenkamp et al., 2012). Adicionalmente, os NSSI distinguem-se dos *piercings* e das tatuagens. Estas são práticas aceites pela sociedade, realizadas com o intuito de melhorar a aparência física, e a dor envolvida é um efeito colateral indesejado, contrariamente à dor dos NSSI que, muitas vezes, é um efeito colateral desejado (Wilkinson & Goodyer, 2011). Relativamente às tentativas de suicídio, os NSSI diferenciam-se na prevalência, métodos, gravidade e funções. Em comparação com as tentativas de suicídio, os NSSI são mais prevalentes, menos graves e envolvem métodos menos letais. Paralelamente, funcionam, principalmente, como uma forma inadequada de regular as emoções e lidar com as circunstâncias de vida, enquanto as tentativas de suicídio envolvem o desejo de terminar com a própria vida (Klonsky et al., 2013; Brausch & Gutierrez, 2009; Butler & Malone, 2013).

De acordo com Favazza e Rosenthal (1993), a automutilação patológica, definida como a alteração ou destruição deliberada do próprio tecido corporal sem intenção suicida, abrange comportamentos que podem ser classificados como *major*, estereotipados e superficiais/moderados, conforme a letalidade das lesões. Os comportamentos *major* (e.g., amputação, castração) são pouco frequentes, resultam em maior dano corporal e estão associados a estados psicóticos e intoxicações agudas. Os atos estereotipados (e.g., bater em si próprio) têm uma natureza fixa, muitas vezes rítmica, não apresentam um simbolismo e estão frequentemente associados a défice cognitivo. Os

comportamentos superficiais ou moderados, como cortar, queimar e arranhar a pele ou provocar escoriações, são os mais comuns e menos letais, ocorrem esporádica ou repetidamente e podem ser sintomas de ou estar associados a variadas perturbações mentais, como as perturbações relacionadas com o trauma, perturbações da personalidade e PCA (Favazza & Rosenthal, 1993).

Os comportamentos superficiais ou moderados foram ainda divididos por Simeon e Favazza (2001) em dois subtipos: compulsivos (e.g., arrancar cabelo, roer as unhas, arranhar a pele) e impulsivos (e.g., cortar, queimar, morder). Os primeiros ocorrem repetidamente, várias vezes ao dia, com um padrão ritualizado e, por vezes, simbólico, surgindo, frequentemente, em resposta a um impulso ao qual se tenta resistir. Por outro lado, os atos impulsivos são esporádicos ou até habituais (mas não altamente repetitivos), ritualizados, frequentemente simbólicos, e podem ser usados para obter um rápido alívio de estados negativos, ainda que o evento ou o estado emocional precipitante possa não ser claramente identificado, ao contrário do que acontece nos comportamentos compulsivos (Simeon & Favazza, 2001).

Barrocas et al. (2014), no seu estudo longitudinal, também identificaram três grupos ou classes de trajetória dos NSSI numa amostra comunitária de 617 adolescentes: um grupo maioritário (69.2%) que não se envolveu em NSSI ou que apresentou uma baixa incidência destes comportamentos (classe de trajetória baixa); um segundo grupo (26.1%) que mostrou um envolvimento moderado ou em declínio nos NSSI (classe de trajetória moderada); e um grupo minoritário (4.7%), cujo envolvimento nesses atos foi crónico e frequente (classe de trajetória crónica). Os participantes com uma história de depressão e com maiores níveis de ruminação foram mais propensos a integrar a classe de trajetória moderada do que a baixa, e os adolescentes do sexo masculino, com o diagnóstico de depressão e um estilo atribucional negativo, foram mais propensos a pertencer à classe crónica do que à baixa. Finalmente, os participantes com um estilo atribucional negativo estiveram em maior risco de seguir uma trajetória crónica de NSSI do que uma trajetória moderada (Barrocas et al., 2014).

Mais recentemente, Case et al. (2020), concretizaram uma análise de classes latentes, junto de uma amostra de estudantes com história de NSSI. Identificaram quatro classes desses comportamentos, conforme as suas caraterísticas e funções. A classe 1 – NSSI ligeiros – foi caracterizada por uma baixa frequência e número de métodos de NSSI ao longo da vida e no último ano. Também envolveu uma baixa frequência de lesões que levaram a cicatrizes, baixos níveis de dor durante a lesão e baixos níveis de identificação com as funções dos NSSI (e.g., regulação emocional, anti-suicídio, autopunição, ligação aos pares, vingança, procura de sensações). Na classe 2 – NSSI moderados – o corte da pele foi o método principal e, no geral, os indivíduos usaram um a dois métodos de NSSI. Comparativamente à média da amostra, a taxa de frequência desses comportamentos foi ligeiramente mais elevada, a

frequência de cicatrizes foi baixa e houve um maior nível de dor durante a lesão e menores níveis de identificação com as funções dos NSSI, com exceção da regulação emocional. Na classe 3 – NSSI moderados de múltiplas funções – o corte também foi o ato principal e, no geral, foram usados dois métodos. Em comparação com a média da amostra, as taxas de frequência dos NSSI foram mais elevadas, assim como a presença de cicatrizes. Por outro lado, os níveis de dor durante a lesão foram menores e houve um maior nível de identificação com todas as funções dos NSSI. Por fim, a classe 4 – NSSI graves – compreendeu o corte como o ato principal e, em média, foram utilizados três métodos. A taxa de frequência de NSSI foi elevada, bem como a presença de cicatrizes, a dor experienciada e os níveis de identificação com as funções dos NSSI, como a regulação emocional, anti-dissociação, anti-suicídio, autopunição, entre outras. O grupo com NSSI ligeiros teve pontuações mais elevadas em fatores protetores, como a autoestima e a proteção do próprio corpo, enquanto o grupo com NSSI graves obteve a menor pontuação nesses fatores. Este grupo também apresentou uma maior pontuação em múltiplos marcadores do risco de suicídio (Case et al., 2020).

2.3. Ferimentos autoinfligidos sem intenção suicida como perturbação

No seguimento da discussão sobre a terminologia e classificação dos NSSI, estes comportamentos têm sido debatidos em termos de possível diagnóstico. Na quarta edição do *Manual de Diagnóstico e Estatística das Perturbações Mentais* (DSM-IV-TR; APA, 2000), os NSSI eram considerados como um dos critérios da perturbação *borderline* da personalidade. Porém, mediante os dados de prevalência e gravidade desses comportamentos e da sua presença em variados contextos clínicos, para além da perturbação *borderline* da personalidade, tem sido reconhecida a possibilidade de atribuir os NSSI a uma categoria de diagnóstico independente. Alguns autores defendem que a inclusão desta categoria pode colmatar a falta de especificidade diagnóstica dos NSSI, melhorar a comunicação entre clínicos e pacientes, informar o tratamento e aumentar a investigação (Wilkinson & Goodyer, 2011). Especialmente, um novo diagnóstico poderá contribuir para o desenho de tratamentos especificamente dirigidos aos NSSI, com base em evidência empírica (Butler & Malone, 2013). Então, no DSM-5 (APA, 2013), esses comportamentos foram classificados como autolesão não suicida, que foi incluída como uma das condições para estudo futuro. Foram propostos os seguintes critérios de diagnóstico:

A. No último ano, o indivíduo produziu, em 5 ou mais dias, lesões autoinfligidas intencionais na sua superfície corporal, de um modo com probabilidade de induzir hemorragia, escoriação ou dor (por exemplo, cortar, queimar, esfaquear, bater, esfregar excessivamente), com a

expectativa de que a lesão leve apenas a lesão física ligeira ou moderada (isto é, não existe intenção suicida).

B. O indivíduo inicia o comportamento com 1 ou mais das seguintes expectativas:
    1. Obter alívio de um sentimento ou estado cognitivo negativo.
    2. Resolver uma dificuldade interpessoal.
    3. Induzir um estado de sentimentos positivos.
C. A autolesão intencional está associada a pelo menos 1 dos seguintes:
    1. Dificuldades interpessoais ou sentimentos ou pensamentos negativos, como depressão, ansiedade, tensão, raiva, mal-estar generalizado ou autocriticismo, ocorrendo no período imediatamente anterior ao ato autolesivo.
    2. Um período de preocupação difícil de controlar com o comportamento pretendido antes de iniciar o ato.
    3. Pensamentos sobre a autolesão que ocorrem com frequência, mesmo quando não há passagem ao ato.
D. O comportamento não é socialmente aceite (por exemplo, *body piercing*, tatuagens, parte de um ritual religioso ou cultural) e não se restringe a arrancar uma crosta de ferida ou a roer as unhas.
E. O comportamento ou as suas consequências causam mal-estar clinicamente significativo ou interferência no funcionamento interpessoal, académico ou noutras áreas importantes do funcionamento.
F. O comportamento não acontece apenas durante episódios psicóticos, *delirium*, intoxicação por substâncias ou abstinência de substâncias. Em indivíduos com uma perturbação do neurodesenvolvimento, o comportamento não faz parte do padrão de estereotipias repetitivas. O comportamento não é mais bem explicado por outra perturbação mental ou condição médica (por exemplo, perturbação psicótica, perturbação do espetro do autismo, incapacidade intelectual, síndrome de Lesch-Nyhan, perturbação de movimentos estereotipados com autolesão, tricotilomania, perturbação de escoriação; APA, 2013, p. 954).

Considerando esta proposta, na investigação de Zetterqvist et al. (2013), com uma amostra comunitária de 3060 adolescentes, 1088 participantes (35.6%) relataram pelo menos um episódio de NSSI no último ano, dos quais, 205 (6.7%) preencheram os critérios de diagnóstico para a autolesão não suicida. A maioria destes participantes admitiu o envolvimento em NSSI com a expectativa de aliviar um

sentimento ou estado cognitivo negativo, resolver uma dificuldade interpessoal ou induzir um sentimento positivo. Também relataram sentimentos ou pensamentos negativos antes dos NSSI e assumiram maior dor no ato de magoar o próprio corpo, bem como mais pensamentos sobre esses comportamentos antes de os iniciar. Por outro lado, 23.2% dos participantes do grupo com autolesão não suicida não experienciaram *distress* e 7.8% não reconheceram qualquer comprometimento em termos do seu funcionamento (Zetterqvist et al., 2013). Estes dados corroboram a proposta de Wilkinson e Goodyer (2011), no sentido de alterar o critério do comprometimento, para que os NSSI, mais do que causar, possam antes ser associados a mal-estar clinicamente significativo e a um funcionamento comprometido, já que a angústia e o sofrimento podem anteceder e conduzir aos NSSI, ao invés de surgirem como consequências desses comportamentos.

A par destes dados, há ainda suporte para a relevância clínica de um eventual diagnóstico. Num estudo anterior, em comparação aos indivíduos que não preencheram os potenciais critérios de diagnóstico da autolesão não suicida, aqueles que evidenciaram esta condição relataram uma maior frequência e número de métodos de NSSI, maior vontade de se magoarem a si próprios, psicopatologia mais grave, maior ideação suicida, traços de personalidade *borderline*, menor qualidade de vida e um funcionamento mais comprometido (Washburn et al., 2015). Contudo, dado que a autolesão não suicida é proposta como uma condição para estudo futuro, mais investigação é necessária para confirmar ou refutar a sua inclusão como perturbação numa próxima edição do DSM.

2.4. Epidemiologia

Pessoas de todas as idades, sexos, raças e etnias podem apresentar NSSI. No entanto, dados epidemiológicos sugerem que estes comportamentos são mais frequentes em adolescentes do que em adultos, sendo que, em investigações anteriores, a idade de início dos NSSI situou-se entre os 13 e os 14 anos (Case et al., 2020; Zetterqvist et al., 2013). No geral, parece existir um pico de prevalência na adolescência, em torno dos 15 anos de idade, que começa a diminuir em adolescentes mais velhos ou em jovens adultos (Moran et al., 2012; Plener et al., 2015). Relativamente às diferenças entre sexos, ainda que alguns estudos tenham indicado que as mulheres estão em maior risco do que os homens para o envolvimento em NSSI (e.g., Barrocas et al., 2012; Guerreiro et al., 2017; Whitlock et al., 2011), tais diferenças parecem mais evidentes em amostras clínicas do que em amostras comunitárias (Bresin & Schoenleber, 2015). Finalmente, parece que os indivíduos Caucasianos e os que se identificam como multirraciais estão em maior risco para os NSSI (Kuentzel et al., 2012). Maiores taxas destes comportamentos são ainda encontradas em minorias sexuais e de género (Jackman et al., 2016).

Os dados existentes também indicam que os NSSI são relativamente comuns, tanto no contexto clínico como na comunidade. Considerando amostras comunitárias de adolescentes, no estudo de Baetens et al. (2014), por exemplo, de 533 participantes, 10.7% assumiram o envolvimento em NSSI, pelo menos uma vez antes dos 15 anos. Outros estudos mais recentes, focados na presença de NSSI nos últimos 6 ou 12 meses, também encontraram esses comportamentos em cerca de 15% a 20% dos participantes adolescentes (Esposito et al., 2019; Robinson et al., 2019). No que respeita a amostras comunitárias de adultos, as taxas de prevalência de NSSI são menores do que nos adolescentes. Por exemplo, Klonsky (2011), em 439 participantes Americanos, com uma média de idades de 55.5 anos, encontrou taxas de 5.9% e 0.9% ao longo da vida e dentro de 12 meses, respetivamente.

Por outro lado, em amostras clínicas, a prevalência dos NSSI é superior. Por exemplo, no estudo de Asarnow et al. (2011), com pacientes entre os 12 e os 18 anos, em tratamento para a depressão, cerca de 24% da amostra relatou uma história de NSSI. Em outro estudo com adolescentes de unidades de internamento psiquiátrico, 60% dos pacientes assumiram o envolvimento em NSSI nos últimos 12 meses (Kaess et al., 2013). Já em adultos, numa investigação com pacientes em tratamento psiquiátrico, com idades compreendidas entre os 17 e os 73 anos, cerca de 45% dos participantes relataram uma história de NSSI (Andover & Gibb, 2010).

Em Portugal, numa investigação com 1713 estudantes, entre os 12 e os 20 anos de idade, cerca de 7% dos participantes assumiram, pelo menos, um episódio de autolesão (e.g., cortar-se, ingerir fármacos em doses superiores, usar substâncias ilícitas) ao longo da vida (Guerreiro et al., 2013). Em outro estudo Português, com 831 adolescentes da comunidade, que pretendeu avaliar a autolesão deliberada, incluindo a automutilação, o comportamento alimentar disfuncional e a ideação autolesiva com ou sem intenção suicida, quase 22% dos participantes relataram esses comportamentos, pelo menos uma vez ao longo da vida (Xavier et al., 2015). Mais recentemente, no estudo *Health Behaviour in School-Aged Children* (Matos & Equipa Aventura Social, 2018), conduzido em Portugal, 19.6% de 6997 adolescentes, entre o 6º e o 10º ano de escolaridade, relataram ter-se magoado a si próprios de propósito, pelo menos uma vez no último ano. Ainda em investigações Portuguesas, focalizadas nos NSSI, foi encontrada uma história desses atos em cerca de 28% de 569 participantes adolescentes da comunidade (Gonçalves et al., 2012) e em 16% de 518 estudantes do ensino superior (Braga & Gonçalves, 2014).

Em conformidade com estas evidências, investigação em torno do *iceberg model of self-harm* (Hawton et al., 2012) tem demonstrado elevados níveis de lesão ao próprio corpo, inclusivamente na comunidade e, especialmente, em adolescentes do sexo feminino (Geulayov et al., 2017). Nesse modelo,

a autolesão é concetualizada em três níveis: autolesão fatal (suicídio) que, embora incomum, é o comportamento mais evidente (a ponta do *iceberg*); a autolesão não fatal, que resulta em assistência clínica e que é também evidente, mas mais comum do que o suicídio; e a autolesão não fatal, que ocorre na comunidade e é comum, mas geralmente oculta e não sujeita a atenção clínica (a parte submersa do *iceberg;* Hawton et al., 2012). No estudo de Geulayov et al. (2017), o *iceberg model of self-harm* (Hawton et al., 2012) foi usado para estimar as taxas de autolesão fatal e não fatal em adolescentes Ingleses, entre os 12 e os 17 anos. Por cada adolescente que cometeu suicídio, houve aproximadamente 370 que procuraram ajuda por autolesão e 3900 que relataram esses comportamentos, mas que não procuraram ajuda clínica. A incidência do suicídio em adolescentes do sexo masculino foi ainda superior à dos adolescentes do sexo feminino, enquanto a incidência de autolesões não fatais foi maior em adolescentes do sexo feminino do que nos do sexo masculino. Adicionalmente, as taxas de autolesão na comunidade, em adolescentes mais jovens (12 a 14 anos), foram tão elevadas quanto as encontradas em adolescentes mais velhos (15 a 17 anos; Geulayov et al., 2017).

Tomados em conjunto, e embora as taxas de prevalência variem consoante a terminologia, o período de avaliação, o tipo de amostra e a faixa etária, os dados realçam que os NSSI constituem uma problemática de relevo, tanto em Portugal como a nível internacional. Além disso, a prevalência destes comportamentos pode ser superior aos dados conhecidos, uma vez que os serviços clínicos podem ter somente acesso a uma parte da realidade. Portanto, além de tratamentos dirigidos a este tipo de casos, urge a necessidade de implementar medidas preventivas na comunidade (Geulayov et al., 2017).

2.5. Psicopatologia comórbida e risco de suicídio

Os NSSI surgem associados a variadas formas de psicopatologia, como a perturbação *borderline* da personalidade, a depressão, o uso de álcool e substâncias, as PCA e as perturbações relacionadas com o trauma (Asarnow et al., 2011; Brown et al., 2002; Doksat et al., 2017; Ford & Gómez, 2015; Guerreiro et al., 2017; Pérez et al., 2019). Além das perturbações comórbidas, os NSSI coocorrem frequentemente com tentativas de suicídio (Andover et al., 2012). Por exemplo, no estudo de Mars et al. (2019), foi encontrado que os NSSI foram preditores significativos de tentativas de suicídio. Tal como avançado pela teoria interpessoal do suicídio, através da prática repetida de lesões a si próprio, um indivíduo pode habituar-se à dor e aos aspetos mais temerosos desses atos, aumentando a propensão para comportamentos mais dolorosos e letais (Van Orden et al., 2010). Na mesma linha, os resultados de Franklin et al. (2011) suportaram a hipótese de que os NSSI estão associados à diminuição da perceção de dor e ao aumento da capacidade de cometer suicídio. Esta capacidade abrange o reduzido

medo da morte e o aumento da tolerância à dor física, que decorrem da exposição repetida a experiências dolorosas ou indutoras de medo (Van Orden et al., 2010). Em particular, a tolerância à dor revelou-se um fator preponderante, já que foi mediadora da associação entre experiências, como os NSSI, e a capacidade de cometer suicídio (Franklin et al., 2011). Pode-se então concluir que apesar de os NSSI ocorrerem, por definição, sem a intenção de pôr termo à vida, estes comportamentos representam um importante fator de risco para o suicídio.

2.6. Modelos de desenvolvimento e manutenção

Vários modelos explicativos do desenvolvimento e manutenção dos NSSI são apresentados na literatura. Por exemplo, Nock (2009), no seu modelo teórico integrado, propôs que fatores de risco distais (e.g., predisposição genética para uma elevada reatividade emocional/cognitiva, abuso na infância, criticismo familiar) conduzem a fatores de vulnerabilidade intra (e.g., elevada ativação fisiológica em resposta a *stressores*) e interpessoal (e.g., baixas competências de comunicação e de resolução de problemas) que limitam uma resposta adequada a situações de *stress* ou eventos ativadores. Consequentemente, os NSSI podem ser desenvolvidos como forma de regular a experiência emocional ou social (Nock, 2009).

A probabilidade de escolher estes comportamentos ao invés de outros, igualmente desajustados e capazes de cumprir a mesma função (e.g., uso de álcool), é ainda aumentada por fatores de vulnerabilidade específicos aos NSSI, convertidos em hipóteses para futura investigação: hipótese da aprendizagem social, que sugere que o envolvimento em NSSI é influenciado pela observação do mesmo comportamento em outras pessoas; hipótese da autopunição, na qual o ato de se magoar a si próprio representa o abuso autodirigido, aprendido através do abuso ou crítica feita pelos outros; hipótese da sinalização social, que sugere que os NSSI podem servir para comunicar e influenciar os outros; hipótese pragmática, que indica que algumas pessoas podem escolher os NSSI por constituírem um método rápido e de fácil acesso; hipótese do opiáceo/analgésico da dor, que considera as evidências da tolerância à dor ou da escassez/inexistência de dor durante o ato de magoar o próprio corpo; e a hipótese da identificação implícita, que evidencia que algumas pessoas podem identificar-se com os NSSI, o que as leva a selecionar e a manter estes comportamentos (Nock, 2009).

Mais recentemente, um modelo concetual de NSSI foi avançado por Hooley e Franklin (2017), cujos princípios assentam em duas dimensões: os benefícios percebidos dos NSSI, que são acessíveis à maioria das pessoas e que potenciam o seu desenvolvimento; e as barreiras naturais ou instintivas, que evitam o envolvimento nesses mesmos comportamentos.

Em primeiro lugar, Hooley e Franklin (2017) apresentam como benefícios percebidos os seguintes aspetos: os NSSI são entendidos como estratégias de melhoria da experiência afetiva, pois podem servir como gratificação do desejo de autopunição, como distratores de pensamentos e emoções negativas, ou podem estar associados a um aumento das emoções positivas e a uma diminuição das emoções negativas, aquando do alívio ou remoção da dor induzida pela lesão; os NSSI podem satisfazer os desejos de autopunição, sendo este o principal benefício cognitivo desses comportamentos; os NSSI favorecem o sentido de pertença a um grupo de pares, isto é, se um grupo apresenta esses comportamentos, um indivíduo pode desenvolvê-los para melhorar ou manter a pertença ao grupo; e os NSSI podem servir para comunicar angústia ou força, ou seja, quando outras formas de comunicação (e.g., falar, chorar) são ineficazes, esses atos podem servir para obter atenção ou, por outro lado, podem ser usados para mostrar aos outros o quão forte se é.

Em segundo lugar, um dos fatores entendidos como barreiras aos NSSI é a falta de conhecimento ou consciência sobre eles, isto é, se um individuo não conhece este tipo de comportamentos, é improvável que os desenvolva. Por outro lado, a consciencialização ou a exposição aos NSSI torna-os uma opção comportamental (Hooley & Franklin, 2017). Este fator pode ser sustentado pela investigação sobre o contágio social, que estabelece que os NSSI podem ser comunicados e transmitidos de pessoa para pessoa, nomeadamente, através de meios informativos, aos quais todos estão expostos, especialmente os adolescentes (Purington & Whitlock, 2010). Neste sentido, esses atos têm ganho destaque com a sua representação em diversos meios, como filmes, séries, músicas, livros, notícias e *internet* (Purington & Whitlock, 2010). Embora a presença dos NSSI nos media possa ter vantagens, como diminuir o estigma e o isolamento daqueles que apresentam esses comportamentos, também pode ter efeitos adversos (Purington & Whitlock, 2010; Whitlock et al., 2007). Por exemplo, na ficção, as consequências dos NSSI podem ser menos retratadas, em detrimento da sua potencial utilidade a curto-prazo, o que pode motivar o recurso a esses comportamentos. Adicionalmente, os relatos de celebridades que admitem NSSI, ao invés de fornecer mais informação acerca das suas consequências, podem antes aumentar o mistério em torno deles ou até romantizá-los. Na *internet*, os *sites* sobre NSSI podem sugeri-los como estratégias eficazes para lidar com variadas situações, e as imagens ou descrições apresentadas podem desencadear ideias de lesões ou novos episódios. Além disso, a participação em fóruns *on-line*, com pessoas que apresentam NSSI, pode colmatar as necessidades de pertença a um grupo, o que interfere na cessação desses comportamentos (Purington & Whitlock, 2010).

Outras barreiras aos NSSI são: a visão positiva do eu, ou seja, se um indivíduo tem uma visão positiva de si próprio, protege o seu corpo ao invés de o prejudicar; a dor física envolvida nos NSSI, o

que, para muitas pessoas, é um entrave a esses comportamentos; a aversão a estímulos dos NSSI, como sangue e feridas; e as normas sociais (Hooley & Franklin, 2017).

Este modelo abrange ainda variados fatores de risco distais, como a experiência de abuso, maus-tratos, vitimização e exposição a pares com NSSI. Estes fatores podem levar aos NSSI através de outros fatores de risco proximais, como o desejo de comunicar sofrimento e a motivação de manter ou melhorar a pertença a um grupo com NSSI. Por sua vez, estes fatores proximais reduzem as barreiras e potenciam os benefícios percebidos dos NSSI, nomeadamente os de natureza emocional. Estes benefícios motivam o envolvimento repetido nesses comportamentos que, por sua vez, pode aumentar a vergonha e o autocriticismo, que favorecem a manutenção dos NSSI (Hooley & Franklin, 2017).

2.7. Funcionalidade

Os NSSI são comportamentos que desempenham diversas funções. Segundo Nock e Prinstein (2004), os NSSI são concetualizados como tendo quatro funções principais, que diferem nas contingências e no reforço: as funções de reforço automático negativo refletem o uso de NSSI para reduzir estados emocionais negativos (e.g., "para evitar sentimentos negativos"; "para aliviar a sensação de entorpecimento ou vazio"); as funções de reforço automático positivo envolvem o recurso a esses comportamentos para criar um estado desejável (e.g., "para sentir algo, mesmo que seja dor"; "para me castigar"); as funções de reforço social negativo refletem o uso de NSSI para escapar a exigências sociais (e.g., "para evitar fazer algo desagradável, que não queria fazer"; "para evitar ir à escola, trabalho, ou outra atividade"); e as funções de reforço social positivo envolvem obter estímulos sociais (e.g., "para ter atenção dos outros"; "para tentar obter uma reação de alguém, mesmo que seja negativa"). As funções de reforço automático, nomeadamente as de regulação emocional e de autopunição, são as mais relatadas pelos indivíduos com NSSI (Robinson et al., 2019; Taylor et al., 2018).

3. Perturbações do comportamento alimentar e ferimentos autoinfligidos sem intenção suicida

Tal como acima mencionado, as PCA e os NSSI coocorrem frequentemente (Claes et al., 2010; Dzombak et al., 2020; Muehlenkamp et al., 2011). Ambos parecem incluídos no mesmo continuum comportamental, no qual determinados sintomas das PCA, como a restrição alimentar e os comportamentos purgativos, são entendidos como formas indiretas de autolesão, enquanto os NSSI assumem-se como formas mais diretas (Jacobson & Luik, 2014). Paralelamente, pode existir uma ligação entre estas formas diretas e indiretas, dado que Favaro e Santonastaso (1998) observaram duas

dimensões comportamentais em pacientes com bulimia nervosa: os comportamentos compulsivos, que incluíam atos como arrancar cabelo, roer as unhas e induzir o vómito, e os comportamentos impulsivos, que abrangiam atos como cortar ou queimar a pele, tentativas de suicídio, uso de álcool ou substâncias e abuso de laxantes ou diuréticos. Em pacientes com anorexia nervosa, os comportamentos compulsivos (arrancar cabelo, roer as unhas) e impulsivos (tentativas de suicídio, cortar, queimar) foram igualmente evidenciados, além de uma terceira dimensão de comportamentos purgativos, que integrava a indução de vómito e o abuso de laxantes e diuréticos (Favaro & Santonastaso, 2002).

3.1. Prevalência, direção e gravidade da coocorrência de perturbações do comportamento alimentar e ferimentos autoinfligidos sem intenção suicida

Existe uma elevada variabilidade entre os estudos de prevalência, devida às diferentes definições e métodos de avaliação das PCA e dos NSSI, e a diversos aspetos metodológicos, incluindo o tamanho das amostras e o uso de *designs* retrospetivos ou prospetivos (Jacobson & Luik, 2014).

Em estudos anteriores, com amostras de PCA, as taxas de participantes com uma história de NSSI oscilaram em torno dos 35% a 41% (Dzombak et al., 2020; Muehlenkamp et al., 2011; Pérez et al., 2018). Em Portugal, num estudo levado a cabo com 66 pacientes com PCA, 36.4% dos participantes evidenciaram uma história de NSSI (Vieira et al., 2016).

Examinando a prevalência ao longo da vida dos NSSI nos diferentes diagnósticos de PCA, Cucchi et al. (2016), na sua revisão, demonstraram que esses comportamentos ocorrem em 21.8% dos pacientes com anorexia nervosa e em 32.7% dos pacientes com bulimia nervosa. Na investigação de Carlson et al. (2018), a prevalência ao longo da vida de NSSI também oscilou entre 24.24% e 51.02% para os pacientes com uma perturbação com outra especificação do tipo restritivo e para aqueles com uma perturbação com outra especificação do tipo ingestão compulsiva/purgativo, respetivamente. Assim, os NSSI parecem ocorrer especialmente com comportamentos alimentares de natureza compulsiva e/ou purgativa (Peebles et al., 2011), embora não possam ser desconsiderados em indivíduos com comportamentos alimentares de natureza restritiva, dado que esses continuam mais suscetíveis para o desenvolvimento de NSSI do que aqueles que não apresentam comportamentos alimentares desajustados (Kiekens & Claes, in press).

Independentemente das diferenças entre os diagnósticos, estas taxas de comorbilidade também suscitaram investigação sobre a direção da associação entre as duas condições. Por exemplo, num estudo longitudinal com 211 indivíduos da comunidade, foi encontrado que os comportamentos alimentares disfuncionais não foram preditores de NSSI, mas uma maior frequência destes últimos atos

constitui-se como um preditor de um comportamento alimentar mais grave 3 meses depois (Turner et al., 2015). Em outro estudo longitudinal, com uma amostra de 1158 mulheres do ensino superior, as estudantes que se envolveram em NSSI antes da entrada na universidade foram mais propensas a ter um comportamento purgativo 9 meses depois (Riley et al., 2016). Adicionalmente, aquelas que apresentaram purga aquando da entrada na universidade foram mais propensas a um subsequente envolvimento em NSSI ao longo do primeiro ano da universidade (Riley et al., 2016). Estes dados sugerem que a relação entre PCA e NSSI pode ser bidirecional (Kiekens & Claes, in press), mas mais investigação longitudinal e com amostras clínicas diagnosticadas com PCA é necessária para clarificar a sequência temporal do desenvolvimento de ambos os problemas.

Paralelamente, a investigação tem avaliado as diferenças entre indivíduos que apresentam psicopatologia alimentar, com e sem NSSI, relativamente à sintomatologia alimentar e ao comprometimento psicossocial. Em conjugação com o dano físico que ambos os problemas envolvem, quando comparados a indivíduos sem NSSI, aqueles que têm as duas condições em concomitância apresentam uma maior gravidade da sintomatologia alimentar, mais comportamentos bulímicos e insatisfação corporal, mais sintomas obsessivo-compulsivos e de depressão, e mais dificuldades nos relacionamentos interpessoais e traços de personalidade disfuncionais (Gómez-Expósito et al., 2016; Islam et al., 2015; Ross et al., 2009). O risco para o envolvimento em comportamentos suicidários também é maior entre indivíduos com PCA e NSSI do que naqueles sem estes últimos comportamentos (Jacobson & Luik, 2014). No geral, estes dados realçam que a comorbilidade em análise compromete a saúde física e o funcionamento psicossocial e, por isso, é imperativo caraterizar e avaliar os NSSI em indivíduos com PCA.

3.2. Fatores associados à coocorrência de perturbações do comportamento alimentar e ferimentos autoinfligidos sem intenção suicida

Dada a frequência e gravidade da coocorrência de PCA e NSSI, tem existido um interesse em compreender a etiologia deste quadro psicopatológico. Portanto, evidências prévias sugerem que fatores comuns assumem um papel na etiologia e manutenção de ambos os problemas (Claes & Muehlenkamp, 2014). Esses fatores podem ser concetualizados de acordo com a sua natureza intra e interpessoal.

3.2.1. Fatores intrapessoais

Neste domínio, as dificuldades na regulação emocional assumem uma grande relevância, tendo sido concetualizadas por Gratz e Roemer (2004) em seis dimensões: acesso limitado a estratégias de

regulação emocional, não aceitação das respostas emocionais, falta de consciência emocional, dificuldades no controlo de impulsos ao experimentar emoções negativas, dificuldades em agir de acordo com os objetivos ao experimentar emoções negativas e falta de clareza emocional.

Evidências anteriores indicam que uma maior psicopatologia alimentar está associada a défices na regulação emocional (Pisetsky et al., 2017) e que existe uma relação recíproca entre a desregulação emocional e os NSSI, ou seja, a baixa regulação emocional prediz o futuro envolvimento em NSSI e estes estão relacionados com uma subsequente diminuição na regulação emocional (Robinson et al., 2019). Também num estudo anterior, realizado com uma amostra de pacientes com perturbações do espetro bulímico, aqueles que apresentaram NSSI relataram mais dificuldades na regulação emocional do que os pacientes sem NSSI (Gómez-Expósito et al., 2016). Então, o comportamento alimentar disfuncional e os NSSI parecem ligados a dificuldades em lidar com emoções intensas ou negativas, o que é suportado por modelos teóricos existentes.

Por exemplo, no modelo do evitamento experiencial (*experiential avoidance model*; Chapman et al., 2006) é proposto que os NSSI são desenvolvidos para evitar ou escapar a emoções e pensamentos negativos, o que conduz a um alívio temporário que reforça negativamente esses comportamentos. Ou seja, um determinado estímulo, como um evento de vida negativo que resulta numa reação emocional forte ou negativa, não é devidamente tolerado, levando o indivíduo a evitá-lo e a envolver-se em comportamentos autodestrutivos que servem para diminuir a intensidade emocional e fornecer um alívio imediato. Assim, os NSSI tornam-se numa resposta condicionada e automática a estados emocionais indesejados ou intoleráveis (Chapman et al., 2006). Também no modelo das cascatas emocionais (*emotional cascades*; Selby et al., 2008) é postulado que os indivíduos com NSSI têm a tendência de ruminar sobre pensamentos e emoções negativas, o que aumenta os níveis de afeto negativo que, por sua vez, conduzem a maior ruminação. Desta forma, um ciclo vicioso – cascata emocional – é desenvolvido e os NSSI podem servir como uma forma de distração, que quebra esse ciclo ao desviar a atenção da ruminação para as sensações físicas desses comportamentos (Selby et al., 2008).

Em linha com estes modelos, num estudo levado a cabo em pacientes diagnosticados com bulimia nervosa, foi encontrado que os estados emocionais positivos (e.g., calma, relaxamento) aumentaram após o envolvimento em NSSI, ainda que os estados emocionais negativos tenham permanecido inalterados (Muehlenkamp et al., 2009). Provavelmente, na sequência de um aumento de emoções como a raiva, tensão, ansiedade, disforia e *distress* ou despersonalização, o envolvimento nos NSSI favorece o alívio imediato dessas emoções (Butler & Malone, 2013). Contudo, a longo prazo, tais atos têm consequências negativas, já que podem desencadear sentimentos de culpa e vergonha, crítica

negativa por parte dos pares, choque e superproteção dos pais e, fisicamente, podem provocar infeções e cicatrizes (Butler & Malone, 2013; Wilkinson & Goodyer, 2011).

Um outro fator comummente associado ao comportamento alimentar disfuncional e aos NSSI é a impulsividade, nomeadamente a urgência negativa, definida como a tendência em ceder aos impulsos, quando acompanhados de emoções negativas (Whiteside & Lynam, 2001). Num estudo anterior com 556 mulheres de diferentes continentes, a urgência negativa esteve correlacionada com os NSSI e com o comportamento alimentar disfuncional (Black & Midred, 2014). Além disso, na investigação de Hasking e Claes (2019), tanto a urgência negativa como as dificuldades na regulação emocional estiveram relacionadas com os NSSI e com o comportamento alimentar disfuncional. Assim, ambos os fatores podem funcionar como mecanismos comuns e transdiagnósticos (Hasking & Claes, 2019).

Ainda em termos intrapessoais, a insatisfação corporal possivelmente aumenta a vulnerabilidade para ambos os comportamentos, pois leva à desvalorização do corpo, exacerbando a possibilidade de lesão a si próprio (Claes & Muehlenkamp, 2014; Muehlenkamp et al., 2013). Um sentimento de alienação ou ódio pelo corpo e um menor investimento na aparência também podem facilitar o ato de magoar a própria superfície corporal (Orbach & Mikulincer, 1998; Walsh, 2012). Especificamente, o investimento corporal é entendido como uma componente da imagem corporal, que diz respeito à relevância das dimensões cognitiva e comportamental da aparência, compreendendo o investimento em crenças ou suposições sobre a importância, significado e influência da aparência e os comportamentos para gerir ou melhorar o aspeto físico (Cash, 1994; Cash et al., 2004; Cash & Szymanski, 1995).

De acordo com Orbach e Mikulincer (1998), existem quatro aspetos associados ao investimento corporal: sentimentos e atitudes em relação à imagem corporal (e.g., "Estou satisfeito/a com a minha aparência"), conforto com o toque (e.g., "Gosto do contacto físico com as outras pessoas"), cuidado corporal (e.g., "Gosto de tomar banho"; "Uso regularmente produtos de cuidado corporal") e proteção corporal (e.g., "Olho para ambos os lados antes de atravessar a rua"; "Cuido-me sempre que sinto um sinal de doença"). Estes aspetos constituem a solução fatorial da Escala do Investimento Corporal (*Body Investment Scale* [BIS], Orbach & Mikulincer, 1998), e sentimentos e atitudes negativas em relação à imagem corporal, desconforto com o toque e baixa proteção ou cuidado corporal são potenciais indicadores de comportamentos autodestrutivos (Orbach & Mikulincer, 1998). Em linha com esta evidência, Pérez et al. (2018), numa amostra de participantes com PCA, observaram que os pacientes com uma história de NSSI mostraram um maior desconforto com o toque, mais sentimentos negativos perante o corpo e menor proteção corporal do que os pacientes sem uma história de NSSI.

A par do foco predominante da investigação na componente avaliativa da imagem corporal, incluindo a satisfação ou insatisfação corporal, estes dados sublinham a necessidade de avaliar o investimento corporal. Por conseguinte, esta variável é focada na tese, nomeadamente no Capítulo 5. É ainda de referir que, para colmatar a inexistência de uma medida adaptada à população Portuguesa, destinada a avaliar o investimento corporal, conduziu-se um estudo das propriedades psicométricas da versão Portuguesa da BIS numa amostra comunitária de 448 estudantes e numa amostra clínica de 93 pacientes com PCA (Vieira et al., 2020). Em ambas as amostras, o fator dos sentimentos e atitudes em relação à imagem corporal apresentou o maior alfa de *Cronbach*, seguindo-se os fatores do conforto com o toque e proteção corporal. Embora aceitável, o fator do cuidado corporal apresentou o menor valor de consistência interna. Na análise fatorial confirmatória, contrariamente à amostra comunitária, a solução original dos quatro fatores mostrou um ajustamento aceitável aos dados da amostra clínica. Provavelmente, os fatores da BIS estão especialmente representados em pacientes com PCA, já que estes mantêm uma relação difícil com os próprios corpos, o que potencia comportamentos autodestrutivos como a restrição alimentar, o exercício físico excessivo e purga. Além disso, comparativamente aos estudantes, os pacientes com PCA apresentaram mais sentimentos e atitudes negativas em relação à imagem corporal, menor conforto com o toque e menos comportamentos conducentes à proteção corporal. Na amostra clínica, foram ainda encontradas relações significativas entre estes fatores e uma maior gravidade da sintomatologia alimentar e maiores dificuldades na regulação emocional (Vieira et al., 2020).

3.2.2. Fatores interpessoais

Neste domínio, o ambiente familiar, as relações com os pares e as experiências de abuso na infância assumem um papel central.

Num estudo com uma amostra clínica de adolescentes com PCA, as mães de pacientes com perturbações do tipo ingestão compulsiva/purgativo e NSSI relataram elevadas dificuldades na resolução de problemas, no desempenho de papéis, no envolvimento, no controlo comportamental e no funcionamento geral (Depestele et al., 2015). Também na investigação de Kelada et al. (2016), os adolescentes que assumiram episódios de NSSI relataram um pior funcionamento familiar, comparativamente ao reportado pelos seus pais e pelos adolescentes sem esses comportamentos.

A psicopatologia na família também tem sido relacionada com as PCA e com os NSSI. Previamente, num estudo conduzido em 3129 estudantes do ensino superior, acompanhados num serviço de consulta psicológica, verificou-se que um dos principais preditores de preocupações mais

graves com alimentação ou a imagem corporal foi ter um membro da família com um problema alimentar (Cavallini et al., 2017). Também em relação à psicopatologia parental, Tafà et al. (2016) notaram que as mães de adolescentes com anorexia nervosa apresentaram níveis mais elevados de sintomatologia depressiva, enquanto as mães dos adolescentes com bulimia nervosa tiveram maiores pontuações em escalas de somatização e hostilidade, e as mães dos adolescentes com perturbação de ingestão alimentar compulsiva tiveram mais sintomas de ansiedade e de perturbação psicótica. Nos três grupos diagnósticos, os pais também apresentaram pontuações elevadas em escalas de sintomatologia obsessivo-compulsiva, de ansiedade e fobia (Tafà et al., 2016). Já na investigação de Gromatsky et al. (2017), comparativamente aos pais de adolescentes sem NSSI, aqueles cujas filhas relataram estes comportamentos, apresentaram mais sintomas da perturbação de hiperatividade/défice de atenção e maior taxa de perturbações de uso de substâncias, bem como menor agradabilidade e consciencialização e maior autocriticismo.

Um ambiente invalidante na infância, no qual há uma tendência em responder de forma irregular e inadequada às crenças, pensamentos, sentimentos e sensações das crianças (Linehan, 2015), tem sido igualmente associado ao comportamento alimentar disfuncional e à presença de NSSI.

No que respeita ao comportamento alimentar, no estudo de Haslam et al. (2012), a crença de que a expressão emocional é um sinal de fraqueza mediou a relação entre a invalidação materna na infância e as preocupações com a alimentação na idade adulta. Também no estudo de Gonçalves et al. (2018), com 362 estudantes Portugueses do ensino superior, a insatisfação corporal e o comportamento alimentar disfuncional foram elevados entre os participantes que entenderam as suas famílias como invalidantes. Ainda numa outra investigação Portuguesa, com 137 pacientes diagnosticados com PCA, a relação entre a invalidação paterna e a sintomatologia alimentar foi mediada por dificuldades nas relações íntimas, como o evitamento da proximidade e a ansiedade relativa ao abandono, enquanto a relação entre a invalidação materna e a sintomatologia alimentar foi apenas mediada pelo evitamento da proximidade (Gonçalves et al., 2019). Possivelmente, mediante a experiência prévia de invalidação emocional, as atitudes alimentares disfuncionais funcionam como estratégias desadequadas para regular experiências emocionais, como a ansiedade em relação ao abandono e o evitamento da intimidade (Gonçalves et al., 2019).

Em relação aos NSSI, no estudo de You e Leung (2012), no qual uma amostra comunitária foi avaliada ao longo de dois anos, a experiência de invalidação familiar no primeiro ano foi relacionada com a posterior ocorrência de NSSI. A par destas evidências, o modelo de Crowell et al. (2009) postula que, ao longo do desenvolvimento, a labilidade emocional é influenciada por características do cuidador, como

a invalidação das emoções, e por características individuais, como a elevada sensibilidade emocional. Portanto, as transações entre vulnerabilidades individuais ou biológicas e fatores de risco ambientais facilitam a desregulação emocional que, por sua vez, pode conduzir a comportamentos desajustados (Crowell et al., 2009). Ao mesmo tempo, a impulsividade tem sido entendida como um fator predisponente para indivíduos com perturbação *borderline* da personalidade, incluindo aqueles que apresentam NSSI (Crowell, 2009). Assim, um comportamento impulsivo pode funcionar como uma estratégia desadequada de resolução de problemas, resultante da invalidação emocional e da incapacidade de tolerar o sofrimento emocional (Linehan, 2015).

Em adição ao ambiente familiar, a experiência de *bullying* (como vítima ou agressor) parece aumentar o risco para a sintomatologia alimentar (Copeland et al., 2015) e para os NSSI (Esposito et al., 2019; Guerreiro et al., 2017). Uma história de abuso físico ou sexual é ainda um potencial preditor da coocorrência de ambas as condições (Gonçalves et al., 2016). Em particular, na revisão de Dancyger et al. (2017) concluiu-se que, entre pacientes com PCA, aqueles que relataram experiências de abuso na infância foram mais propensos a um comportamento purgativo, a magoarem-se a si próprios e a apresentar comorbilidades psiquiátricas. No que concerne aos NSSI, no recente estudo de Wang et al. (2020), por exemplo, os maus-tratos na infância foram positivamente associados à frequência de NSSI e esta relação foi mediada pela autoestima.

É possível que a combinação de potenciais fatores de risco, como a exposição a um ambiente invalidante na infância, as dificuldades na regulação emocional e a impulsividade, facilite o desenvolvimento da patologia alimentar e dos NSSI. No entanto, muitos destes fatores não têm sido explorados conjuntamente nem em amostras que incluam as duas condições comórbidas: PCA e NSSI. Além disso, estes fatores são também comuns a outras problemáticas. Investigação adicional é então necessária para explorar variáveis associadas à ocorrência de NSSI em indivíduos com PCA, de forma a identificar potenciais fatores de risco específicos a ambos os problemas. Esta compreensão multifatorial poderá orientar práticas de avaliação e intervenção mais específicas e eficazes.

3.3. Modelos explicativos da coocorrência de perturbações do comportamento alimentar e ferimentos autoinfligidos sem intenção suicida

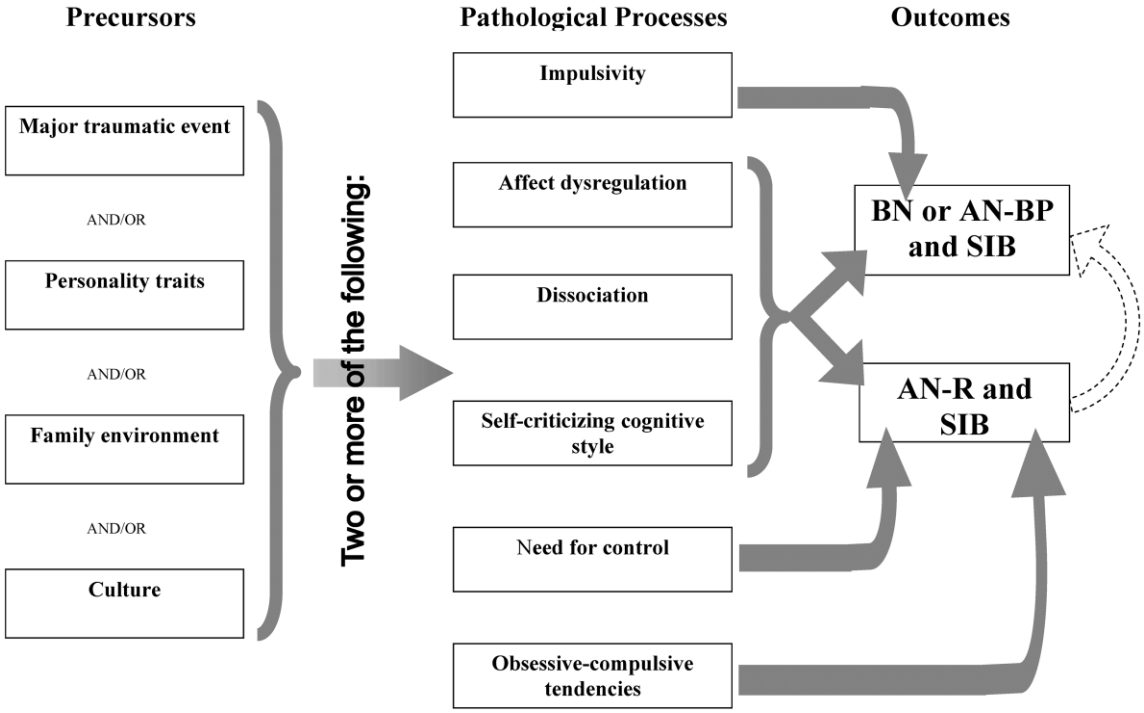
Considerando a variedade de fatores associados, alguns modelos teóricos têm sido propostos para explicar a comorbilidade entre PCA e NSSI.

Por exemplo, Svirko e Hawton (2007) apresentaram um modelo concetual (Figura 1) que compreende as possíveis razões para a associação entre PCA e NSSI. Fatores como a impulsividade,

desregulação emocional, dissociação, autocriticismo, necessidade de controlo e características obsessivo-compulsivas são entendidos como processos patológicos, subjacentes às PCA e aos NSSI, que possivelmente levam à comorbilidade entre ambos. O desenvolvimento destes processos é ainda potenciado por determinados precursores, incluindo acontecimentos traumáticos no passado, como o abuso físico e sexual na infância, caraterísticas do ambiente familiar, como a baixa coesão e o elevado conflito, caraterísticas de personalidade e o contexto cultural (Svirko & Hawton, 2007).

Figura 1

Modelo da etiologia da associação entre PCA e NSSI



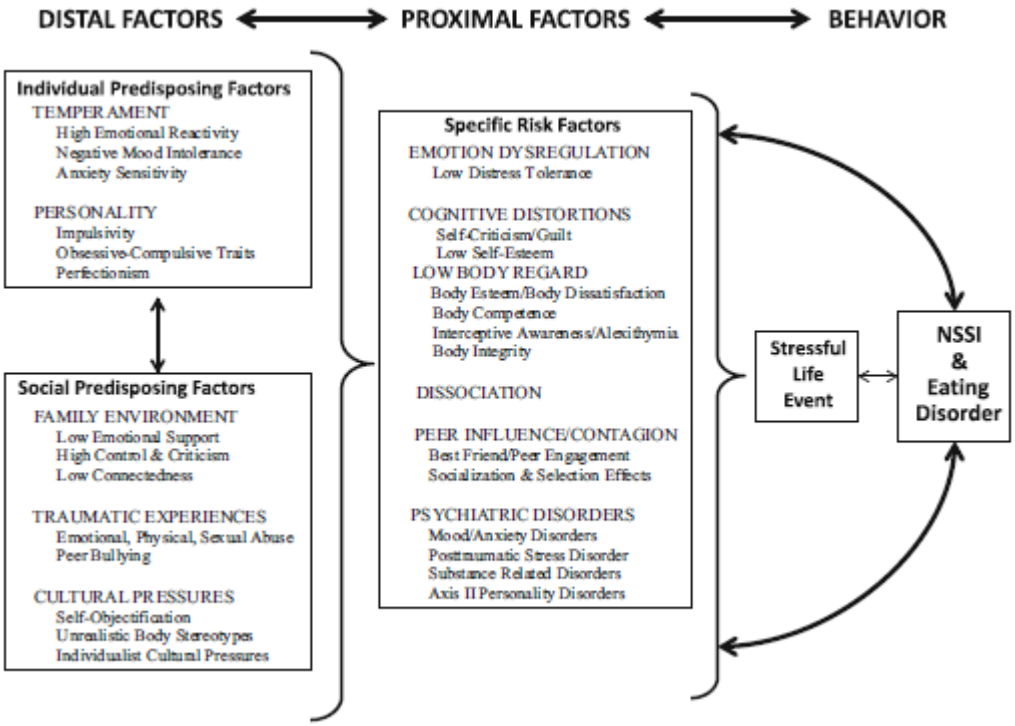
Note. From "Self-injurious behavior and eating disorders: The extent and nature of the association," by E. Svirko and K. Hawton, 2007, *Suicide and Life-Threatening Behavior*, *37*(4), p. 418 (https://doi.org/10.1521/suli.2007.37.4.409). Copyright 2007 by The American Association of Suicidology. Reprinted with permission.

Na mesma linha de investigação, Claes e Muehlenkamp (2014) postularam que fatores de risco distais e proximais são possivelmente partilhados pelas PCA e pelos NSSI (Figura 2). Fatores de risco distais e individuais incluem o temperamento (e.g., elevada reatividade emocional) e traços de personalidade (e.g., perfecionismo, impulsividade), enquanto fatores de risco distais e sociais incluem o ambiente familiar (e.g., baixo suporte emocional, elevado controlo e criticismo), experiências traumáticas, como o abuso na infância e *bullying,* e as pressões culturais (e.g., ter um corpo "perfeito"). Fatores de risco proximais incluem a desregulação emocional, distorções cognitivas, baixa consideração pelo próprio

corpo, dissociação, influência dos pares e psicopatologia comórbida (perturbações depressivas/ansiedade, perturbação de *stress* pós-traumático, perturbações de uso de substâncias, perturbações da personalidade). É possível que as interações entre os fatores de risco distais e proximais possam levar à coocorrência da sintomatologia alimentar e dos NSSI. Acontecimentos de vida antecedentes e negativos, como abuso sexual e morte de um significativo, podem também precipitar o sofrimento emocional, que é regulado por comportamentos alimentares disfuncionais e/ou NSSI, reforçando assim os fatores de risco proximais (Claes & Muehlenkamp, 2014).

Figura 2

Modelo concetual de fatores de risco interativos para os NSSI e as PCA



Note. From "Non-suicidal self-injury and eating disorders: Dimensions of self-harm," by L. Claes and J. J. Muehlenkamp in L. Claes and J. J. Muehlenkamp (Eds.), *Non-suicidal self-injury in eating disorders: Advancements in etiology and treatment* (p. 7), 2014, Springer. Copyright 2014 by Springer-Verlag Berlin Heidelberg. Reprinted with permission.

Embora estes modelos estejam bem estabelecidos na literatura, o suporte empírico nesta área é ainda limitado. Então é necessário testar modelos concetuais e analisar as relações ou interações entre os fatores, para melhor compreender a sua natureza predisponente ou precipitante e, consequentemente, as potenciais trajetórias que conduzem a um maior risco de apresentar conjuntamente PCA e NSSI. Considerando o escopo desta tese, potenciais fatores de risco para as PCA e os NSSI, bem como as relações entre si, serão explorados numa ampla amostra Portuguesa, à luz de

modelos concetuais (e.g., Claes & Muehlenkamp, 2014; Crowell et al., 2009; Svirko & Hawton, 2007). Com base nesses resultados, novos modelos serão também desenvolvidos e testados, suportando e expandindo a concetualização existente.

3.4. Intervenção nas perturbações do comportamento alimentar e nos ferimentos autoinfligidos sem intenção suicida

3.4.1. Intervenção nas perturbações do comportamento alimentar

Dada a gravidade das PCA, têm sido feitos esforços para desenvolver e avaliar tratamentos eficazes. Como tal, a terapia cognitivo-comportamental para a bulimia nervosa (Fairburn, 1985) foi estabelecida como o tratamento de primeira escolha para essa perturbação (Wilson & Shafran, 2005). Posteriormente, uma versão melhorada da terapia passou a ter um escopo transdiagnóstico e considerou que existem mecanismos de manutenção adicionais (i.e., perfecionismo, baixa autoestima, intolerância afetiva e dificuldades interpessoais), que interagem com a sintomatologia central das PCA, contribuindo para a persistência destes problemas (Fairburn et al., 2003).

Ainda em suporte da abordagem cognitivo-comportamental, vários estudos têm testado a sua eficácia. Por exemplo, na investigação de Agras et al. (2000), para a bulimia nervosa e em comparação com a terapia interpessoal, a terapia cognitivo-comportamental mostrou resultados superiores na taxa de pacientes recuperados. Também na revisão sistemática e meta-análise de Linardon et al. (2017), a terapia cognitivo-comportamental para a bulimia nervosa e para a perturbação de ingestão alimentar compulsiva foi mais eficaz na redução de sintomas cognitivos e comportamentais do que as condições de controlo ativas (e.g., outras abordagens psicoterapêuticas) e inativas (e.g., lista de espera).

Por outro lado, na anorexia nervosa, existem menos evidências quanto à eficácia de um tratamento e a investigação debruça-se, principalmente, sobre a terapia familiar em adolescentes, não sendo ainda claros os efeitos desta intervenção, nem da terapia cognitivo-comportamental em jovens e adultos (Fairburn, 2005; Murphy et al., 2010). Numa recente meta-análise (van den Berg et al, 2019), os resultados também sugeriram que não há diferenças entre o tratamento psicológico (e.g., terapia cognitivo-comportamental, psicoterapia cognitivo-analítica) e a condição de controlo (e.g., tratamento habitual) em resultados terapêuticos como o ganho de peso, a redução da psicopatologia alimentar e o aumento da qualidade de vida. Assim, não é possível estabelecer a eficácia do tratamento psicológico para a anorexia nervosa e mais investigação é necessária neste domínio (van den Berg et al., 2019).

3.4.2. Intervenção nos ferimentos autoinfligidos sem intenção suicida

No que concerne aos NSSI, ainda que a sua gravidade e prevalência sejam reconhecidas na investigação, até onde se sabe, não existem intervenções específicas, eficazes e empiricamente suportadas para esses problemas (Muehlenkamp, 2006; Turner et al., 2014). Consequentemente, abordagens como a terapia comportamental dialética, que integra o treino de competências interpessoais, de regulação emocional e de tolerância ao *distress*, têm sido aplicadas aos NSSI (e.g., Fleischhaker et al, 2011). Porém, a terapia comportamental dialética foi originalmente concebida para a perturbação *borderline* da personalidade*,* na qual os NSSI são apenas um sintoma (Linehan, 1993; Klonsky et al., 2014). Além disso, os indivíduos com estes comportamentos, mas sem o diagnóstico de perturbação *borderline* da personalidade, não deverão necessitar de um tratamento tão especializado e intensivo (Kiekens & Claes, in press).

Outras abordagens, como a terapia de grupo na regulação emocional baseada na aceitação (Gratz & Gunderson, 2006), a terapia baseada na mentalização (Rossouw & Fonagy, 2012) e a terapia cognitivo-comportamental assistida por manual (*manual-assisted cognitive-behavior therapy*; Evans et al., 1999), também têm sido usadas no tratamento dos NSSI. Contudo, são direcionadas à autolesão mais ampla (incluindo comportamentos suicidários) e, pelo que é possível conhecer, foram somente testadas no âmbito das perturbações da personalidade e da depressão.

Ainda num formato breve, Andover et al. (2014) desenvolveram uma intervenção direcionada a jovens adultos com NSSI. A intervenção abrangeu estratégias motivacionais, a análise funcional e o treino de competências para resolver problemas, tolerar o *distress*, lidar com as distorções cognitivas e comunicar com os outros. Num estudo piloto e num ensaio controlado e aleatorizado, foram encontradas diminuições nos NSSI ao longo da intervenção, em amostras clínicas e heterogéneas em diagnóstico, integrando, conjuntamente, pacientes com perturbações de humor, ansiedade, uso de substâncias e perturbações da personalidade (Andover et al., 2014; Andover et al., 2017).

Recentemente, a eficácia de uma psicoterapia cognitivo-comportamental, manualizada e de natureza breve (oito a 12 sessões) – *Cutting Down Programme* – foi testada em comparação ao tratamento psicoterapêutico habitual, num ensaio controlado e aleatorizado (Kaess et al., 2019). Esta intervenção foi baseada nas terapias cognitivo-comportamental e comportamental dialética e foi especificamente adaptada ao tratamento de NSSI em adolescentes. Os resultados do *follow-up* aos 6 meses mostraram que a nova intervenção e o tratamento habitual contribuíram igualmente para a diminuição dos NSSI, tentativas de suicídio e sintomas de depressão, bem como para a melhoria da qualidade de vida. Contudo, logo após o término da intervenção, o grupo experimental apresentou uma

redução mais rápida na frequência de NSSI no último mês do que o grupo de controlo, apenas sujeito ao tratamento habitual. O grupo experimental também foi exposto a menos sessões de psicoterapia do que o grupo de controlo, indicando que o sucesso do tratamento pode ser garantido numa intervenção breve (Kaess et al., 2019). Mais uma vez, esta intervenção foi conduzida numa amostra clínica de vários tipos de diagnóstico, incluindo perturbações de humor, de ansiedade e perturbação *borderline* da personalidade. Portanto, outros estudos são necessários para verificar se estas intervenções são também eficazes em amostras mais homogéneas em diagnóstico, ou seja, que incluam participantes de um só grupo de diagnóstico, como, por exemplo, as PCA.

Em termos gerais, apesar dos resultados promissores, as limitações apontadas reforçam a necessidade de mais investigação para delinear e testar intervenções para os NSSI, inclusivamente no contexto de perturbações especificas como as PCA.

3.4.3. Intervenção na coocorrência de perturbações do comportamento alimentar e ferimentos autoinfligidos sem intenção suicida

Considerando que os indivíduos com PCA, frequentemente, apresentam NSSI, é necessário desenvolver e implementar uma intervenção que responda a ambas as condições. Contudo, pelo que nos é dado a conhecer, escasseiam estudos que testem intervenções direcionadas às PCA e aos NSSI, conjuntamente, e não existem diretrizes baseadas na evidência científica para determinar a modalidade de tratamento a adotar quando a psicopatologia alimentar e os NSSI coexistem (Marino et al., 2020).

Dados anteriores sustentam que as terapias cognitivo-comportamentais são possivelmente eficazes no tratamento das PCA e dos NSSI (Turner et al., 2014). Marino et al. (2020) também construíram um modelo para ajudar os clínicos a decidir entre duas modalidades de tratamento a aplicar em indivíduos com PCA, que apresentem comportamentos como os NSSI: terapia cognitivo-comportamental ou terapia comportamental dialética. Contudo, este modelo é ainda preliminar e necessita de testagem e de futura investigação. Adicionalmente, abordagens como a reestruturação cognitiva, terapia familiar, modificação de comportamentos e intervenção em grupo parecem ser úteis no tratamento da comorbilidade entre psicopatologia alimentar e NSSI, mas carecem de evidência empírica quanto à sua eficácia (Sansone et al., 2004).

Paralelamente, se fatores comuns estão subjacentes às PCA e aos NSSI, então pode ser mais eficaz implementar intervenções que focalizem esses mesmos fatores do que as dirigir a cada comportamento em específico (Hasking & Claes, 2019). Neste sentido, Robinson et al. (2019) sugerem que o tratamento de NSSI deve ter uma componente destinada a melhorar as competências de regulação

emocional, para que se desenvolvam comportamentos alternativos e adaptativos para gerir as emoções, ao invés de magoar o próprio corpo. Ao mesmo tempo, a versão melhorada da terapia cognitivo-comportamental para as PCA, ainda que principalmente focada na sintomatologia alimentar, reconhece a importância de abordar mecanismos de manutenção, como as dificuldades em lidar com estados de humor intensos ou negativos (Fairburn et al., 2003). Também indivíduos com maior impulsividade e dificuldade em tolerar o *distress* parecem estar em elevado risco para o envolvimento em comportamentos bulímicos e NSSI e, por isso, esses fatores devem ser foco de intervenção (Hovrud et al., 2019).

Embora possam ser menos frequentes, as funções sociais dos NSSI também são reportadas. Por exemplo, num estudo anterior em que se desenvolveu e avaliou as propriedades psicométricas do *Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents* (Carvalho et al., 2015), as funções de reforço automático e de reforço social apresentaram boa consistência interna e validade de construto. Além disso, ambas as funções estiveram negativamente associadas com memórias precoces de calor e segurança, sugerindo que os NSSI podem, não só, funcionar como forma de gerir as próprias emoções, como também de regular as relações com os outros (Carvalho et al., 2015). Como tal, uma implicação clínica é o treino de aptidões de comunicação interpessoal e de resolução de problemas (Zetterqvist et al., 2013). Dada a expressão de atitudes negativas perante o corpo, a intervenção junto de pacientes com PCA e NSSI deve ainda focalizar a relação com o próprio corpo (Jacobson & Luik, 2014).

Quanto ao formato, uma intervenção em grupo pode ser útil como uma componente do tratamento mais amplo, já que pode incluir elementos da intervenção individual e tem as vantagens de desmistificar comportamentos, promover a coesão, validação e suporte entre os membros, estabelecer objetivos comuns e facilitar a resolução de problemas dentro de um mesmo contexto (Sansone et al., 2004). Uma intervenção de natureza breve e em grupo também confere aos serviços de saúde a possibilidade de usarem os seus recursos de forma eficiente (Wade et al., 2017).

Atendendo a estas evidências e recomendações, a presente tese terá uma componente focada no desenvolvimento, implementação e avaliação de uma intervenção em grupo, de natureza breve e baseada em estratégias empiricamente suportadas, destinada a pacientes com PCA, que reportem o envolvimento atual ou passado em NSSI.

4. Pertinência da presente investigação

Até onde sabemos, escasseia investigação Portuguesa sobre os NSSI no contexto das PCA. Assim, torna-se importante avaliar a frequência dos NSSI, caracterizar estes comportamentos, perceber

que fatores estão associados ao seu desenvolvimento e manutenção em amostras clínicas de pacientes com PCA, e intervir na comorbilidade entre os dois problemas.

Evidências internacionais sugerem que fatores distais (e.g., abuso na infância) e proximais (e.g., desregulação emocional) influenciam o desenvolvimento conjunto de PCA e NSSI (e.g., Claes & Muehlenkamp, 2014). No entanto, nem todos os indivíduos com dificuldades na regulação emocional ou com uma história de abuso na infância desenvolvem esses problemas, e tais fatores estão também associados a outro tipo de psicopatologia, como os sintomas de depressão (Christ et al., 2019). Então, a par da consistência na terminologia usada e da identificação dos métodos, caraterísticas e motivações dos NSSI em pacientes com PCA, uma importante direção para a presente investigação é avaliar um conjunto bem-estabelecido de fatores intra e interpessoais, envolvidos no desenvolvimento e manutenção da psicopatologia alimentar, e compreender quais dessas variáveis contribuem especificamente para a presença concomitante de NSSI. Esta compreensão é fundamental para aumentar o conhecimento e melhorar práticas de avaliação, diagnóstico, prevenção ou tratamento.

A coocorrência das PCA e dos NSSI é também reconhecida e concetualizada em diferentes modelos teóricos (e.g., Claes & Muehlenkamp, 2014; Svirko & Hawton, 2007). Então, um outro passo necessário é testar essa concetualização. Embora muitos fatores já tenham sido independentemente associados à sintomatologia alimentar e aos NSSI (e.g., Hasking & Claes, 2019; Zelkowitz & Cole, 2018), as relações entre si no contexto da comorbilidade não estão esclarecidas. Assim, é necessário testar um modelo elaborado a partir de potenciais fatores de risco, identificados especificamente no contexto das PCA e com uma amostra clínica Portuguesa, que inclua as relações entre diferentes fatores distais e proximais e NSSI. A investigação sobre a interação entre fatores de risco é fundamental para a compreensão dos mecanismos psicossociais que potenciam o desenvolvimento de ambos os problemas, ou seja, para perceber as possíveis formas de manifestação do risco para a coocorrência de PCA e NSSI.

Sendo a exposição a um ambiente invalidante na infância associada ao comportamento alimentar disfuncional (Haslam et al., 2008) e aos NSSI (You & Leung, 2012), é também importante avaliar essa variável com um instrumento designado para esse efeito. De forma a colmatar a inexistência de medidas específicas e a constituir um questionário Português, válido e fiável, para examinar a perceção de invalidação emocional na infância, mostra-se pertinente traduzir e examinar as propriedades psicométricas da *Invalidating Childhood Environment Scale* (ICES; Mountford et al., 2007).

Paralelamente, a invalidação emocional durante a infância parece contribuir para dificuldades na regulação emocional e para um comportamento impulsivo (Linehan, 2015; Mountford et al., 2007). De acordo com evidências teóricas (e.g., Crowell et al., 2009; Svirko & Hawton, 2007), estes últimos fatores

têm um papel fulcral nas PCA e nos NSSI. Assim, uma das linhas de investigação será delinear e testar um modelo, que possibilite explorar se a exposição a um ambiente invalidante na infância está associada ao envolvimento em NSSI no contexto das PCA, e se esta associação é exacerbada por maiores dificuldades na regulação emocional e pela urgência negativa. Avaliar simultaneamente estas variáveis e analisar os fatores moderadores é relevante para clarificar potenciais determinantes e circunstâncias do desenvolvimento de NSSI em concomitância com as PCA, e para informar práticas de avaliação e intervenção.

Finalmente, embora os NSSI sejam frequentes e considerados como um problema de saúde pública, há escasso suporte para tratamentos específicos e empiricamente suportados para esses problemas (Muehlenkamp, 2006). Considerando que estes ocorrem frequentemente com as PCA (Kostro et al., 2014; Muehlenkamp et al., 2011) e que existem poucas abordagens de tratamento que focalizem as duas condições em simultâneo (Levitt et al., 2004), urge a necessidade de desenhar, implementar e testar uma forma de intervenção psicológica, baseada na evidência e adicional ou complementar ao tratamento psiquiátrico habitual, dirigida a pacientes com PCA e história de NSSI. A criação e disseminação de novas formas de intervenção, que apresentem resultados promissores, poderá contribuir para a melhoria na prestação e acesso aos serviços de saúde mental, nomeadamente em áreas onde as intervenções escasseiam, como a dos NSSI.

5. Objetivos e hipóteses da investigação

Considerando as necessidades de estudo, acima identificadas, a presente investigação tem os seguintes objetivos:

(i) Avaliar a frequência e caracterizar os NSSI em pacientes diagnosticados com PCA e explorar as diferenças entre indivíduos com e sem NSSI na psicopatologia alimentar;

(ii) Determinar se potenciais fatores de risco para as PCA estão associados a uma maior probabilidade de envolvimento em NSSI;

(iii) Especificar e testar um modelo de relações entre potenciais fatores de risco distais e proximais, examinando o possível papel mediador dos fatores proximais na relação entre os fatores distais e a presença de NSSI entre pacientes com PCA;

(iv) Examinar as propriedades psicométricas da versão Portuguesa da ICES, numa amostra comunitária e numa amostra clínica de pacientes com PCA, bem como investigar as diferenças entre as amostras nos comportamentos parentais invalidantes e nos estilos

familiares, e explorar as associações entre a invalidação parental e a psicopatologia alimentar;

(v) Avaliar as diferenças em variáveis demográficas e clínicas entre três grupos de participantes com PCA: participantes sem NSSI, participantes com NSSI há mais de um ano e participantes com NSSI no ano anterior, e verificar se as dificuldades na regulação emocional e a urgência negativa moderam a relação entre a invalidação parental e o envolvimento atual em NSSI;

(vi) Desenvolver, implementar e avaliar a viabilidade e aceitação de uma breve intervenção em grupo, adicional ao tratamento habitual, dirigida a pacientes com PCA e história de NSSI, bem como examinar as potenciais mudanças nas variáveis-alvo no final da intervenção e aos 3 meses de *follow-up*.

Em primeiro lugar, consistente com estudos anteriores e modelos concetuais (Claes & Muehlenkamp, 2014; Svirko & Hawton, 2007), espera-se uma elevada frequência de NSSI em pacientes com PCA e essa comorbilidade deverá estar relacionada com comportamentos compulsivo-purgativos, uma menor idade de início da perturbação, maior gravidade da psicopatologia alimentar e maior exposição a potenciais fatores de risco, como abuso na infância, uso de substâncias e sintomatologia depressiva.

Em segundo lugar, fatores de risco como as experiências de abuso físico e sexual, deverão ter um papel mais distal no tempo para as PCA e os NSSI, sendo a relação entre estes comportamentos e os fatores distais possivelmente mediada por outros de natureza proximal, como a autoavaliação negativa, uso de substâncias e acontecimentos de vida antecedentes e negativos.

Em terceiro lugar, para garantir a avaliação fidedigna da exposição a um ambiente invalidante na infância em estudos integrantes da presente tese, a versão Portuguesa da ICES deverá ter propriedades psicométricas adequadas, quando aplicada a uma amostra comunitária e a uma amostra clínica de pacientes com PCA. Também deverão existir diferenças entre as amostras nos comportamentos parentais invalidantes e nas atitudes e comportamentos alimentares, e a invalidação parental estará especificamente associada a comportamentos bulímicos.

Em quarto lugar, certas dificuldades na regulação emocional e na urgência negativa deverão tornar os indivíduos mais vulneráveis ao possível impacto da invalidação parental na ocorrência de NSSI.

Em quinto e último lugar, espera-se que a viabilidade e aceitação da intervenção desenvolvida, direcionada a pacientes com PCA e história de NSSI, sejam elevadas.

6. Estrutura da tese

A presente tese compreende cinco capítulos[3], organizados de forma sequencial, para que cada capítulo confira suporte ao seguinte. A tese tem o principal objetivo de expandir a literatura científica sobre a coocorrência de PCA e NSSI e aplicar esse conhecimento ao desenvolvimento de uma breve intervenção psicológica em grupo, direcionada a indivíduos com ambos os problemas. Para corresponder a este objetivo, a investigação conduzida mereceu o parecer positivo da Comissão de Ética da Universidade do Minho - Subcomissão de Ética para as Ciências Sociais e Humanas e da Comissão de Ética do Centro Hospitalar de São João/Faculdade de Medicina da Universidade do Porto.

No Capítulo 1, é apresentado o estudo "Putative risk factors for non-suicidal self-injury in eating disorders", publicado na *European Eating Disorders Review*. Neste estudo, a presença de NSSI é avaliada e um conjunto alargado de potenciais fatores de risco é examinado, retrospetivamente, através de uma entrevista semiestruturada (*Oxford Risk Factor Interview* [RFI]; Fairburn et al., 1997), numa amostra de 245 pacientes diagnosticados com PCA. Desta forma, pretende-se ampliar o conhecimento sobre possíveis domínios de risco e acontecimentos de vida subjacentes a ambos os problemas, o que contribui para a identificação de grupos de risco e suporta estudos longitudinais.

No Capítulo 2, é apresentado o estudo transversal "Eating disorders and non-suicidal self-injury: Structural equation modelling of a conceptual model", também publicado na *European Eating Disorders Review*. Com base nos potenciais fatores de risco identificados no estudo anterior e no modelo concetual de Claes e Muehlenkamp (2014), neste estudo, um modelo de equação estrutural é especificado e testado, incluindo um padrão de relações entre possíveis fatores de risco distais (baixo peso parental, tensão familiar às refeições, problemas de alcoolismo dos pais, agressão pelos pares e abuso na infância), fatores de risco proximais (autoavaliação negativa, tentativas de suicídio como sintoma de depressão e uso de substâncias) e acontecimentos de vida antecedentes (e.g., luto), numa amostra de 245 participantes com PCA, com e sem NSSI. Assim, é explorado o possível papel mediador dos fatores proximais na relação entre os fatores distais e a presença de NSSI.

O Capítulo 3 apresenta o estudo "Psychometric properties of the Portuguese version of the Invalidating Childhood Environment Scale", publicado na *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*. Este estudo tem como objetivo central examinar as propriedades psicométricas da versão Portuguesa da ICES – um instrumento de autorrelato que avalia retrospetivamente a exposição a um ambiente invalidante na infância – incluindo a análise de

[3] As diferenças entre os capítulos na formatação, organização, estilo de escrita, citações e referências bibliográficas são devidas ao cumprimento das diferentes normas de cada uma das revistas científicas, nas quais os estudos foram submetidos e/ou publicados.

componentes principais numa amostra comunitária de estudantes do ensino secundário e do ensino superior (N = 410), a análise fatorial confirmatória numa amostra clínica de pacientes com PCA (N = 101) e a consistência interna em ambas as amostras. Também pretende investigar as diferenças entre as amostras relativamente aos comportamentos parentais invalidantes e estilos familiares, bem como explorar as associações entre a invalidação parental e a psicopatologia alimentar. Este capítulo contribui, assim, para a adaptação da escala às amostras Portuguesas em estudo, possibilitando o seu uso no próximo capítulo e favorecendo a sua utilidade para profissionais de saúde e investigadores que pretendam avaliar a exposição a um ambiente invalidante na infância.

No Capítulo 4 é apresentado o estudo transversal "Nonsuicidal self-injury, difficulties in emotion regulation, negative urgency and childhood invalidation: A study with outpatients with eating disorders", publicado no *Jounal of Clinical Psychology*. Este estudo vem na sequência dos anteriores, nos quais se pretende verificar a existência e interação de fatores de natureza intra e interpessoal na comorbilidade entre PCA e NSSI (Capítulos 1 e 2) e, em particular, explorar a associação da psicopatologia alimentar com a experiência de invalidação emocional na infância (Capítulo 3). Porém, nem todas as pessoas expostas a este fator familiar ou interpessoal desenvolvem PCA e NSSI. Então, sabendo que ambos os problemas envolvem dificuldades na regulação emocional e na impulsividade (i.e., urgência negativa) e que estas variáveis estão também relacionadas com um ambiente invalidante na infância, torna-se pertinente explorar se o envolvimento em NSSI é mais propenso entre pacientes com PCA, que experienciem invalidação parental e que apresentem mais dificuldades na regulação emocional e urgência negativa. Portanto, o estudo do Capítulo 4 pretende investigar a frequência, métodos e características dos NSSI numa amostra de 171 pacientes em ambulatório, diagnosticados com PCA; explorar as diferenças entre três grupos – participantes sem NSSI, participantes com NSSI há mais de um ano e participantes com NSSI no ano anterior – em relação à idade, índice de massa corporal, durações do tratamento e da perturbação, atitudes e comportamentos alimentares, dificuldades na regulação emocional, urgência negativa e exposição à invalidação na família; e testar se as dificuldades na regulação emocional e a urgência negativa moderam a relação entre a invalidação parental e o envolvimento em NSSI.

O Capítulo 5 apresenta o estudo "Group-based intervention for eating disorders and non-suicidal-self-injury: A case series", submetido a revista internacional com arbitragem científica e, atualmente, em processo de revisão. Este estudo piloto, não controlado, ou seja, um estudo de série de casos, foca a avaliação da viabilidade e aceitação de uma intervenção em grupo, conduzida em 16 pacientes com PCA e história de NSSI. Baseada em estratégias empiricamente suportadas, transdiagnósticas e de orientação

cognitivo-comportamental (Barlow et al., 2011; Fairburn et al., 2008; Walsh, 2012), o principal objetivo desta intervenção consubstancia-se em promover competências adaptativas para lidar com dificuldades em domínios de risco potencialmente envolvidos no desenvolvimento e manutenção das PCA e dos NSSI: desregulação emocional, impulsividade e limitadas aptidões de resolução de problemas, dificuldades na comunicação interpessoal e insatisfação corporal ou falta de investimento emocional no corpo. A pertinência para o seu desenvolvimento advém da revisão da literatura e dos capítulos anteriores, nos quais são avaliados potenciais fatores de risco associados à comorbilidade entre PCA e NSSI. Através da análise do recrutamento, da adesão à intervenção, das taxas de retenção e de atrito e da satisfação com a intervenção, este capítulo permite testar a viabilidade e aceitação da intervenção, dando ainda uma indicação preliminar das mudanças nas variáveis-alvo no final da intervenção e aos 3 meses de *follow-up*.

Espera-se, assim, que esta tese suporte a importância de avaliar os NSSI no contexto das PCA, que possa esclarecer investigadores e profissionais de saúde sobre os fatores psicossociais associados à comorbilidade entre os dois problemas e que contribua para o refinamento, integração e disseminação de uma breve intervenção em grupo, dirigida a indivíduos com PCA e história de NSSI.

CAPÍTULO 1

Putative risk factors for non-suicidal self-injury in eating disorders[4]

Abstract

Evidence suggests a common association between eating disorders (EDs) and non-suicidal self-injury (NSSI). The present study aimed to investigate the potential risk factors for NSSI among ED patients. We assessed 245 ED patients with the Oxford Risk Factor Interview for ED. The results showed that 33% of ED patients reported NSSI in their lifetime. NSSI appeared to occur more frequently among binge-eating/purging-type ED patients than among patients with other ED and to be related to a more severe eating pathology. A younger age at the onset of eating problems, more negative self-evaluation, suicide attempts, substance abuse, parents' low weight, family tension at mealtime, parental alcohol problems, childhood abuse, peer aggression, and negative antecedent life events were more common among patients with co-occurring EDs and NSSI than among patients without NSSI. The results may inform the risk assessment and treatment of NSSI in EDs in the early detection period.

Keywords: eating disorders, non-suicidal self-injury, risk factors

[4] Vieira, A. I., Machado, B. C., Machado, P. P. P., Brandão, I., Roma-Torres, A., & Gonçalves, S. (2017). Putative risk factors for non-suicidal self-injury in eating disorders. *European Eating Disorders Review*, *25*(6), 544–550. https://doi.org/10.1002/erv.2545

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Introduction

Self-harming behaviour, which is viewed as socially inadequate behaviour that poses a potential degree of harm to the body and is adopted to cope with a problem, can take a variety of forms (Claes & Vandereycken, 2007). According to Jacobson and Luik (2014), eating disorders (EDs) and non-suicidal self-injury (NSSI) are, respectively, indirect and direct forms of self-harm. EDs are characterised by engagement in eating patterns and weight-control behaviours that may include restricting food intake and recurrent binge eating and purging (Fairburn & Harrison, 2003). NSSI, defined as deliberate and direct damage to one's own body without suicidal intent (Claes & Vandereycken, 2007), has received increasing attention; consequently, these behaviours have been added to the category of conditions for further study in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; American Psychiatric Association, 2013).

NSSI, which includes behaviours such as scratching, cutting, hitting and burning oneself (Nock, 2009), has been shown to occur among ED patients, with prevalence rates ranging between 30% and 59% (Claes, Luyckx, et al., 2015; Gonçalves et al., 2016b; Muehlenkamp, Claes, Smits, Peat, & Vandereychen, 2011). The frequency of NSSI appears to vary between 14% and 42% for anorexia nervosa restricting type, between 28% and 68% for anorexia nervosa binge-eating/purging type, and between 26% and 55% for bulimia nervosa (Svirko & Hawton, 2007). Furthermore, individuals with NSSI possibly exhibit more eating pathology, including bulimic behaviours and body dissatisfaction, than individuals without NSSI (Favaro & Santonastaso, 1998; Ross, Heath, & Toste, 2009), and a higher frequency of NSSI may be related to more severe ED (Turner et al., 2015).

Research has addressed potential risk factors for EDs. Prospective longitudinal and retrospective studies with case-control designs have identified the following as risk factors: eating concerns and negative body evaluation (Gustafsson, Edlund, Kjellin, & Norring, 2009), dietary restraints, negative affect, substance use (Stice, Ng, & Shaw, 2010), family discord and higher parental expectations or demands (Gonçalves, Machado, Martins, Hoek, & Machado, 2016a; Pike et al., 2008), parental problems (e.g., alcoholism, obesity; Fairburn, Welch, Doll, Davies, & O'Connor, 1997), and higher perfectionism (Holland, Bodell, & Keel, 2013; Machado, Gonçalves, Martins, Hoek, & Machado, 2014).

Potential risk factors for developing NSSI include a history of substance use (Klonsky & Muehlenkamp, 2007), parental substance use disorder, self-criticism (Gromatsky et al., 2017), and childhood sexual abuse (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Gratz, 2003). Hankin and Abela (2011) found that having experienced multiple stressful life events and more depressive symptoms predicted a higher likelihood of NSSI.

Regarding EDs and NSSI, the literature indicates that both conditions emerge in adolescence (Bjärehed & Lundh, 2008; Brown & Plener, 2017), and those with disordered eating and NSSI appear to have a younger age of symptom onset (Wright, Bewick, Barkham, House, & Hill, 2009) and more binge-eating and/or purge behaviours (Peebles, Wilson, & Lock, 2011) than those who engage only in disordered eating behaviours. Previous studies find that less childhood paternal care (Fujimori et al., 2011), higher parental criticism (Claes, Soenens, Vansteenkiste, & Vandereycken, 2012), more substance use disorders (Islam et al., 2015) and depression (Claes, Vandereycken, & Vertommen, 2003) are widely reported among ED patients with NSSI. More recently, a lower body mass index (BMI), feeling fat, a history of sexual/physical abuse and purging behaviours were associated with the occurrence of NSSI in EDs (Gonçalves et al., 2016b).

Svirko and Hawton (2007) presented a conceptual model which includes the following factors potentially involved in the association between EDs and NSSI: impulsivity, obsessive-compulsive characteristics, affect dysregulation, dissociation, self-criticism and need for control. The authors also argue that traumatic events such as childhood sexual abuse, personality traits and certain characteristics of cultural and family environment (e.g., less cohesive and expressive) can be precursors of the development of these factors. Claes and Muehlenkamp (2014) posits that distal and proximal risk factors are possibly shared by EDs and NSSI. Individual distal risk factors include temperament and personality traits (e.g., perfectionism), whereas social distal risk factors include family environment and traumatic experiences, such as childhood abuse and peer bullying. Proximal risk factors include emotion dysregulation, cognitive distortions, low body regard, dissociation, peer influence, and comorbid psychopathology. It is possible that interactions among the risk factors may lead to the co-occurrence of EDs and NSSI. Furthermore, stressful life events (e.g., sexual abuse, death of a loved one) can increase internal distress, which is regulated by EDs and/or NSSI, reinforcing the proximal risk factors.

The high prevalence of NSSI among ED patients and its possible association with a higher severity of eating pathology suggest that engagement in both behaviours may be more concerning than previously expected. However, most studies have focused on unique correlates for EDs or NSSI, leaving a lack of aggregate data or shared variables for both problems about the potentially common etiopathology paths. Thus, it is important to simultaneously examine possible risk factors and associations with NSSI in EDs in a wide array of well-established factors. Identifying the psychosocial factors associated with the overlap of these two problems can improve assessment and treatment efforts aimed at preventing and decreasing direct and indirect forms of self-harm.

Therefore, to our knowledge, this is the first study to contribute to a sustained understanding of potential risk factors for NSSI associated with EDs by using Oxford Risk Factor Interview (RFI) for ED. Given the evidence to the comorbidity between EDs and NSSI, the present study may contribute to the literature by expanding our knowledge about possible risk domains and antecedent life events common to both conditions. Moreover, defining potential risk groups based on the retrospective correlates of RFI will support longitudinal studies about EDs and NSSI. Specifically, this study aimed to (1) assess the prevalence of NSSI in ED patients; (2) assess the differences between individuals with and without NSSI regarding disordered eating; and (3) determine whether putative risk factors were associated with a higher likelihood of NSSI engagement among ED patients.

Consistent with previous studies and conceptual models (e.g., Claes & Muehlenkamp, 2014; Svirko & Hawton, 2007), it is expected that the presence of NSSI among patients with EDs will be related to (1) binge eating and purging behaviours; (2) a younger age of onset of disordered eating; (3) greater eating pathology; and (4) greater exposure to specific putative risk factors such as parenting problems, a history of being abused and bullied, substance use disorders and depressed mood.

Method

Participants

Two hundred and forty-five female ED outpatients aged 14-49 years (M = 22.12; SD = 6.31) participated in the study. The mean age of onset of the first ED symptom was 15.58 (SD = 3.80), the mean BMI was 17.72 (SD = 4.15), and the mean duration of ED was 6.33 years (SD = 5.23). Ninety-six (39.2%) were diagnosed with restricting-type ED (anorexia nervosa restricting type), and 149 (60.8%) were diagnosed with binge-eating/purging-type ED (20.8% with anorexia binge-eating/purging-type, 38.8% with bulimia nervosa, and 1.2% with binge-eating disorder), according to DSM-5 (American Psychiatric Association, 2013). Exclusion criteria were physical disorders likely to influence eating habits or weight (e.g., diabetes), psychosis or current pregnancy. Participants were recruited in specialised ED treatment settings.

Measures

Eating Disorders Examination (Fairburn, Cooper, & O'Connor, 2014)

The Eating Disorders Examination (EDE) is a semi-structured interview that assesses the severity of ED cognitions over the past 28 days and the key behavioural features of disorder in terms of the number of episodes of the behaviour and the number of days on which the behaviour has occurred during

the past 3 months. In the current study, the diagnostic items of the EDE were used to assess ED diagnosis and psychopathology. In the present study, Cronbach's alpha for the EDE was .78.

Oxford Risk Factor Interview for Eating Disorder (Fairburn, Welch, Doll, Davies, & O'Connor, 1997)

The current study used the RFI to assess the exposure to putative risk factors for EDs. The interviews focused on the period before onset of the ED, with age of onset being defined as the age at which the first significant and persistent eating pathology behaviours began (Fairburn et al., 1997). For putative risk factors believed to have a hereditary component (e.g., parental psychopathology), the interviews focused on both the pre-disorder and post-disorder onset period.

According to previous studies (Hilbert et al., 2014; Manwaring et al., 2006; Pike et al., 2008), the putative risk factors were categorised into seven domains and their subdomains: subject's mental health (conduct problems: conduct problems and truancy; negative affectivity: negative self-evaluation, shyness, absence of friends, school anxiety, depressed mood, suicide ideation and suicide attempts; substance use: lifetime alcohol and drug use; perfectionism); subject's physical health (pregnancy history: pregnancy abortion and number of children/pregnancies; severe childhood obesity: childhood/adolescent overweight); other environmental experiences (disruptions: frequent house moves and changes of caregiver; bullied and teased: peer aggression, threatening teasing and teasing about shape, weight, eating or appearance); family weight and eating concerns (family dieting: family member dieting for shape or weight/any reason (parents vs. other); parental overweight: mother's/father's highest weight; family history of anorexia or bulimia nervosa: family member with low weight (parents vs. other), family member with shape/weight concern (parents vs. other) and family member with history of anorexia or bulimia nervosa (parents vs. other); family overeating: family member with binge-eating (parents vs. other)); quality of parenting (parental problem parenting: parental under-involvement, overinvolvement or affectionless control; family discord: low contact with parent, parental arguments, low parental affection and family tension at mealtime; separations from parent; parental absence or death; high parental demands: parental high expectations, criticism and ill health); parental psychopathology (parental mood and substance disorder: parental major depression, alcohol, and drug problems); and childhood abuse (sexual and physical abuse).

The interviews also assessed NSSI. Participants were asked, "Have you ever tried to hurt yourself?" If yes, "What kind of behaviour did you engage in at that time?" and "How many times did the behaviour occur?" A subset of factors that represent exposure to life events in the 12 months preceding

the index age (e.g., major house move) were still considered in RFI. Cronbach's alpha for the RFI in the present study was .70.

Procedure

This study was reviewed and approved by the institutional review board of the Research Center of Psychology (University of Minho). Interviews were administered by clinical psychologists trained in the use of the standardised interview procedure of EDE and RFI. Participants were informed about the research aims, and data confidentiality was assured. All adult participants provided written informed consent and written informed consent for minors was provided by their parents.

Statistical analyses

The statistical analyses were conducted with IBM SPSS Statistics 23.0 (SPSS Inc., Chicago, IL). An exploratory data analysis examined the parametric test assumptions. To evaluate between-group differences regarding bulimic and purging episodes, current age, index age, duration of disorder and current BMI, we used the Mann-Whitney test (*U*). To evaluate the associations among putative risk factors, features associated with binge-eating, diagnostic group and presence/absence of NSSI, chi-squared tests (χ^2) were conducted.

A binary logistic regression was performed to estimate the probability of a binary response (history of NSSI vs. no history of NSSI) based on putative risk factors as independent variables. The relevant assumptions of this statistical analysis were tested (according to Field, 2009): (i) we excluded the factors that did not show variability in the groups with and without NSSI; (ii) we considered putative risk factors for the regression analysis only when they showed statistical significant or marginally significant values between the groups; (iii) we excluded the cases in which cells presented a percentage superior to 20% when the minimum expected value was less than 5; (iv) we excluded all independent variables with highly correlated results; (v) we considered the maximum number of independent variables by participants according to Stevens' (1946) guidelines; and (vi) we took into account potential outliers that would need to be excluded from the final analysis. These analyses were used to assess the antecedent life events. p values < .05 were considered significant.

Results

One hundred fifty-six participants (67%) reported no history of NSSI (non-NSSI group), and 77 (33%) had engaged in NSSI at some point in their lives (NSSI group). Almost 80% of the participants from

the NSSI group (n = 62) reported engaging in these behaviours after the development of EDs. Sixteen participants (6.9%) reported engaging in these behaviours before the index age.

Table 1 presents the demographic and clinical comparison of the non-NSSI group and the NSSI group. The presence of NSSI was associated to ED type: fourteen (18.2%) participants from the NSSI group were diagnosed with a restricting-type ED, while 63 (81.8%) were diagnosed with a binge-eating/purging-type ED, $\chi^2(1) = 21.05$, $p < .001$. There was a significant difference between the groups in terms of the index age ($p = .001$). Participants from the NSSI group were younger when their eating problems began. There were no significant differences between the groups in current age ($p = .40$), BMI ($p = .13$) or duration of ED ($p = .16$).

Table 1. Demographic and clinical description of the non-NSSI and NSSI groups

	Non-NSSI group (n = 156)	NSSI group (n = 77)
	M (SD)	*M (SD)*
Current age (years)	22.18 (6.17)	21.10 (4.88)
Index age (years)	16.13 (4.21)	14.34 (2.50)
Age of onset of bulimia nervosa (years)	17.86 (4.28)	16.38 (2.66)
Age of onset of anorexia nervosa (years)	18.14 (4.98)	17.49 (3.94)
Duration of ED (years)	6.05 (5.02)	6.77 (5.20)
Current BMI (kg/m^2)	17.38 (3.87)	18.03 (3.64)
	n (%)	*n* (%)
ED type		
Restricting type	77 (49.4)	14 (18.2)
Binge-eating/purging type	79 (50.6)	63 (81.8)

Note. N total = 233, 12 participants did not complete the entire interview.

With respect to disordered eating behaviour in past 3 months, analyses of between-group differences indicated that the NSSI group reported a larger number of objective bulimic episodes (p = .001), more dietary restrictions outside bulimic episodes ($p < .001$) and more periods of absence of extreme weight-control behaviours ($p = .001$) than the non-NSSI group. The NSSI group also evidenced significantly higher levels of weight ($p = .006$) and shape ($p < .001$) concerns and fear of gaining weight ($p < .001$) and feeling fat ($p < .001$). There were no significant differences between the groups in terms of the frequencies of subjective bulimic episodes ($p = .50$) or extreme weight-control behaviours, such as

self-induced vomiting (p = .99), laxative misuse (p = .85), diuretic misuse (p = .30), and driven exercising (p = .74).

In the NSSI group, most participants reported eating much more rapidly than usual ($\chi^2(2) = 15.92$, p <.001), eating until they felt uncomfortably full ($\chi^2(2) = 8.82$, p = .003), eating large amounts of food when they did not feel hungry ($\chi^2(2) = 11.18$, p = .001), eating in secret ($\chi^2(2) = 7.78$, p = .009) and feel guilty about eating ($\chi^2(2) = 13.11$, p <.001), in comparison with the non-NSSI group.

Putative risk factors in the NSSI versus non-NSSI groups

Table 2 presents the distribution of putative risk factors, entered in each model, in the non-NSSI *versus* NSSI groups and the results of binary logistic regression analyses. In comparison to the non-NSSI group, participants from the NSSI group reported significantly greater levels of exposure to all except one of the seven domains (subject's mental physical health). A greater level of exposure within each domain/subdomain was associated with a greater risk of belonging to the NSSI group. Concerning the individual putative risk factors, in comparison to the non-NSSI group, the NSSI participants reported significantly greater levels of exposure with regard to negative self-evaluation (p =.02), suicide attempts (p = .001), substance use (p < .001), parents' low weight (p = .02), peer aggression (p = .02), family tension at mealtime (p = .001), parental alcohol problems before index age (p = .03), sexual abuse (p = .04) and physical abuse (p = .02).

Antecedent life events in NSSI versus non-NSSI groups

Table 3 summarises the results of the comparisons of the non-NSSI group and the NSSI group regarding specific life events in the 12-month period immediately preceding the first ED symptoms. The model was statistically significant ($\chi^2(3) = 8.09$, p =. 04), explained 16% (Nagelkerke R^2) of the variance and correctly classified 66.8% of cases. Compared with the non-NSSI group, the NSSI group reported significantly greater levels of exposure to the experience of bereavement (p = .005), physical abuse (p = .01) and anything else (e.g., "I entered the national team of basket and I was not called to a game ... my mother did not talk about anything else"; p =.04).

Table 2. Distribution of the risk factors in the non-NSSI and NSSI groups using binary logistic regression

	Non-NSSI group (n = 156)	NSSI group (n = 77)	95% CI for Odds Ratio			
Domains	*n (%)*	*n (%)*	*B (SE)*	Lower	Odds Ratio	Uper
Subject ´s Mental Health†						
Constant			5.02 (1.02)			
Negative self-evaluation	59 (37.8)	52 (67.5)	-.85* (.36)	.21	.43	.86
Shyness	53 (34.0)	44 (57.1)	-.58 (.36)	.28	.56	1.14
Absence of friends	23 (14.7)	23 (29.9)	-.04 (.43)	.41	.96	2.25
School anxiety	32 (20.5)	28 (36.4)	-.64† (.36)	.26	.53	1.08
Depressed mood	29 (18.6)	29 (37.7)	-.44 (.44)	.27	.64	1.52
Suicidal ideation	14 (9.0)	21 (27.3)	-.18 (.54)	.29	.83	2.41
Suicide attempts	2 (1.3)	14 (18.2)	-2.75** (.86)	.01	.06	.34
Substance use (lifetime alcohol and drug use)	10 (6.4)	24 (31.2)	-1.76*** (.45)	.07	.17	.41
Other Environmental Experiences‡						
Constant			.00 (.44)			
Peer aggression	11 (7.1)	14 (18.2)	-.99* (.44)	.16	.37	.87
Teasing about shape, weight, eating or appearance	61 (39.1)	39 (50.6)	.38 (.29)	.83	1.46	2.57
Family Weight and Eating Concerns§						
Constant			-.89 (.16)			
Family member dieting for shape or weight (Parents)	21 (13.5)	17 (22.1)	.46 (.37)	.76	1.59	3.30
Family member with low weight (Parents)	7 (4.5)	11 (14.3)	1.16* (.51)	1.17	3.20	8.77

†*Note*. R^2 = .22 (Hosmer & Lemeshow), .25 (Cox & Snell), .35 (Nagelkerke). Model $\chi^2(8) = 66.50$, $p < .001$.

‡*Note*. R^2 = .03 (Hosmer & Lemeshow), .03 (Cox & Snell), .05 (Nagelkerke). Model $\chi^2(2) = 8.01$, $p = .02$.

§*Note*. R^2 = .03 (Hosmer & Lemeshow), .03 (Cox & Snell), .05 (Nagelkerke). Model $\chi^2(2) = 7.96$, $p = .02$.

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table 2. (Continued)

	Non-NSSI group (*n* = 156)	NSSI group (*n* = 77)	95% CI for Odds Ratio			
Domains	*n (%)*	*n (%)*	*B (SE)*	Lower	Odds Ratio	Uper
Quality of Parenting¶						
Constant			.40 (.27)			
Parental arguments	56 (35.9)	43 (55.8)	-.39 (.31)	.37	.67	1.25
Family tension at mealtime	36 (23.1)	39 (50.6)	- 1.08** (.32)	.18	.34	.64
Parental high expectations	86 (55.1)	53 (68.8)	-.54† (.31)	.32	.58	1.07
Parental Psychopathology††						
Constant			-.95 (.18)			
Parental major depression (before index age)	33 (21.2)	24 (31.2)	.49 (.32)	.88	1.64	3.06
Parental alcohol problems (before index age)	14 (9.0)	15 (19.5)	.87* (.40)	1.08	2.39	5.27
Childhood Abuse‡‡						
Constant			.61 (.39)			
Sexual abuse (before index age)	19 (12.2)	21 (27.3)	-.76* (.37)	.23	.47	.97
Physical abuse (before index age)	20 (12.8)	23 (29.9)	-.87* (36)	.21	.42	.85

¶*Note*. R^2 = .08 (Hosmer & Lemeshow), .09 (Cox & Snell), .13 (Nagelkerke). Model $\chi^2(3) = 22.75$, $p < .001$.

††*Note*. R^2 = .02 (Hosmer & Lemeshow), .03 (Cox & Snell), .04 (Nagelkerke). Model $\chi^2(2) = 7.31$, $p = .03$.

‡‡*Note*. R^2 = .05 (Hosmer & Lemeshow), .06 (Cox & Snell), .08 (Nagelkerke). Model $\chi^2(2) = 13.62$, $p < .001$.

†$p < .10$, *$p < .05$, **$p < .01$.

Table 3. Distribution of the life events in the 12 months preceding the index age between the non-NSSI and NSSI groups using binary logistic regression

	Non-NSSI group (n = 156)	NSSI group (n = 77)		95% CI for Odds Ratio		
Antecedent life events	*n (%)*	*n (%)*	*B (SE)*	Lower	Odds Ratio	Uper
Constant			2.7 (.73)			
Significant episode of physical illness	19 (12.2)	18 (23.4)	-.77† (.39)	.22	.46	.99
Bereavement (close relative/friend/partner)	23 (14.7)	22 (28.6)	-1.02** (.36)	.18	.36	.73
End of relationship with boyfriend/partner	18 (11.6)	17 (22.1)	-.69† (.39)	.23	.50	1.10
Physical abuse	12 (7.7)	17 (22.1)	-1.07* (.43)	.15	.35	.81
Anything else significant	25 (16.0)	25 (32.5)	-.71* (.35)	.25	.49	.98

Note. R^2 = .09 (Hosmer & Lemeshow), .11 (Cox & Snell), .16 (Nagelkerke). Model $\chi^2(5) = 27.87$, $p < .001$.

*$p < .10$, **$p < .05$, **$p < .01$.

Discussion

In this study, we examined the prevalence of NSSI among ED patients and the differences between groups with and without NSSI regarding disordered eating behaviour, and we evaluated an array of potential risk factors for NSSI in EDs.

The percentage of participants who reported NSSI (33%) is in accordance with previous studies that have stated that the prevalence rates of NSSI are around 30% in ED patients (Claes et al., 2012; Solano, Fernández-Aranda, Aitken, López, & Vallejo, 2005).

In line with previous studies (e.g., Wright et al., 2009), a lower index age was significantly associated with the presence of NSSI. It is possible that a younger age of onset of disordered eating may increase the risk of developing other maladaptive behaviours or may be related to common pathways in the development of NSSI. Most of the participants from the NSSI group also reported engaging in these behaviours after the development of EDs. This suggests that clinicians should anticipate and assess NSSI engagement throughout the course of treatment among ED patients. Moreover, early prevention and intervention programs may to assist in reducing these behaviours. More research is needed on the temporal relationship between eating problems and NSSI.

Higher rates of NSSI were reported among patients with binge-eating/purging EDs, supporting earlier research that has found these behaviours to be more frequent for patients with bulimia nervosa, anorexia nervosa purging type and binge-eating disorder than for those with anorexia nervosa restrictive type (e.g., Gonçalves et al., 2016b; Islam et al., 2015). According to evidence that suggests that a higher likely of NSSI engagement acts on binge-eating/purging thoughts or behaviours (Shingleton et al., 2013; Turner, Yiu, Claes, Muehlenkamp, & Chapman, 2016), in our study, patients engaging in NSSI reported more objective bulimic episodes and binge-eating behaviours. Therefore, patients with ED types that include binge and/or purge behaviours may face increased risk of NSSI. Although we found no significant differences between the non-NSSI and NSSI groups in regard to extreme weight-control behaviours, the ED group with NSSI also presented higher levels of weight and shape concerns, fear of gaining weight and feeling fat. These findings suggest that the presence of NSSI is probably associated with a more severe ED symptomatology.

Confirming the evidence that EDs and NSSI frequently co-occur with other health-risk behaviours (Duggan & Heath, 2014), substance abuse appeared to be a factor that possibly contributes to the common development of NSSI and EDs, as established by the model of Claes and Muehlenkamp (2014). Difficulties in emotion regulation and impulsivity may be related to the development of these specific behaviour patterns (Svirko & Hawton, 2007). To support this hypothesis, prior research suggests an

association between maladaptive behaviours (e.g., NSSI, disordered eating, substance misuse) and greater difficulties in emotion regulation (Buckholdt et al., 2015). Certain impulsivity dimension (e.g., negative/positive urgency, lack of premeditation, and lack of perseverance) also appear to be related to NSSI in ED patients (Claes, Islam, et al., 2015) and substance abuse (Petry, 2001). Addressing targets related to emotion regulation and impulsivity in EDs treatment may assist in reducing these behaviours.

In accordance with prior research (Cucchi et al., 2016), attempted suicide was significantly associated with EDs and NSSI. Negative self-evaluation also appeared to be a factor that increases the likelihood of engaging in self-injury. Previously, Claes, Vandereycken, Bijtebier, and Muehlenkamp (2010) found that participants with NSSI reported lower self-esteem and poorer self-concept than participants without NSSI, which probably facilitates engagement in forms of direct and indirect self-injury. Therefore, a careful suicide assessment and interventions that challenge negative assumptions and attitudes about the self may be useful.

Unlike prior evidence (Claes & Muehlenkamp, 2014), our results did not support the relationship between perfectionism and NSSI among eating disordered patients. Hoff and Muehlenkamp (2009) also found that participants with NSSI differed from non-NSSI participants only in selected aspects of perfectionism (e.g., concern over mistakes, parental criticism, and organization). It is possible that this personality trait may be a specific risk factor for EDs but not for NSSI, and further research is needed to clarify the role of the different components of perfectionism in the development of both problems.

In the domain of family weight and eating concerns, only the variable parents' low weight was statistically significant. Thus, other factors, such as family dieting, commonly associated with EDs (e.g., Fairburn et al., 1999; Hilbert et al., 2014), may be less determinant of the co-occurrence of EDs and NSSI. Family tension at mealtime and parental alcohol problems emerged, in our study, as possible risk factors for EDs and NSSI. However, according to a recent study (Depestele et al., 2017), most factors related to the quality of parenting (e.g., parental under-involvement) were not significant predictors of NSSI in ED patients. Thus, our results support the hypothesis that most family factors are nonspecific to EDs and NSSI because they may increase the risk for psychopathology development in general. However, family therapy and an attention to family relationships may be useful in the treatment of EDs and NSSI.

Our findings also support the evidence that experiencing childhood abuse and peer aggression can play a role in the aetiology of ED with NSSI (Claes & Muehlenkamp, 2014; Svirko & Hawton, 2007). Thus, clinicians should assess a history of abuse within EDs and NSSI patients and treatments may not only target both conditions, but the symptoms related to the trauma as well.

Finally, consistent with previous research (Liu et al., 2014), some negative antecedent life events, such as bereavement and physical abuse, were associated with engagement in NSSI by ED patients. Considering that both problems may constitute maladaptive coping strategies (Claes & Vandereycken, 2007), it is possible that stressful life events can increase distress, which can be regulated by EDs and/or NSSI behaviours (Claes & Muehlenkamp, 2014). These findings suggest that clinicians may consider integrating coping skills methods for dealing with stressful life events.

The current findings should, however, be interpreted within the context of the study limitations. One of them is the retrospective assessment, prone to recall biases. We tried to overcome this limitation by having clinical psychologists with clinical experience in evaluation and intervention conduct the interviews. Participants were a group of female eating disordered patients, and therefore, the findings may not be generalizable to the community. Further prospective studies, including both male and female normal controls, are necessary to confirm and extend the findings of this study. Despite these limitations, we evaluated a wide range of putative risk factors and severe behaviours as NSSI across a large sample of adolescents and adults with EDs using a well-established semi-structured interview.

To conclude, the present study indicates that ED participants who self-injure seem to exhibit more binge-eating/purging behaviours, a more severe eating pathology and a younger age at symptom onset. ED participants from the NSSI group have also been shown to be more exposed to putative risk factors concerning their mental health, environmental experiences, family weight and eating concerns, quality of parenting, parental psychopathology and childhood abuse. More specifically, negative self-evaluation, suicide attempts, lifetime substance use, peer aggression, parents' low weight, family tension at mealtime, parental alcohol problems, childhood abuse, and some negative antecedent life events may be potential risk factors for NSSI development within an eating disordered population. Moreover, our results support the precedence of the ED diagnosis over the NSSI development, confirming the premorbid nature of ED symptomatology in respect to the posterior NSSI development. Among ED patients, NSSI is one of the most relevant behaviours to be consider by clinicians, which in turn may be assisted by the fact that some of the putative risk factors found to be associated to the NSSI vulnerability can be rigorously assessed. Thus, we are now more able to contribute to the risk assessment and intervention in EDs and NSSI and support additional research on the interaction of psychosocial risk factors for both problems in order to expand upon existing research field and to explain the common comorbidity.

Acknowledgements

This research was partially supported by a Foundation for Science and Technology doctoral grant to the first author (SFRH/BD/116974/2016).

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CAPÍTULO 2

Eating disorders and non-suicidal self-injury: Structural equation modelling of a conceptual model[5]

Abstract

Evidence suggests several risk factors for both eating disorders (ED) and non-suicidal self-injury (NSSI), but the relationships between these factors are not well understood. Considering our previous work and a conceptual model, this cross-sectional study aimed to assess the relationships among distal and proximal factors for the presence of NSSI in ED. We assessed 245 ED patients with the Oxford Risk Factor Interview for ED. Structural equation modelling revealed that both distal and proximal factors were related to the presence of NSSI in ED, disclosing a mediating role of the proximal factors. Stressful life events mediated the relationship between childhood sexual abuse, peer aggression and both ED and NSSI. Childhood physical abuse was related to ED and NSSI via substance use, negative self-evaluation, and suicide attempts. Findings provided support for the conceptual model and highlight the possible mechanisms by which psychosocial factors may lead to ED and NSSI.

Keywords: aetiology, eating disorders, nonsuicidal self-injury, risk factors

[5] Vieira, A. I., Machado, B. C., Moreira, C. S., Machado, P. P. P., Brandão, I., Roma-Torres, A., & Gonçalves, S. (2018). Eating disorders and non-suicidal self-injury: Structural equation modelling of a conceptual model. *European Eating Disorders Review*, *26*(5), 431–437. https://doi.org/10.1002/erv.2611

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Introduction

Non-suicidal self-injury (NSSI, e.g., cutting, burning and biting), defined as intentional damage to one's own body without lethal intent (Nock, 2009), is frequently observed among eating disorder (ED) patients, with rates ranging from 14% to 68% (Solano, Fernández-Aranda, Aitken, López, & Vallejo, 2005; Svirko & Hawton, 2007).

Given the comorbidity, evidence has suggested a variety of common psychosocial factors that place individuals at risk for both ED and NSSI (Muehlenkamp, Claes, Smits, Peat, & Vandereycken, 2011; Svirko & Hawton, 2007). In our previous study (Vieira et al., 2017), we sought to understand the psychosocial factors that specifically pose risks for NSSI in ED; we determined whether putative risk factors assessed by the Oxford Risk Factor Interview for ED (RFI; Fairburn, Welch, Doll, Davies, & O'Connor, 1997) were associated with a higher likelihood of NSSI engagement among ED patients. The findings suggested that negative self-evaluation, suicide attempts, substance use, peer aggression, low parental weight, family tension at mealtimes, parental alcohol problems, childhood abuse, and certain stressful life events were more common among patients with co-occurring ED and NSSI than among ED patients without NSSI. However, it remains unclear which of these factors can specifically explain or mediate the relationship between other factors and NSSI among ED patients, representing possible mechanisms through which psychosocial factors influence risk for both conditions.

In that sense, the conceptual model developed by Claes and Muehlenkamp (2014), demonstrates the relationships between distal and proximal risk factors shared by ED and NSSI and represents a possible aetiological pattern for the development of both ED and NSSI. In this model, distal factors include individual risk factors, such as temperament and personality traits, and social risk factors, such as family environment, traumatic experiences (e.g., childhood abuse and peer bullying) and cultural pressures. Proximal factors include specific risk factors, such as emotion dysregulation, cognitive distortions (e.g., low self-esteem), low body regard, dissociation, peer influence and psychiatric disorders (e.g., mood/anxiety disorders and substance use disorders). According to the model, it is expected that relationships among the risk factors occur among the distal factors and across the distal and proximal factors, increasing the risk for developing NSSI, ED, or their co-occurrence. The authors also posit that these factors may interplay with stressful life events to increase internal distress, which may be regulated by NSSI and/or ED. This effect can, in turn, influence or reinforce proximal risk factors. Such mutual interplay may contribute to the cyclical and repetitive pattern of ED and NSSI behaviours (Claes & Muehlenkamp, 2014).

Although the Claes and Muehlenkamp model (2014) is well-established in the literature, and previous studies have examined certain distal and proximal risk factors (e.g., Anderson, Smith, Mason, & Crowther, 2017; Muehlenkamp et al., 2011; Vieira et al., 2017), scholars need to explore the relationships among those factors and their potential intermediary processes to achieve a greater understanding of direct and indirect pathways for heightened risk of ED and NSSI overlap. Knowledge of how these factors relate can help clinicians better understand the lifelong developmental trajectory of self-harm behaviours and identify evaluation and intervention targets.

Thus, the purpose of this study was to specify and test a model of relationships between distal and proximal factors. Informed by the findings of our previous work (Vieira et al., 2017) and the conceptual model of the risk factors for both ED and NSSI developed by Claes and Muehlenkamp (2014), our model included a pattern of relationships between distal factors (low parental weight, family tension at mealtimes, parental alcohol problems, peer aggression and childhood abuse), proximal factors (negative self-evaluation, suicide attempts as a symptom of severe depression and substance use) and stressful life events (e.g., bereavement), within a sample of ED patients with and without NSSI. Considering the empirically based potential risk factors for NSSI in ED previously observed (Vieira et al., 2017), the present study may expand research, examining the possible mediating role of proximal factors in the relation between distal factors and the presence of NSSI in ED. In addition, this study may contribute to the development of aetiological models of ED and NSSI, working through the recognised conceptual model developed by Claes and Muehlenkamp (2014).

Method

Participants

The sample consisted of 245 female ED outpatients with a mean age of 22.12 (*SD* = 6.31). Ninety-six (39.2%) participants met the criteria for restricting-type ED (anorexia nervosa restricting type), while 149 (60.8%) were diagnosed with binge-eating/purging-type ED (20.8% with anorexia binge-eating/purging type, 38.8% with bulimia nervosa, and 1.2% with binge eating disorder). The mean age of onset of the first ED symptom was 15.58 (*SD* = 3.80) and the mean body mass index (BMI) was 17.73 (*SD* = 4.15).

Measures

Eating Disorders Examination (Fairburn, Cooper, & O'Connor, 2014)

The EDE is a semi-structured interview that assesses the frequency and severity of ED features over the past 28 days, particularly restraint, eating concern and attitudes towards shape and weight. In this study, we only used the diagnostic items to assess ED diagnoses and psychopathology.

Oxford Risk Factor Interview for ED (Fairburn et al., 1997)

The RFI is a semi-structured interview that examines the exposure to putative risk factors for ED. The interview establishes the index age, defined as the age at which the first significant and persistent eating pathology behaviours began (Fairburn et al., 1997). The putative risk factors were categorised into seven domains: Subject's Mental Health (e.g., negative self-evaluation, substance use and suicide attempts as a symptom of severe depression); Subject's Physical Health; Other Environmental Experiences (e.g., peer aggression); Family Weight and Eating Concerns (e.g., low parental weight); Quality of Parenting (e.g., family tension at mealtimes); Parental Psychopathology (e.g., parental alcohol problems); and Childhood Abuse (sexual and physical abuse). For example, to assess the negative self-evaluation, participants were asked, "In general, as a child or adolescent, how did you feel about yourself compared to other people? Did you feel that you were the same, better or worse than the others?" (Table S1). In the present study, each putative risk factor was dichotomised (presence vs absence) for the statistical analyses.

The interview also assesses NSSI. Participants were asked, "Have you ever tried to hurt yourself without the intention of committing suicide?" A subset of factors that represent exposure to life events in the 12 months preceding the index age (e.g., physical illness, bereavement, end of relationship with partner) was considered in RFI. In the present study, reliability analyses of the risk domains were conducted using Cronbach's alphas with polychoric correlation, through the R package semTools (semTools Contributors, 2016), as well as composite reliability (CR) and average variance extracted (AVE; Fornell & Larcker, 1981). Cronbach's alpha for the childhood abuse domain (sexual abuse and physical abuse) was .73 (CR = .73; AVE = .57) and Cronbach's alpha for the subject's mental health domain (substance use, negative self-evaluation, suicide attempts and NSSI) was .74 (CR = .78, AVE = .49.).

Procedure

The study was reviewed and approved by the institutional review board of the Research Centre of Psychology (University of Minho). Participants were recruited through referrals by clinicians at public psychiatric services that specialised in the treatment of ED. Participants were informed about the research aims and data confidentiality was assured. Adult participants provided written informed consent and for minors, the written informed consent was provided by their parents. Interviews were administered by clinical psychologists trained in the use of the interview procedure.

Statistical analyses

The distal and proximal risk factors were modelled using structural equation modelling (SEM). The estimates of the model were calculated using lavaan (Rosseel, 2012) and semTools packages (semTools contributors, 2016) in R statistical environment (RStudio, version 3.4.3, R Development Core Team, 2017). Since all variables in this model were dichotomous, the mean and variance adjusted weighted least square (WLSMV) estimation was selected. In the simple mediation models, the bootstrapping procedure was used to compute the standard errors of the indirect effects (Hoyle, 2012; Shrout & Bolger, 2002). In these cases, the diagonally weighted least square estimator (DWLS) was used. Following the recommendations of Hu and Bentler (1999), we used several fit indices to evaluate model fit, including the Chi-Square statistic (χ^2), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and the Weighted Root-Mean-Square Residual (WRMR). Good model fit is indicated by a non-significant Chi-Square value, CFI values greater than .95, TLI values greater than .90, RMSEA values less than .05 and WRMR values less than 1.0. The alpha for the analysis was set to .05.

Results

Seventy-seven participants (33%) reported a history of NSSI. Table 1 shows the correlations between the study variables. Distal factors and proximal factors were all significantly associated with the presence of NSSI in ED.

Table 1. Correlations among all of the main variables

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Low parental weight	1.00										
2. Family tension at mealtimes	.46***	1.00									
3. Parental alcohol problems	.31†	.31*	1.00								
4. Sexual abuse	.34*	.38***	.37**	1.00							
5. Physical abuse	-.03	.40***	.06	.58***	1.00						
6. Peer aggression	.02	.39**	.20	.21	.22	1.00					
7. Negative self-evaluation	.04	.30**	.07	.15	.29*	.28*	1.00				
8. Suicide attempts	.15	.16	.26	.47***	.55***	.06	.20	1.00			
9. Substance use	.27	.37**	.02	.30*	.26†	.24	.26·	.31†	1.00		
10. Stressful events	.02	.18†	.12	.47***	.26*	.31*	.26*	.36*	.30*	1.00	
11. Presence of NSSI	.37**	.48***	.29*	.36***	.38***	.37***	.45***	.69***	.60***	.41***	1.00

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Path analysis model for the presence/absence of NSSI in ED

The first step of the model specification was the choice of factors. The factors were selected according to the conceptual model developed by Claes and Muehlenkamp (2014) and the results obtained in our previous study (Vieira et al., 2017), which suggested that negative self-evaluation, suicide attempts, lifetime substance use, peer aggression, low parental weight, family tension at mealtimes, parental alcohol problems, childhood abuse, and certain negative antecedent life events may be potential risk factors for NSSI engagement among ED patients. The choice of factors for the model was also supported by the correlations between all the main variables (Table 1).

We have allocated our variables to distal and proximal factors, as established by Claes and Muehlenkamp (2014). Distal factors include low parental weight, family tension at mealtimes, parental alcohol problems, peer aggression and childhood abuse; proximal factors include negative self-evaluation, suicide attempts and substance use. According to the model, stressful life events that occurred in the 12 months preceding the onset of the ED (e.g., major house moves, maltreatment, bereavement) were also included in the path model.

Distal and proximal factors that were significantly correlated with the presence of NSSI were modelled using SEM, specifically a path analysis. The model (Figure 1) fit the data well, with chi-square = 34.46, *p* value = .60, *df* = 37, RMSEA < .01 with 90% confidence interval (CI) [.00, .04], CFI = 1.0, TLI = 1.0, and WRMR = .70.

Although the direct paths among the distal factors were significant, there was also evidence of indirect relationships from distal factors to NSSI through proximal factors, such as stressful life events, negative self-evaluation, substance use, and suicide attempts.

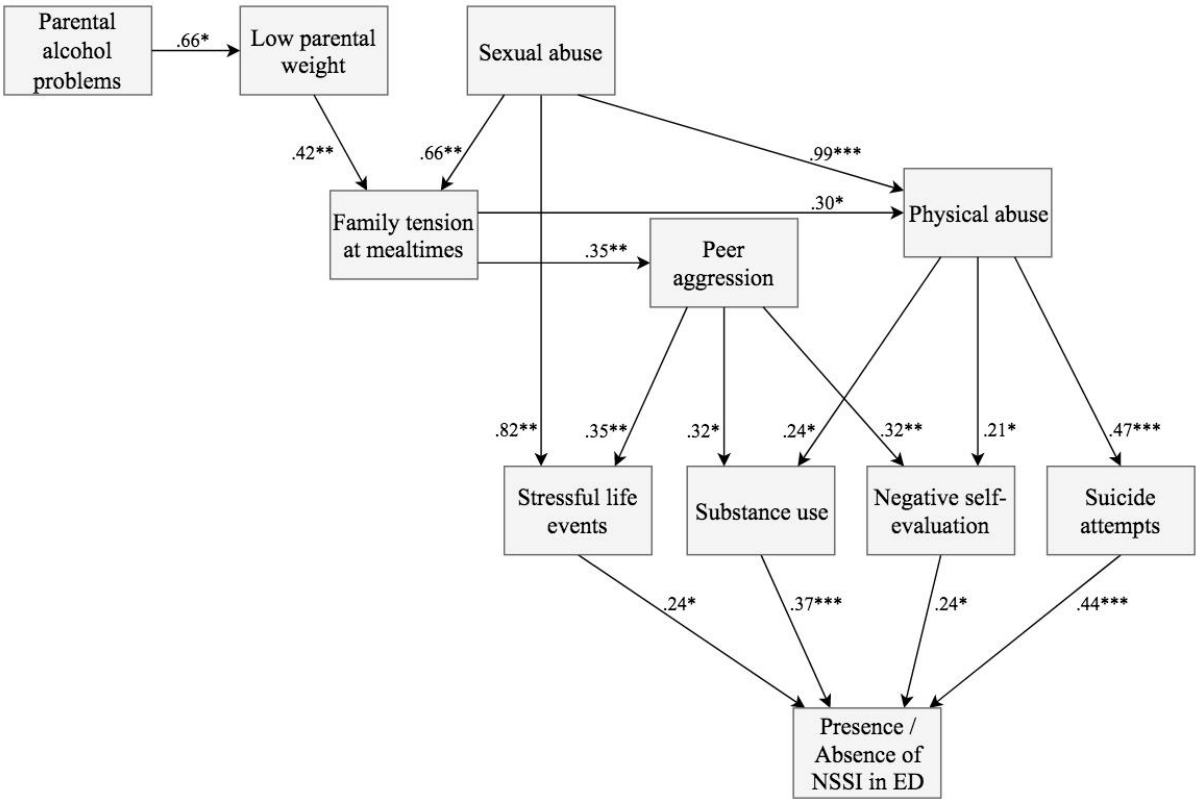


Figure 1. Path diagram for the path analysis modelling of the presence/absence of NSSI in ED. Each rectangle denotes a dummy variable encoding the absence (0) or presence (1) of the factor. The estimated unstandardised coefficients are shown together with the corresponding significance level. All lines represent significant relationships. All endogenous variables are associated with errors which, for sake of simplicity, are not shown in this figure. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Mediating role of proximal factors

Table 2 summarises the potential mediator effects included in the model. We tested the indirect effects using a bootstrap estimation approach (Hoyle, 2012; Shrout & Bolger, 2002). The results indicated that the experience of childhood sexual abuse was associated with the presence of two or more stressful life events, which in turn were associated with the presence of NSSI in ED, unstandardised effect = .34, 95% CI [.12, .73]. The indirect effects of childhood physical abuse on NSSI via substance use (unstandardised effect = .28, 95% CI [.03, .59]), negative self-evaluation (unstandardised effect = .22, 95% CI [.05, .49]) and suicide attempts (unstandardised effect = .64, 95% CI [.22, 1.10]) were statistically significant. The indirect effects of peer aggression on NSSI through negative self-evaluation (unstandardised effect = .25, 95% CI [.02, .58]) and stressful life events (unstandardised effect = .24, 95% CI [.02, .77]) were also statistically significant.

Table 2. Simple mediator effects

Mediator	Simple path	Indirect effect [95% bootstrap CI]		Direct effect	Total effect
Negative self-evaluation	Physical abuse → NSSI	.22*	[.05, .49]	.43	.66*
	Peer aggression → NSSI	.25*	[.02, .58]	.42	.67*
Suicide attempts	Physical abuse → NSSI	.64*	[.22, 1.10]	.02	.66*
Substance use	Physical abuse → NSSI	.28*	[.03, .59]	.38	.66*
	Peer aggression → NSSI[a]	.30	[-.04, .67]	.36	.67*
Stressful life events	Sexual abuse → NSSI	.34*	[.12, .73]	.32	.65*
	Peer aggression → NSSI	.24*	[.02, .77]	.48	.73*

Note. The significance was assessed through the 95% bootstrap confidence interval (CI): intervals that do not include zero indicate significant values. The total effect is the sum of the direct and indirect effects. Testing multiple mediator models that include all mediator variables, other indirect effects remain significant.

[a]In a multiple mediator model, this effect is non-significant after controlling negative self-evaluation and stressful life events (95% CI [−.15, .62]).

*$p < .05$.

Discussion

This study aimed to specify and test a model of relationships between distal and proximal factors associated with NSSI among ED patients based on the conceptual model of Claes and Muehlenkamp (2014) and on the putative risk factors for NSSI in ED previously observed (cf. Vieira et al., 2017). First, we confirmed the overall rationale of the model of Claes and Muehlenkamp (2014), because the assessed potential risk factors were distal and proximal in nature, confirming the role of stressful life events in the relationship between them. Second, all of the factors in our proposed model were aggregated in the clusters of the conceptual model of Claes and Muehlenkamp (2014) and represented family environment and traumatic experiences (distal factors), and negative self-evaluation and psychiatric disorders (proximal factors). Moreover, all of the factors were exactly the ones that were more common among patients with co-occurring EDs and NSSI than among patients without NSSI.

According to the conceptual model of Claes and Muehlenkamp (2014), our results support the role of the family environment. Specifically, parental alcohol problems were associated with low parental weight which, in turn, was associated with family tension at mealtimes. It is possible that family problems may lead to the tension in the family, especially in the moments that surround family meals. Conversely,

it seems that parents' concerns regarding eating and weight may influence children's eating practices (Francis & Birch, 2005).

Regarding the relationship between family factors and the experience of traumatic experiences, including peer aggression, we can hypothesise about the coexistence of both problems arising in early life and potentially predisposing participants to emotional dysregulation and difficulty developing coping skills to address adverse situations.

As proposed by Claes and Muehlenkamp (2014), the experiences of physical and sexual abuse seem to act as distal risk factors for NSSI in ED, which, in turn, are mediated by proximal risk factors. Specifically, the path from physical abuse to NSSI was mediated by negative self-evaluation. In line with this finding, recent evidence showed that young people with experiences of physical abuse reported lower self-esteem than non-abused individuals (Nilsson, Nordås, Priebe, & Svedin, 2017). Moreover, childhood abuse may predispose to self-injury because the victims may come to blame their bodies for the assaults and believe that physical punishment is deserved (Walsh, 2006). Suicide attempts, as a symptom of severe depression, also seem to mediate the relationship between physical abuse and NSSI in ED, supporting previous results showing an association between childhood abuse and suicide attempts (Harford, Yi, & Grant, 2014) and NSSI (Claes & Vandereycken, 2007). This finding probably suggests that severe depressive symptoms are indirectly related to physical abuse and NSSI in ED. In addition, we found an indirect effect of physical abuse on NSSI through substance use. These findings are consistent with earlier research that has shown that ED and NSSI patients exhibit more impulsive behaviours, namely, substance-abuse disorders, compared to the ED patients without NSSI (Islam et al., 2015).

Our results also support the presence of stressful life events as a factor that may explain the increase in internal distress and the urge to self-regulate through ED symptomatology and/or NSSI. The individuals may use these behaviours as an automatic-negative reinforcement strategy to address adverse situations or negative affective states (Nock & Prinstein, 2004), especially in the presence of early adverse experiences (e.g., sexual abuse) that possibly increase the vulnerability to maladaptive coping. Considering our possible explanation of the relationship between distal and proximal factors, traumatic experiences seemed to be reinforced, with peer aggression also emerging as a distal risk factor for NSSI in ED via negative self-evaluation and stressful life events.

By combining the proposed conceptual model with empirically based risk factors, the present study offered an important expansion of literature because it examined the direct and indirect associations between potential distal and proximal risk factors for NSSI in ED, which revealed possible mediating mechanisms and explained theoretically interesting relations. Further, this study assessed several of the

factors proposed by the Claes and Muehlenkamp model (2014) within a large sample of ED patients using the RFI.

There are several limitations to consider. Participants were all female ED patients and our conclusions may not be representative for NSSI in the general population or for NSSI in males. The cross-sectional design of this study does not allow firm conclusions about causality. Our findings are derived from a sample assessed in a previous study (Vieira et al., 2017). Together with the use of cross-sectional data, this underscores the need for future studies that replicate the study findings. Another limitation is the retrospective assessment, which is prone to recall biases. Prospective longitudinal research is needed to clarify the temporal order of the variables and to examine the features of ED in different subgroups of individuals who self-injure. This study only assessed the presence/absence of NSSI and additional information about parts injured, frequency, related attitudes, functionality, and affective antecedents and consequences would be of interest.

In summary, the current study supports the Claes and Muehlenkamp model (2014) and expands our previous work (Vieira et al., 2017). Specifically, our findings show the need for mental health professionals to assess NSSI among ED patients and to explore the history of childhood abuse simultaneously with negative self-evaluation, other self-harm behaviours such as substance use and suicide attempts, and antecedent stressful life events. Interventions that acknowledge the multifactorial nature of ED and NSSI and include efforts to improve self-esteem and emotion regulation adaptive strategies may prevent subsequent development and maintenance of ED and NSSI.

Acknowledgement

This research was partially supported by a Foundation for Science and Technology doctoral grant to the first author (SFRH/BD/116974/2016).

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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CAPÍTULO 3

Psychometric properties of the Portuguese version of the Invalidating Childhood Environment Scale[6]

Abstract

Purpose The current study aimed to examine the psychometric properties of the Portuguese version of the Invalidating Childhood Environment Scale (ICES) in a non-clinical and clinical sample of eating disorder (ED) patients. This study also investigated the between-sample differences regarding invalidating parental behaviours and family styles and explored the associations between invalidating childhood environments and eating pathology. **Methods** A sample of 410 high school and college students and 101 patients with a diagnosis of ED completed self-report measures. Principal component analyses and confirmatory factor analyses were conducted to examine the factor structure of the ICES. The internal consistency and the between-sample differences and associations between invalidating childhood environments and eating pathology were also tested. **Results** Principal component analyses and confirmatory factor analyses indicated a two-factor solution for each parent. The ICES demonstrated high internal consistency and was able to differentiate between non-clinical and clinical samples. The perception of parental invalidation was higher in ED patients, and the clinical sample presented higher scores in the chaotic and perfect family styles and lower scores in the validating family style, in comparison with the non-clinical sample. Both maternal invalidation and invalidating styles were significantly associated with a higher ED symptomatology. **Conclusions** The Portuguese version of the ICES revealed adequate psychometric properties. Considering the relationship between invalidation in family and eating pathology, the ICES may be useful in clinical practice, especially among ED patients.

Keywords: invalidating environments, eating disorder, reliability, validity, psychometrics

[6] Vieira, A. I., Gonçalves, M., Machado, B. C., Rodrigues, T., Machado, P. P. P., Brandão, I., Timóteo, S., Nunes, P., & Gonçalves, S. (2018). Psychometric properties of the Portuguese version of the Invalidating Childhood Environment Scale. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, *25*(1), 195–203. https://doi.org/10.1007/s40519-018-0550-x

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Introduction

Childhood experience of an invalidating family environment has received significant research attention with regard to its association with a variety of psychopathologies, including borderline personality disorder (BPD) [1], depressive symptomatology [2], and eating disorders (ED) [3]. Linehan [4] posits that the invalidating environment, in which the communication of emotions is ignored or punished, puts children at risk of developing maladaptive behaviours, especially in the presence of a biological predisposition to emotional vulnerability. It is possible that perceived invalidation of internal experiences results in the development of emotional dysregulation and behaviours, such as substance use, cutting, binge eating, and purging, which in turn may be used as mechanisms to regulate or tolerate emotional distress [5].

The growing research concerning invalidating environments and the dialectical behaviour therapy (DBT) model [4] has been supported by development of the Invalidating Childhood Environment Scale (ICES) [6], a self-report measure that retrospectively assesses the exposure to invalidation in the family. The ICES consists of 18 items based on the descriptions proposed by Linehan [4]. Fourteen items assess invalidating parental behaviours (e.g., ignore emotions, over-react to emotions, overestimate problem solving), while the other four items reflect three types of invalidating environment ("typical", "perfect" and "chaotic") and one type of validating environment. The original version of the scale [6] demonstrated higher levels of internal consistency in the eating-disordered sample (paternal invalidation alpha = .796; maternal invalidation alpha = .772) in comparison with the non-clinical sample (paternal invalidation alpha = .587; maternal invalidation alpha = .664).

To the best of our knowledge, eight studies have used the ICES [1, 3, 6-11]. So far, two previous studies have established the reliability and validity of the ICES. The validation of the French version, with college students, revealed good psychometric qualities. Factor analyses indicated a two-dimensional structure ("personal distress" and "inability of empathy"), and a good convergent validity was demonstrated by the significant correlations between the ICES scores and a measure of depressive symptoms [7]. Another study carried out with a group of American college students also showed that the ICES had high reliability (maternal invalidation alpha = .90; paternal invalidation alpha = .88) and adequate concurrent validity by correlating positively with BPD symptoms. Regarding factor structure, the authors found poor fit for the full 14-item version of the invalidation scales. However, a 9-item version revealed improved fit, which suggested the possible exclusion of five items [10].

The ICES has been used to evaluate the relationship between invalidating family environment and eating symptomatology. The authors of the original ICES found that bulimic behaviours were positively

associated with perceived paternal and maternal invalidation among the non-clinical sample. Within the eating-disordered sample, only the maternal invalidation was associated with bulimic behaviours. In addition, distress intolerance partially mediated the relationship between perceived experience of an invalidating father and the development of an ED [6]. In another study, individuals with bulimia nervosa reported the highest level of paternal invalidation. In particular, paternal invalidation was related to vomiting, and a typical family in which the focus is success, achievement and control of one's emotions also related to exercising excessively [3].

Although demonstrating promising results, additional research is warranted to investigate the psychometric properties of the ICES in other countries, such as Portugal. Introducing an assessment tool into Portuguese research and clinical practice would contribute to the advancement of knowledge regarding the impact of invalidating childhood environments. Moreover, to the best of our knowledge, the factor structure of the scale has not yet been examined with a clinical sample.

Thus, the current study aimed to (a) examine the psychometric properties of the Portuguese version of the ICES, including the principal component analysis in a non-clinical sample, the confirmatory factor analysis in a clinical sample of ED patients, and the internal consistency for the both samples; (b) investigate the between-sample differences regarding invalidating parental behaviours and family styles; and (c) explore the associations between invalidating childhood environments and eating pathology. Consistent with previous literature, it was hypothesized that the Portuguese version of the ICES, when applied to non-clinical and clinical samples, has adequate psychometric properties. Further predictions were that there would be significant differences between non-clinical and clinical samples regarding ICES dimensions and eating attitudes and behaviours and that perceived parental invalidation would also be positively associated with eating-disordered attitudes and behaviours, especially bulimic symptoms.

Methods

Participants

A total of 511 participants completed the current study. These participants were drawn from non-clinical (n = 410) and clinical (n = 101) samples. Two groups represented the non-clinical sample: one group of high school students (n = 49) and another of college students (n = 361). The non-clinical sample was recruited from three education institutions in the north of Portugal: a public high school, a public university and a private university. The clinical sample consisted of 101 ED patients. Participants were recruited in a specialized ED treatment setting.

Measures

The Invalidating Childhood Environment Scale (ICES)

The ICES [6] is a self-report measure that assesses childhood invalidation. It contains 14 items that examine invalidating maternal and paternal behaviours: ignore thoughts and judgements; ignore emotions; negate thoughts and judgements; negate emotions; overreact to emotions; overestimate problem solving; overreact to thoughts and judgements; and oversimplify problems [4]. Participants are asked to rate their experience up to the age of 18 years, and each item is rated on a five-point scale (*never* to *all the time*) for each parent. The mean score for the 14 items for each parent indicates the levels of perceived parental invalidation. Higher scores reflect a greater perception of emotional invalidation by one's father and mother. The final four items address family style during childhood. Three of these are styles of an invalidating environment: "chaotic" (parents are often unavailable, and they may have substance use problems, mental health disorders or financial difficulties); "typical" (the focus of family is controlling one's emotions, achievement and success); and "perfect" (the focus is on hiding feelings and getting on with it). One of these items include a description of an emotionally supportive environment ("validating"). The items were rated on a five-point scale (*not like my family* to *like my family all of the time*). The ICES provides a single score for each of the four family types. Higher scores indicate greater levels of a validating environment or of the three styles of invalidating environment. In the present study, a validating family (coded as one) represents a higher score in the validating family style, whereas an invalidating family (coded as zero) represents a higher score in one or more of the three styles of an invalidating environment ("typical", "perfect" and "chaotic").

Eating Disorder-15 (ED-15)

The ED-15 [12] is a brief self-report measure that assesses ED features over the preceding week. The ED-15 includes 10 items divided into two attitudinal subscales: weight and shape concerns, and eating concerns. The total attitudinal score is the mean of the scores on all 10 items. Higher scores indicate greater levels of eating pathology. The measure also includes five behavioural items (objective binges, vomiting episodes, laxative use days, exercise days and restriction days). The original measure revealed strong internal consistency and test-retest reliability [12]. In the present study, Cronbach's alpha for the ED-15 overall attitudinal score (non-clinical sample alpha = .912; clinical sample alpha = .932) also suggested high internal consistency.

Procedure

This study was authorized and approved by the University of Minho Ethics Commission – Subcommittee of Ethics for Social and Human Sciences and the Ethics Committee São João Hospital Centre/Faculty of Medicine, University of Porto. In the non-clinical sample, all students received an invitation to participate in the study, and after obtaining their informed consent (including legal guardians), the participants completed the test battery in their classroom.

Data for clinical participants were collected as part of psychological assessment of ED patients in treatment. Participants were informed about the research aims and data confidentiality was assured. Legal guardians and adults provided written informed consent before participating, and adolescents under 18 years of age provided assent. All participants were diagnosed by psychiatrists according to Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria [13].

The ICES was translated and adapted from the original English version [6]. The original version of the measure was translated by the authors of this study; a fluent bilingual (English and Portuguese) psychologist then translated the Portuguese version back into English. We compared the versions and identified discrepancies were analysed to clarify the Portuguese ICES.

Statistical analyses

Principal component analyses, using direct oblimin rotation, were performed on the non-clinical sample to examine the factor structure of the 14 items of the ICES that address maternal and paternal behaviours. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted to determine the adequacy of the principal component analyses. Concerning the paternal items, the number of factors to retain was indicated by eigenvalues greater than one [14]. With respect to the maternal items, data were forced into a two-factor solution, based on the two-factor structure found in the paternal items and in a previous study [7]; items with factor loadings > .30 were chosen [15].

Confirmatory factor analyses, using a maximum likelihood estimation method, for the ICES items were conducted on the clinical sample to evaluate the fit of the data to the factor models. The relevant fit statistics were tested (according to Bentler and Bonett [16]; Hu and Bentler [17]). Because the chi-squared test of absolute model fit is sensitive to sample size and is affected by the distribution of variables, we also turned to other fit statistics, such as the Incremental Fit Index (IFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). Criteria for a good fit model were IFI, TLI and CFI > .90 and RMSEA < .06 (< .07 acceptable) [18, 19].

The ICES internal consistency was examined in both samples by computing Cronbach's alphas. To determine between-group differences, ICES and ED-15 scores for the non-clinical and clinical samples were compared using the independent samples *t* test (*t*). Chi-squared (χ^2) tests were conducted to evaluate the associations between the sample (non-clinical/clinical), the family type (validating family/invalidating family – the latter includes typical, perfect or chaotic family) and the ED type (restricting-type ED, binge-eating/purging type ED). To investigate associations between the ICES and the ED-15 among the clinical sample, we performed Spearman correlation coefficients (r_s). The relevant assumptions of these statistical analyses were tested. Confirmatory factor analyses were conducted using IBM® SPSS® Amos™ 24.0, and other analyses were conducted using IBM® SPSS® Statistics 24.0. *P* values < .05 were considered significant.

Results

Table 1 presents the demographic and clinical characteristics of the non-clinical and clinical samples. In the non-clinical sample, a total of 410 participants with a mean age of 19.99 years (*SD* = 3.19) responded to our measures. Participants were mostly female (*n* = 345, 84.1%) and mean body mass index (BMI) was 21.58 (*SD* = 2.77).

In the clinical sample, of the 101 ED patients, 59 participants (58.4%) were diagnosed with restricting-type ED (includes anorexia nervosa restricting type) and 42 (41.6%) were diagnosed with binge-eating/purging type ED (includes anorexia binge-eating/purging type, bulimia nervosa, and binge ED). Participants were mostly female (*n* = 93, 92.1%), ages ranged from 14 to 55 years (*M* = 26.21 years, *SD* = 10.66 years) and mean BMI was 19.20 (*SD* = 4.49).

Table1. Demographic characteristics of the non-clinical and clinical samples

	Non-clinical sample (*n* = 410)	Clinical sample (*n* = 101)	
		Restricting-type ED (*n* = 59)	Binge eating/purging type ED (*n* = 42)
	M (*SD*)	*M* (*SD*)	*M* (*SD*)
Age	19.99 (3.19)	24.61 (10.72)	28.38 (10.31)
BMI	21.58 (2.77)	16.85 (2.15)	22.61 (4.81)
	n (%)	*n* (%)	*n* (%)
Gender (% Women)	345 (84.1)	55 (93.2)	4 (6.8)

Principal component analyses

The factor structure of the ICES was examined using the non-clinical sample (n = 410). With respect to the items that address paternal behaviours, the principal component analysis extracted two factors explaining 48.13% of the variance. The first factor included nine items: 1, 3, 4, 6, 7, 9, 10, 11, and 13, and the second factor included five items: 2, 5, 8, 12, and 14. For these data, the KMO was .91 and Barlett's Spherical Test was significant (p < .001). Therefore, principal component analysis was appropriate. Concerning the items that address maternal behaviours, the same two factors were extracted explaining 44.97% of the variance. The KMO was .90 and Barlett's Spherical Test was significant (p < .001). Thus, principal component analysis was also appropriate. The 14 items that compose these two factors and the factor loadings are presented in Table 2.

Confirmatory factor analyses

The data from the clinical sample (n = 101) were used in the confirmatory factor analyses. Initially, a one-factor solution was fitted; however, both the paternal (14-item) and maternal (14-item) invalidation scales had poor fit – Paternal invalidation scale: IFI = .753, TLI = .700, CFI = .746 and RMSEA = .132; Maternal invalidation scale: IFI = .774, TLI = .726, CFI = .768 and RMSEA = .132. This suggested that more than one factor underlies the ICES paternal and maternal items, which is consistent with a previous study [7] and findings of the principal component analyses with the non-clinical sample. Therefore, two-factor models (Factor I includes items 1, 3, 4, 6, 7, 9, 10, 11, and 13; Factor II includes items 2, 5, 8, 12, and 14) were fitted for father and mother. As seen in Table 3, this solution showed an improved fit – Father: IFI = .970, TLI = .962, CFI = .969 and RMSEA = .047; Mother: IFI = .955, TLI = .935, CFI = .953 and RMSEA = .065.

Table 2. Principal component analysis of the ICES (n = 410)

Items	Father		Mother	
	Factor I	Factor II	Factor I	Factor II
1. My parents would become angry if I disagreed with them.	.415		.549	
2. When I was anxious, my parents ignored this.		-.774		-.738
3. If I was happy, my parents would be sarcastic and say things like: "What are you smiling at?"	.543		.603	
4. If I was upset, my parents said things like: "I'll give you something to really cry about!"	.572		.556	
5. My parents made me feel OK if I told them I didn't understand something difficult the first time.		-.634		-.581
6. If I was pleased because I had done well at school, my parents would say things like: "Don't get too confident".	.631		.620	
7. If I said I couldn't do something, my parents would say things like: "You're being difficult on purpose".	.740		.708	
8. My parents would understand and help me if I couldn't do something straight away.		-.816		-.736
9. My parents used to say things like: "Talking about worries just makes them worse".	.486		.301	
10. If I couldn't do something however hard I tried, my parents told me I was lazy.	.582		.508	
11. My parents would explode with anger if I made decisions without asking them first.	.625		.649	
12. When I was miserable, my parents asked me what was upsetting me, so that they could help me.		-.876		-.850
13. If I couldn't solve a problem, my parents would say things like: "Don't be so stupid — even an idiot could do that!"	.679		.609	
14. When I talked about my plans for the future, my parents listened to me and encouraged me.		-.723		-.738

Note. Only factor loadings > 0.3 are presented

Table 3. Model fit statistics for confirmatory factor analyses of the ICES (n = 101)

Model	χ^2 (df)	χ^2/df	IFI	TLI	CFI	RMSEA
Paternal invalidation: One factor	210.591 (77)***	2.735	.753	.700	.746	.132
Maternal invalidation: One factor	212.038 (77)***	2.754	.774	.726	.768	.132
Paternal invalidation: Two factor	90.315 (74)†	1.220	.970	.962	.969	.047
Maternal invalidation: Two factor	93.581 (66)*	1.418	.955	.935	.953	.065

Note. IFI incremental fit index, *TLI* tucker-lewis index, *CFI* comparative fit index, *RMSEA* root mean square error of approximation.

†p < .10, *p < .05, ***p < .001.

Internal consistency

Cronbach's alphas of the ICES factors were calculated in both non-clinical and clinical samples for each parent. As show in Table 4, reliability analyses showed good internal consistency for both the non-clinical sample (Father: Factor I alpha = .796 and Factor II alpha = .845; Mother: Factor I alpha = .780 and Factor II alpha = .792) and the clinical sample (Father: Factor I alpha = .873 and Factor II alpha = .797; Mother: Factor I alpha = .864 and Factor II alpha = .790).

Cronbach's alphas of the original ICES scales were also calculated. In the non-clinical sample, paternal invalidation and maternal invalidation scales had good levels of internal consistency (paternal invalidation alpha = .859; maternal invalidation alpha = .845). In the clinical sample, reliability analyses also showed good internal consistency for both the paternal invalidation (Cronbach's alpha = .862) and the maternal invalidation (Cronbach's alpha = .885).

Table 4. Internal consistency of the ICES in both non-clinical and clinical samples

	Non-clinical sample (n = 410) Cronbach's alpha	Clinical sample (n = 101) Cronbach's alpha
ICES factors		
Father - Factor I	.796	.873
Father - Factor II	.845	.797
Mother - Factor I	.780	.864
Mother - Factor II	.792	.790
Original ICES scales		
Paternal invalidation	.859	.845
Maternal invalidation	.862	.885

Differences between samples in invalidating childhood environments

Table 5 presents mean scores on the ICES and ED-15 for the non-clinical and clinical samples. There were significant differences between the samples with respect to the ICES scores. Participants from the clinical sample perceived higher paternal [$t(509) = 2.94$, $p = .003$] and maternal invalidation [$t(509) = 2.55$, $p = .011$] than the non-clinical sample. ED participants had significantly higher scores in the chaotic family [$t(506) = 6.31$, $p < .001$] and in the perfect family style [$t(508) = 4.91$, $p < .001$], and lower scores in the validating family style [$t(505) = -3.89$, $p < .001$]. There were no significant differences between the two samples in the typical family style [$t(507) = 1.20$, $p = .229$].

Within the clinical sample, more participants perceived an invalidating family [$\chi^2(1) = 13.06$, $p < .001$] in comparison with the non-clinical sample. The family type (validating/invalidating family) was not significantly associated with ED type [$\chi^2(1) = 3.25$, $p = .071$].

Table 5. Mean scores on the ICES and ED-15 for the non-clinical and clinical samples

	Non-clinical ($n = 410$) *M (SD)*	Clinical ($n = 101$) *M (SD)*	*t*
ICES – Parental invalidation			
Paternal invalidation	27.20 (9.30)	30.34 (10.74)	2.94**
Maternal invalidation	25.59 (8.27)	28.07 (10.47)	2.55*
ICES – Family styles			
Chaotic family	1.28 (.70)	1.89 (1.37)	6.31***
Typical family	2.37 (1.25)	2.54 (1.40)	1.20
Perfect family	1.44 (.87)	1.95 (1.17)	4.91***
Validating family	3.97 (1.11)	3.46 (1.42)	-3.89***
ED-15 – Attitudinal scales			
Weight and shape concerns	1.12 (1.28)	3.01 (1.82)	12.06***
Eating concerns	1.74 (1.40)	3.39 (1.70)	9.99***
Total	1.36 (1.20)	3.19 (1.65)	12.39***
ED-15 – Behavioural items			
Objective binges	.50 (1.30)	1.61 (3.39)	5.20***
Vomiting episodes	.03 (.34)	1.12 (3.41)	6.32***
Laxative use days	.01 (.15)	.20 (.94)	4.01***
Exercise days	.78 (1.55)	1.32 (2.32)	2.82**
Restriction days	1.22 (2.14)	2.32 (2.80)	4.32***
Family type (validating/invalidating family)	*n* (%)	*n* (%)	χ^2
Invalidating family	114 (27.9)	47 (46.5)	13.06***

Note. Validating family includes the validating family style; invalidating family includes the chaotic, typical, and perfect family styles. *$p < .05$, **$p < .01$, ***$p < .001$.

Associations between invalidating childhood environments and eating pathology

According to previous results about the pattern of differences between samples, with the clinical sample scoring higher on the ICES and ED-15, the correlations between both measures, among the ED participants, showed that paternal invalidation was not associated with ED-15 scores. On the other hand, maternal invalidation was not associated with ED-15 attitudinal scales but was significantly associated with objective binges (r_s = .278, p = .005), vomiting episodes (r_s = .204, p = .043) and restriction days (r_s = .217, p = .021). The chaotic family style was associated with laxative use days (r_s = .232, p = .031), and the perfect family style was associated with objective binges (r_s = .231, p = .021). The results of correlation analyses are presented in Table 6.

Table 6. Associations between invalidating childhood environments and eating pathology among the clinical sample

	ED-15							
	Weight and shape concerns	Eating concerns	Total	Objective binges	Vomiting episodes	Laxative use days	Exercise days	Restriction days
ICES								
Paternal invalidation	.078	.022	.028	.190	.051	-.076	.086	.133
Maternal invalidation	.112	.084	.087	.278**	.204*	.128	.145	.232*
Chaotic family	.184†	-.008	.119	.171†	.052	.217*	.109	.117
Typical family	.096	.047	.120	.125	.011	-.077	.107	.066
Perfect family	.082	-.001	.120	.231*	.108	.003	.155	.063
Validating family	-.039	.015	-.030	-.105	-.153	.067	.012	-.091

†p < .10, *p < .05, **p < .01.

Discussion

The first aim of this study was to examine the psychometric properties of the Portuguese version of the ICES in both a non-clinical and a clinical sample of ED patients.

Previously, to the best of our knowledge, only two studies examined the factor structure of the ICES using non-clinical samples [7, 10]. In contrast to the one-factor (14-item) version of the paternal and maternal invalidation scales of the original ICES [6], our principal component analyses with a non-clinical

sample provided support for a two-factor solution. Confirmatory factor analyses with a clinical sample of ED patients also showed that the two-factor model found provided a better fit to the data than a one-factor solution. Our results are in accordance with both previous studies to which we referred. That is, in both, the authors established the presence of one factor composed by the same nine items as our Factor I [7, 10]. The other five items were removed in the work by Robertson and colleagues [10], who proposed an abbreviated version of the ICES (ICES-9) or like in Compagnone and Lo Monaco [7], included a second factor, Factor II.

We believe that our results reinforce Linehan's conceptual model [4]. Factor I includes nine items that characterize an invalidating family environment precisely around the three primary features proposed by Linehan [5]: rejection of the communication of private experiences and self-generated behaviours; punishment of emotional displays and intermittent reinforcement of emotional escalation; and oversimplification of problem-solving and goal attainment. On the other hand, Factor II includes exactly four items that represent parents' emotional and supportive behaviour. The only item that does not fit with this explanation is item two, which assesses anxiety, an emotion that is frequent from childhood into adolescence [20] and that may be associated with the need of some parents to ignore anxiety in a daily routine to help the child break the threatening interpretations of harmless situations.

In the present study, the original maternal and paternal invalidation scales, as well as the two factors for father and mother, extracted in the principal component analyses were found to have good internal consistency across the samples. Considering these results and those of previous studies [3, 10], the ICES has demonstrated good internal consistency in both clinical and non-clinical samples.

A secondary aim of this study was to investigate the between-sample differences regarding invalidating parental behaviours and family styles. In line with our hypotheses and the evidence of links between family environment and eating pathology [21], scores on the ICES were found to differentiate between samples. Perceived maternal and paternal invalidation, and chaotic and perfect invalidating family styles, were significantly higher for participants in the clinical sample than in the non-clinical sample.

Consistent with the study of Mountford and colleagues [6], only maternal invalidation was associated with a higher eating pathology among the clinical group. More specifically, there were positive correlations between the maternal invalidation and binge eating, vomiting episodes and restriction days. The chaotic family style was positively related to laxative use days, and the perfect family style was related to objective binges. In accordance with prior research [3], while invalidation was associated with some bulimic behaviours, no significant associations were found between perceived invalidation and eating

attitudes (weight and shape concerns and eating concerns). These findings support the hypothesis that an invalidating family environment might contribute to the development of eating pathology, especially bulimic behaviours [3, 6, 8]. According to Linehan and Dexter-Mazza [5], invalidating environments may contribute to deficits in emotion regulation, which in turn increase the likelihood of engaging in behaviours, such as binge eating and vomiting, that regulate or avoid negative emotions. Therefore, because of its emphasis on regulating emotions and using healthier coping mechanisms, Linehan's DBT model [4] can be an effective treatment for ED patients.

Considering the fact that previous studies examining the factor structure of the ICES were carried out with non-clinical samples, this study has addressed a gap in the research literature by directing attention to the psychometric properties for the Portuguese version of the ICES using a large community sample as well as a clinical sample of ED patients. However, this study has some limitations. First, the current sample was composed mostly of women, and the findings cannot be generalized to men. Second, the ED participants were in treatment and therefore represent only part of the general population with ED. Moreover, the smaller size of the clinical sample limits our knowledge about the structure of the ICES with ED patients. Third, recall biases may have influenced retrospective assessments of invalidating parental behaviours and family styles. Fourth, the presence of a diagnosis of ED in the non-clinical sample was not rigorously assessed. Therefore, it is not possible to infer that the non-clinical sample does not include subjects with ED. In addition, the between-sample differences regarding invalidating parental behaviours and family styles should be interpreted with caution, since the mean age of participants was different across the two samples in the analysis. Finally, the cross-sectional design cannot address the causal relationships between invalidating childhood environments and ED.

Future studies should consider using samples of similar age and equal proportions of men and women to examine whether there are age and gender differences in invalidating parental behaviours and family styles. Prospective research on the role of the invalidation in the development of ED symptomatology is also needed. Finally, investigating the factor structure of the ICES among samples from different countries could be interesting.

In sum, the findings from the current study suggest that the Portuguese version of ICES has adequate psychometric properties. Thus, the Portuguese version of the ICES seems to be a useful measure of invalidating childhood environments, especially in ED settings.

Acknowledgements

This research was partially supported by a Foundation for Science and Technology doctoral grant to the first author (SFRH/BD/116974/2016).

Compliance with ethical standards

Conflict of interest

On behalf of all the authors, the corresponding author states that there is no conflict of interest.

Ethical approval

The research was approved by the internal review board of the Research Center of Psychology at the University of Minho (Portugal) and all procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent in writing was obtained from all individual participants included in the study.

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CAPÍTULO 4

Nonsuicidal self-injury, difficulties in emotion regulation, negative urgency and childhood invalidation: A study with outpatients with eating disorders[7]

Abstract

Objectives: Among outpatients with eating disorders (ED), we compared participants without nonsuicidal self-injury (non-NSSI group), with NSSI over a year ago (past NSSI group) and with NSSI in the previous year (current NSSI group) regarding different variables, and examined whether difficulties in emotion regulation and negative urgency moderated the relationship between maternal/paternal invalidation and NSSI. **Method:** The sample included 171 outpatients (94.2% female; M_{age} = 28.78, SD_{age} = 11.19). **Results:** Fifty-four participants (31.6%) had NSSI in the previous year. This group showed higher eating pathology, difficulties in emotion regulation, negative urgency and maternal/paternal invalidation than the non-NSSI group. Analyses revealed an adequate fit to the data for the model that included moderating effects of emotional awareness and negative urgency in the relationship between maternal/paternal invalidation and increased likelihood of NSSI in the previous year. **Conclusions:** Interventions for NSSI and ED should include emotion regulation, impulse control and validation strategies.

Keywords: nonsuicidal self-injury, eating disorders, emotional dysregulation, negative urgency, invalidation

[7] Vieira, A. I., Moreira, C. S., Rodrigues, T. F., Brandão, I., Timóteo, S., Nunes, P., & Gonçalves, S. (2020). Nonsuicidal self-injury, difficulties in emotion regulation, negative urgency, and childhood invalidation: A study with outpatients with eating disorders. *Journal of Clinical Psychology*. Advanced online publication. https://doi.org/10.1002/jclp.23038

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Introduction

Nonsuicidal self-injury (NSSI), defined as the deliberate and self-inflicted damage to the surface of one's body without suicidal intent (International Society for the Study of Self-injury, 2018), has been recognized as a public health problem that occurs in community and clinical samples (Guerry & Prinstein, 2010). These behaviors have physical consequences (e.g., cuts, bruising) and are related to various forms of psychopathology, including borderline personality disorder and depression (Asarnow et al., 2011; Brown, Comtois, & Linehan, 2002). Individuals who engage in NSSI may also have more difficulties in close relationships (Plener, Schumacher, Munz, & Groschwitz, 2015). In addition, NSSI appears to predict and increase the risk of suicide attempts (Mars et al., 2019; Ribeiro et al., 2016).

Research has shown that NSSI is more frequent among youth and women (Bresin & Schoenleber, 2015; Turner, Austin, & Chapman, 2014) and that people engage in NSSI for different reasons. According to Nock and Prinstein's (2004) four-function model, individuals perform these behaviors given their automatic reinforcement (e.g., reducing one's negative emotions or punishing oneself) and/or social reinforcement (e.g., avoiding doing something unpleasant or getting a reaction from someone) role.

Considering its severity and that NSSI seems to be distinct from other mental disorders (Hooley & Franklin, 2017), these behaviors were included as a condition for further study in the fifth edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5; American Psychiatric Association, 2013). The diagnostic criteria for NSSI disorder in the DSM-5 (APA, 2013) include the engagement in NSSI in the last year, the expectation associated with these behaviors (e.g., relief from a negative feeling) and the presence of a precipitant (e.g., negative feelings or thoughts).

Within the clinical population, NSSI is commonly found in patients with eating disorders (ED). A previous study showed that 33% of individuals diagnosed with ED had injured themselves (Vieira, Machado, et al., 2018) and Pérez, Marco, and Cañabate (2018) also carried out a study with 226 female outpatients with ED, in which 37.2% of the sample had a history of NSSI. Although these behaviors seem more likely to occur when patients have a binge-eating/purging type of ED (Carlson et al., 2018; Jacobson & Luik, 2014), in a study conducted by Wang, Pisetsky, Skutch, Fruzzetti, and Haynos (2018), restrictive eating behaviors were associated with an increased likelihood of NSSI, even after controlling for the presence of binge-eating and purging behaviors. Finally, the presence of NSSI has also been associated with a higher ED severity (Vieira, Ramalho, Brandão, Saraiva, & Gonçalves, 2016).

Given the comorbidity between NSSI and ED, theoretical models have identified factors critical to the relationship between both behaviors. For example, in the conceptual model of the interactive risk factors for both NSSI and ED (Claes & Muehlenkamp, 2014), aspects related to the family environment

(e.g., low emotional support) are likely accountable for this comorbidity. Accordingly, empirical evidence indicates that an invalidating environment, in which a child grows up feeling that their emotional responses are not legitimate or valid (Linehan, 1993), is related to the occurrence of NSSI (Adrian et al., 2018) and to adult eating concerns (Haslam, Arcelus, Farrow, & Meyer, 2012).

Based on the biosocial developmental model of borderline personality (Crowell, Beauchaine, & Linehan, 2009), impulsivity has also been highlighted as a predisposing factor for a subset of individuals with borderline personality disorder (BPD), including those who present NSSI. A poor impulse control may appear early in the development of BPD, contributing for the co-occurrence of biological vulnerabilities for BPD and other impulse control disorders. Additionally, emotional lability is influenced by caregiver characteristics (e.g., invalidation of child emotions) and is based on characteristics of the child (e.g., negative affectivity, high emotional sensitivity). Finally, transactions between biological vulnerabilities and environmental risk factors across development facilitate emotion dysregulation, which in turn can lead to negative outcomes (Crowell et al., 2009).

Given its relevance, the theory outlined by Crowell et al. (2009) informed the development of our model hereby proposed (Figure 1), aimed at exploring the potential role of emotion dysregulation and impulsivity or negative urgency as moderators of the relationship between maternal/paternal invalidation and NSSI in the previous year among outpatients with ED. Subsequently, we integrate research evidences regarding the associations between the co-occurrence of NSSI and ED, and their interplay with emotion dysregulation, parental invalidation and negative urgency, which further support our model.

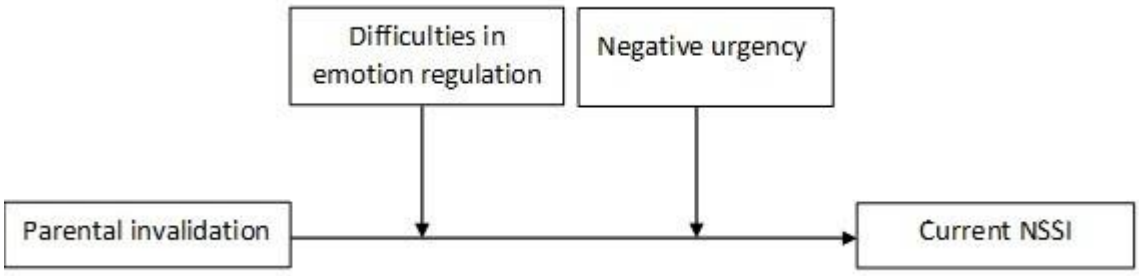


Figure 1. Conceptual diagram of the effect of parental invalidation on current NSSI by the moderation impact of difficulties in emotion regulation and negative urgency. NSSI, nonsuicidal self-injury

Emotion dysregulation, NSSI and ED

Consistent with the Gratz and Roemer (2004) model, emotional regulation is understood in different dimensions: the ability to use appropriate strategies to modulate emotions, one's ability to inhibit

impulsive behaviors, one's capacity to engage in goal-directed behavior, the acceptance of emotions, and the awareness and understanding of emotions. Deficits in these dimensions reflect emotion dysregulation (Lavender et al., 2015), which have been associated with ED severity (Pisetsky, Haynos, Lavender, Crowa, & Peterson, 2017).

Several models have conceptualized emotion dysregulation as a risk factor for the co-occurrence of NSSI and ED (e.g., Anderson, Smith, Mason, & Crowther, 2018; Claes & Muehlenkamp, 2014; Svirko & Hawton, 2007). Specifically, both bulimia and anorexia nervosa have been correlated with the use of maladaptive emotional regulation strategies, the inability to tolerate distress, the non-acceptance of emotions and elevated punishment sensitivity (Lavender et al., 2014, 2015; Wonderlich & Lavender, 2017). Moreover, deficits in recognizing emotions in others seem more characteristic of anorexia nervosa, while individuals with bulimia nervosa seem to present a heightened sensitivity to reward (Lavender et al., 2015; Wonderlich & Lavender, 2017). In general, a binge eating/purging type ED seems to be related to behavioral control deficits when accompanied by negative emotions (Racine & Horvath, 2020). Fairburn, Cooper, and Zafran (2003) suggest that mood intolerance is an ED maintaining mechanism and that symptoms such as binge eating, self-induced vomiting and intense exercising may be used as forms of emotion regulation.

Additionally, in the Muehlenkamp, Peat, Claes, and Smits 's (2012) model of NSSI and disordered eating, the co-occurrence of these behaviors was associated with emotion dysregulation. According to these authors, both problems represent forms of expressing emotion dysregulation through the body (Muehlenkamp, Peat, et al., 2012).

Parental invalidation, emotion dysregulation, NSSI and ED

Parental invalidation appears to be related to emotion dysregulation (e.g., Sturrock & Mellor, 2014). According to Mountford, Corstorphine, Tomlinson, and Waller (2007), positive associations between maternal invalidation and bulimic behaviors are present among individuals with ED, as well as associations between an invalidating environment and difficulties in tolerating distress, possibly resulting in the use of maladaptive strategies for emotional avoidance, such as eating-disordered behaviors. Finally, based on the experiential avoidance model (Chapman, Gratz, & Brown, 2006), NSSI is often understood as a negatively reinforced emotion-regulation strategy, leading to temporary relief of unwanted and/or unpleasant emotional responses. Taken together, this evidence suggests a potential interaction between parental invalidation, difficulties in emotion regulation and ED symptomatology.

Negative urgency, emotion dysregulation, parental invalidation, NSSI and ED

A recent study found positive and moderate correlations between measurement tools of emotion dysregulation and certain aspects of impulsivity, including negative urgency (Juarascio et al., 2020). In fact, beyond emotion dysregulation, prior research suggests that negative urgency (i.e., the tendency to surrender to impulses when accompanied by negative emotions) is associated with the lifetime occurrence of NSSI (Lockwood, Daley, Townsend, & Sayal, 2017). Also, in a study by Claes et al. (2015), patients with ED and NSSI scored higher on negative urgency than those without NSSI. Impulsive behavior has still been considered a maladaptive problem-solving strategy resulting from emotional invalidation and the inability to tolerate emotional distress (Linehan, 2015).

Current study

Considered together, previous theoretical models include variables related to family environment, emotion dysregulation and impulsivity to explain NSSI and ED (e.g., Crowell et al., 2009; Nock, 2009; Svirko & Hawton, 2007). However, many of them require additional testing to understand of the possible interactions between them. Parental invalidation, emotion dysregulation and negative urgency are also independently associated with NSSI and disordered eating, but there is a lack of studies exploring simultaneously these variables in relation to the development of NSSI in the clinical context of ED. Evidence suggests that patients with ED have high emotion regulation difficulties (Harrison, Sullivan, Tchanturia, & Treasure, 2010) and people with these difficulties are more likely to self-injure (Hasking, Dawkins, Gray, Wijeratne & Boyes, 2020). In addition, negative urgency might have an important role in both NSSI and ED. For example, in a prior study, impulse control difficulties when upset were associated with recurrent objective binge eating and purging in anorexia nervosa (Racine & Wildes, 2013). In another study, negative urgency was also a robust predictor of history of NSSI (Peckham et al., 2019).

We may conclude that the relationship between an invalidating childhood environment and eating pathology may be common (e.g., Haslam, Mountford, Meyer, & Waller, 2008). Moreover, an invalidating childhood environment can underlie increased difficulties in regulating behaviors and emotional states (e.g., Mountford et al., 2007), leading individuals to engage in NSSI and disordered eating behavior to cope with unwanted or overwhelming emotions (Ernhout, Babington, & Childs, 2015). Therefore, the presence of certain difficulties in emotion regulation and negative urgency may exacerbate the potential impact of parental invalidation on the likelihood of the occurrence of NSSI amongst patients with an ED. That is, the likelihood of engaging in NSSI might be greater in patients with ED who experienced an invalidating childhood environment and display more difficulties in emotion regulation and negative

urgency. However, to date, no research has examined these variables as potential moderators of the association between maternal and paternal invalidation and engagement in both NSSI and ED. Addressing these gaps is relevant to expand the knowledge on the etiology and maintenance of NSSI and ED, clarify the potential determinants and circumstances of the development of NSSI in ED and inform assessment, prevention or treatment of both problems.

Thus, the current study has the following aims: (i) to explore the frequency, methods and related characteristics of NSSI in a sample of outpatients with ED; (ii) to explore the differences between participants without NSSI (non-NSSI group), with NSSI over a year ago (past NSSI group), and with NSSI during the previous year (current NSSI group) regarding demographic and clinical variables; and mainly (iii) to examine whether difficulties in emotion regulation (limited access to emotion regulation strategies, nonacceptance of emotional responses, impulse control difficulties, difficulties engaging in goal-directed behavior and lack of emotional awareness and clarity) and negative urgency moderate the relationship between maternal and paternal invalidation and the engagement in NSSI.

Method

Participants

In the present study, 171 outpatients were recruited from a public psychiatric service that provides specialized treatment for ED in the north of Portugal. All participants were in outpatient treatment. The mean age of the sample was 28.78 years old (*SD* = 11.19; range = 14-57), and the majority were female (94.2%) and single (69%). Most participants had secondary education (62.5%), followed by higher education (28%) and primary education (9.5%). Of the total sample, 43.1% were students, 40.7% were employed, 15% were unemployed and 1.2% were retired. Most of the sample (78.6%) reported current psychiatric medication use (e.g., benzodiazepines, antidepressants).

Fifty-four participants (31.6%) were diagnosed with anorexia nervosa restricting type, 21 (12.3%) with anorexia nervosa binge eating/purging type, 41 (24%) with bulimia nervosa, 20 (11.7%) with binge eating disorder and 35 (20.5%) with other specified feeding and eating disorder, according to the DSM-5 (APA, 2013). The mean BMI was 20.66 (*SD* = 5.98) and ranged from 11.72 to 47.22. The mean duration of the ED was 97.61 months (*SD* = 103.34), and the mean duration of treatment was 32.70 months (*SD* = 58.37). The exclusion criteria were moderate or severe intellectual disability, psychosis and current pregnancy.

The sample was divided into three subgroups: non-NSSI group, including participants who reported absence of NSSI over their lifetime; past NSSI group, including participants who reported these

behaviors more than a year ago; and current NSSI group, including participants who reported the occurrence of NSSI during the previous year.

Measures

Sociodemographic and clinical questionnaire

Participants completed a questionnaire that collected information on gender, age, marital status, education, occupation, psychiatric medication use, weight, height, duration of treatment in the public psychiatric service that provides specialized treatment for ED ("How long have you been attending eating behavior consultations at the Hospital?"), duration of the ED and suicidal thoughts/attempts (i.e., "Have you been thinking about suicide?"; "Have you recently attempted to commit suicide?").

Self-Injury Questionnaire-Treatment Related (SIQ-TR; Claes & Vandereycken, 2007)

The SIQ-TR is a self-report measure with 60 items that assesses the presence of five methods of NSSI: scratching, bruising, cutting, burning, and biting (or other). For each method it is asked how long ago the participant had engaged in this form of NSSI (a week; a month; several months; more than a year; and never). If it was less than a month ago, participants must answer additional questions regarding NSSI characteristics for each one, such as injured body parts, frequency of NSSI, pain frequency, related attitudes (e.g., whether the NSSI was planned beforehand) and affective antecedents and consequences of NSSI. The NSSI functions were assessed through 14 items that were scored on a scale ranging from 1 (*not at all*) to 5 (*very much*). These items are distributed across four scales, according to the four-function Nock and Prinstein's (2004) model: automatic-negative reinforcement (e.g., to avoid or suppress negative feelings; to avoid or suppress painful images/memories), automatic-positive reinforcement (e.g., to feel something, even if it was pain; to punish myself), social-negative reinforcement (e.g., to avoid school, work, or other activities; to avoid doing something unpleasant you don't want to do) and social-positive reinforcement (e.g., to feel some pleasure; to show myself how strong I am). The SIQ-TR also provides a mean score for each function scale.

Eating Disorder-15 (ED-15; Tatham, Turner, Mountford, Tritt, Dyas, & Waller, 2015; Portuguese version Rodrigues, Vaz, Silva, Conceição, & Machado, 2019)

The ED-15 is a self-report measure that assesses eating attitudes through 10 items, using a Likert-type scale ranging from 0 (*not at all*) to 6 (*all the time*). Two attitudinal subscales are derived: 1)

weight and shape concerns and 2) eating concerns. The overall attitudinal score is computed by the mean of the 10 items. Higher scores suggest greater levels of eating pathology. The ED-15 also includes five behavioral items: binge-eating episodes, self-induced vomiting episodes, laxative misuse days, eating restraint days and excessive exercise days. In this study, Cronbach's alpha for the total attitudinal score was .94.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Portuguese version Coutinho, Ribeiro, Ferreira & Dias, 2010)

The DERS is a 36-item questionnaire that assesses emotion regulation difficulties on a five-point Likert-type scale ranging from 1 (*almost never*) to 5 (*almost always*) across six dimensions: limited access to emotion regulation strategies (strategies); nonacceptance of emotional responses (nonacceptance); lack of emotional awareness (awareness); impulse control difficulties (impulse); difficulties engaging in goal-directed behavior (goals); and lack of emotional clarity (clarity). In the present study, we obtained the following Cronbach's alpha for the subscales of strategies (α = .94), nonacceptance (α = .95), awareness (α = .81), impulse (α = .94), goals (α = .92) and clarity (α = .84). Cronbach's alpha for the total score was .97.

UPPS-P Impulsive Behavior Scale - Negative Urgency Subscale (Whiteside, Lynam, Miller, & Reynolds, 2005; Portuguese version Lopes, Oliveira, Brito, Gamito, Rosa, & Trigo, 2013)

This 12-item subscale assesses an individual's tendency to engage in impulsive behaviors when accompanied by negative affect. Items are scored on a four-point Likert-type scale ranging from 1 (*agree strongly*) to 4 (*disagree strongly*). Cronbach's alpha in the current sample was .93.

Invalidating Childhood Environment Scale (ICES; Mountford, Corstorphine, Tomlinsson, & Waller, 2007; Portuguese version Vieira, Gonçalves, et al., 2018)

The ICES is a self-report measure with 14 items that retrospectively assess invalidating maternal and paternal behaviors, according to the descriptions of Linehan (1993). Participants are asked to rate their experience up to the age of 18 years, using a five-point Likert-type scale ranging from 1 (*never*) to 5 (*all the time*) separately for each parent. The mean score for the 14 items indicates the levels of perceived parental invalidation. Higher scores suggest a greater perception of emotional invalidation by one's father and mother. Four final items assess the family styles during childhood. Three of them are invalidating

environmental styles: “chaotic family”, in which the parents are often unavailable; “typical family”, focused on controlling emotions, achievement and success; and “perfect family”, where everything is apparently perfect, but negative emotions (e.g., fear and anger) are not accepted. Finally, one of these styles corresponds to a “validating family”, in which the child's emotions and thoughts are recognized and accepted. The ICES presents a single score for each family style. Higher scores indicate greater levels of validating or invalidating environments. In the present study, Cronbach’s alphas were .94 and .93 for maternal and paternal invalidation, respectively.

Procedure

The present study was authorized and approved by the University of Minho Ethics Commission - Subcommittee of Ethics for Social and Human Sciences and the Ethics Committee São João Hospital Centre/Faculty of Medicine, University of Porto, and it complied to the Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. Participants were referred by clinicians, recruited and informed about the purpose and procedures of the study. Following written informed consent, participants completed a battery of self-report questionnaires.

Statistical analyses

Statistical analyses were conducted using R statistical environment (RStudio, version 3.6.2, R Development Core Team, 2019), through lavaan (Rosseel, 2012), semTools (Jorgensen, Pornprasertmanit, Schoemann, & Rosseel, 2018), glmmTMB (Brooks et al., 2017), ordinal (Christensen, 2019), AICcmodavg (Mazerolle, 2019), lmtest (Zeileis & Hothorn, 2002), effects (Fox & Weisberg, 2018) and interactions (Long, 2019) packages. All variables were created by total scoring, on average form, that is, all items composing a scale, or a subscale, were averaged and then originated a new variable of interest in the dataset. For constructs with categorical indicators, the Cronbach’s alpha was calculated from polychoric correlations.

To describe the frequency and characteristics of NSSI in the sample, we performed descriptive statistics. To compare the non-NSSI, past NSSI and current NSSI groups regarding age, BMI, duration of the ED and treatment, ED-15, DERS, UPPS-P negative urgency and ICES, linear regression modeling was conducted using a suitable distribution for each variable. More precisely, for positive discrete data (e.g., age, duration of treatment, ED-15 vomiting episodes) we used the Conway-Maxwell-Poisson (CMP) distribution, for general positive continuous data (e.g., BMI, DERS subscales) we used the Tweedie family

of distributions, and for ordinal data (all invalidating childhood family types) we used the ordered logit regression.

To analyze moderator effects for the relationship between maternal/paternal invalidation and the engagement in NSSI, we specified additive multiple moderator models for the comparison between groups: non-NSSI group vs current NSSI group. We only compared these two groups because the samples sizes for the comparisons involving the past NSSI group did not show enough statistical power to assess moderations. Indeed, it is known that power analysis in logistic regression is a complex problem (e.g., Ryan, 2013). However, a simple guideline of 10 events (not persons) per predictor variable was proposed by Peduzzi et al. (1996) as a minimum sample size in logistic regressions. This simple rule of thumb has been recommended by other authors (e.g., Harrell, 2001; Ryan, 2013; Schoonjans, 2014).

In this study, this guideline suggested that our analyses would not be able to capture moderator variables for the comparisons including the past NSSI group, since those models have at least three predictor variables and this group has only 19 participants. Moreover, for the comparison between the non-NSSI group and the current NSSI group, this guideline suggested statistical power to detect at most two moderator variables (i.e., five predictor variables), as the current NSSI group has 54 participants. Nevertheless, we analyzed all possible moderator models (according to the selected moderator variables of interest) for all comparisons. Three-way interactions were also tested, and they did not produce significant results. This result was expected because three-way interactions include seven predictors.

The procedure to select additive moderator models consisted of the following four main steps. First, we fixed a list of moderators of interest according to the aims of this study: all dimensions of the DERS and UPPS-P negative urgency. Second, we considered all possible additive multiple moderator models including those moderators (127 possible additive moderator models). To evaluate the adequacy of these moderator models, we also included the no interaction model (i.e., the model where maternal/paternal invalidation is a simple predictor of NSSI). Thus, a total of 128 candidate models were analyzed. Third, among this list, we restricted attention to the models having only significant interactions. Marginally significant interactions were assessed using the likelihood ratio test (LRT), which is a more trustworthy statistic in logistic regression (Agresti, 2007; Hauck & Donner, 1997; Jennings, 1986). Finally, from this sublist we selected the best model fitting to the data. Model comparison was performed by inspecting the second order Akaike's information criterion (AICc), with lowest values indicating a better fit, according to the recommendations of the package (AICcmodavg) used to perform the model selection and to the references included therein (Burnham & Anderson, 2004).

In addition, analyses were performed separately for each invalidation type (maternal and paternal invalidation). The outcome was the dichotomous variable encoding information about NSSI group membership. As result, logistic models were analyzed and provided an estimate about how maternal/paternal invalidation affected the likelihood of changing from non-NSSI group to current NSSI group. According to the lowest AICc, a moderation model was selected for each invalidation type (maternal and paternal invalidation). The significance level was set at the conventional α = .05.

Results

Frequency and characteristics of NSSI

Participants who admitted no history of NSSI made up the non-NSSI group (n = 98, 57.3%), participants who reported engaging in these behaviors more than a year ago made up the past NSSI group (n = 19, 11.1%) and those who had performed at least one method of NSSI during the previous year made up the current NSSI group (n = 54, 31.6%). In this last group, fourteen participants (25.9%) reported one method, 12 (22.2%) reported two methods, 17 (31.5%) reported three methods, 6 (11.1%) reported four methods, 3 (5.6%) reported five methods, and 2 (3.7%) reported six methods of NSSI.

Of the participants from the current NSSI group, 28 (51.9%) had injured themselves during the preceding week or month of the study. Of these, 15 (53.6%) scratched the surface of their skin, 13 (46.4%) cut, 6 (21.4%) bruised, 8 (28.6%) bit, and 7 (25.0%) reported a different method of NSSI (e.g., hair-pulling). Table 1 presents more detailed information on the characteristics of NSSI in the previous week or month.

Table 1. Characteristics of NSSI among participants who self-injured during the previous week or month

	Scratching (*n* = 15)	Bruising (*n* = 6)	Cutting (*n* = 13)	Biting (*n* = 8)	Other (*n* = 7)
Injured body parts, *n* (%)					
Head, neck	2 (13.3)	0	0	0	5 (71.4)
Arms, hands, nails	12 (80.0)	2 (33.3)	12 (92.3)	7 (87.5)	1 (14.3)
Torso, belly, buttock	1 (6.7)	1 (16.7)	1 (7.7)	0	1 (14.3)
Legs, feet, toes	0	3 (50.0)	0	1 (12.5)	0
Frequency (days/month), *n* (%)					
1-5	11 (73.3)	3 (50.0)	11 (84.6)	6 (75.0)	4 (57.1)
6-10	2 (13.3)	1 (16.7)	2 (15.4)	1 (12.5)	1 (14.3)
10-15	0	0	0	0	0
More than 15	2 (13.3)	2 (33.3)	0	1 (12.5)	2 (28.6)
Frequency (times/day), *n* (%)					
Less than 1	9 (60.0)	2 (33.3)	9 (69.2)	4 (50.0)	1 (14.3)
1-2	2 (13.3)	3 (50.0)	1 (7.7)	3 (37.5)	5 (71.4)
3-4	3 (20.0)	1 (16.7)	3 (23.1)	1 (12.5)	0
More than 5	1 (6.7)	0	0	0	1 (14.3)
How often pain, *n* (%)					
Never	4 (26.7)	3 (50.0)	4 (30.8)	5 (62.5)	2 (28.6)
Now and then	8 (53.3)	2 (33.3)	5 (38.5)	2 (25.0)	2 (28.6)
Often	2 (13.3)	0	2 (15.4)	0	3 (42.9)
Always	1 (6.7)	1 (16.7)	2 (15.4)	1 (12.5)	0
NSSI was planned beforehand, *n* (%)					
Never	13 (86.7)	5 (83.3)	11 (84.6)	7 (87.5)	1 (14.3)
Now and then	2 (13.3)	1 (16.7)	1 (7.7)	0	2 (28.6)
Often	0	0	0	1 (12.5)	1 (14.3)
Always	0	0	1 (7.7)	0	3 (42.9)
NSSI functions, *M* (*SD*)					
Automatic negative reinforcement	3.60 (1.22)	2.44 (1.76)	3.23 (1.44)	2.96 (1.59)	1.95 (.99)
Automatic positive reinforcement	2.25 (1.02)	2.71 (.75)	2.33 (.95)	2.81 (1.02)	1.96 (.73)
Social negative reinforcement	1.76 (.77)	1.72 (.61)	1.54 (1.13)	1.92 (.66)	1.19 (.33)
Social positive reinforcement	1.35 (.36)	1.21 (.25)	1.22 (.38)	1.44 (.56)	1.14 (.20)

Note. Burning was not reported in the past week or month.

Abbreviation: NSSI, nonsuicidal self-injury.

With respect to the NSSI functions, the current NSSI group scored higher on automatic reinforcement functions than on social reinforcement functions. As can be seen in the Supplementary Table 1, the automatic-negative reinforcement function with a higher mean score was "to avoid or suppress negative feelings" (scratching, *M* = 4.29, *SD* = 1.14; bruising, *M* = 2.33, *SD* = 1.51; cutting, M = 3.62, SD = 1.66; biting, *M* = 3.50, *SD* = 1.85; other, *M* = 2.14, *SD* = 1.22), whereas the automatic-positive reinforcement function with a higher mean score was "to punish myself" (scratching, *M* = 2.86, *SD* = 1.75; bruising, *M* = 4.33, *SD* = 1.21; cutting, *M* = 3.77, *SD* = 1.64; biting, *M* = 3.63, *SD* = 1.77; other, *M* = 3.71, *SD* = 1.89). Regarding social negative reinforcement functions, the most mentioned was "to show myself how strong I am" (scratching, *M* = 1.86, *SD* = 1.35; bruising, *M* = 1.50, *SD* = .55; cutting, *M* = 1.77, *SD* = 1.54; biting, *M* = 1.25, *SD* = .71; other, *M* = 1.00, *SD* = .00), whereas the most mentioned social positive reinforcement function was "to avoid doing something unpleasant you don't want to do" (scratching, *M* = 2.64, *SD* = 1.91; bruising, *M* = 2.67, *SD* = 1.86; cutting, *M* = 2.00, *SD* = 1.58; biting, *M* = 3.13, *SD* = 1.81, other, *M* = 1.43, *SD* = .79).

Across the total sample (*N* = 171), 38 participants (22.2%) reported current suicidal thoughts, and 11 (6.4%) reported at least one recent suicide attempt. Specifically, in the current NSSI group, 20 (37.0%) participants reported current suicidal thoughts, in the past NSSI group, 4 (21.1%) related these thoughts, and in the non-NSSI group, 14 (14.7%) participants stated suicidal thoughts. Finally, in the current NSSI group, 8 (14.8%) participants reported suicide attempts, in the past NSSI group, 2 (10.5%) related these acts, and 1 (1.1%) participant from the non-NSSI group stated suicide attempts.

Comparison between groups regarding age, BMI, duration of the ED and duration of treatment

As seen in Table 2, participants with current NSSI were younger than those who did not report NSSI in their lifetime or those who related these behaviors over a year ago. Moreover, the results showed a shorter duration of treatment in the current NSSI group than in the non-NSSI group or in the past NSSI group. The duration of the ED was also shorter in the current NSSI group than in the non-NSSI group. No significant differences were found between the groups regarding BMI.

Comparison between groups regarding eating pathology, difficulties in emotion regulation, negative urgency and invalidating childhood environments

We found statistically significant differences between the groups regarding eating and weight and shape concerns (Table 2). In comparison with the non-NSSI group, the current NSSI group showed higher scores in weight and shape concerns, eating concerns and in the ED-15 overall score. The past NSSI group had higher scores in weight and shape concerns than the non-NSSI group, and the current NSSI group had more eating concerns than the past NSSI group.

Except for excessive exercise days, the current NSSI group presented higher scores in all ED-15 behavioral items than the non-NSSI group. The past NSSI group also had more binge-eating episodes than the non-NSSI group, and the current NSSI group had more vomiting episodes, laxative misuse days and excessive exercise days than the past NSSI group. No significant differences were found between the groups on the number of eating restraint days.

Regarding the DERS, the current NSSI group showed higher scores than the non-NSSI group on the total scale and subscales. In addition, the past NSSI group had higher scores than the non-NSSI group on the total scale as well as on the strategies, nonacceptance, awareness and clarity subscales. In comparison with the non-NSSI group, the current NSSI group also showed a higher score on the UPPS-P negative urgency subscale. No significant differences were found between the non-NSSI and past NSSI groups, as well as between the past NSSI and current NSSI groups on the negative urgency subscale.

With respect to the ICES scores, the current NSSI group had significantly higher scores in maternal invalidation and paternal invalidation, as well as in the typical family style, and in the chaotic family style, than the group without NSSI. The past NSSI group also had higher scores in maternal invalidation, paternal invalidation, typical family style and in the chaotic family style than the group without NSSI. No significant differences were found between the past and current NSSI groups in the ICES scores.

Table 2. Group differences in sociodemographic and clinical variables

	Non-NSSI group (*n* = 98)	Past NSSI group (*n* = 19)	Current NSSI group (*n* = 54)	Non-NSSI vs Current NSSI groups		Non-NSSI vs Past NSSI groups		Past NSSI vs Current NSSI groups	
	M (SD)	*M (SD)*	*M (SD)*	Estim.	*p-value*	Estim.	*p-value*	Estim.	*p-value*
Age	30.56 (12.16)	32.00 (11.32)	24.46 (7.76)	**-.22**	<.001	.05	.592	-.27	.004
BMI	20.93 (6.30)	21.78 (7.04)	19.84 (4.95)	-.05	.230	.04	.563	-.09	.200
Duration of treatment	35.42 (67.00)	50.16 (55.38)	21.74 (38.31)	**-.49**	.005	.35	.170	-.84	.002
Duration of the ED	109.12 (120.61)	101.16 (76.43)	76.36 (72.80)	**-.36**	.040	-.08	.765	-.28	.295
ED-15 Weight and shape concerns	2.51 (1.91)	3.52 (1.72)	3.80 (1.69)	**.42**	<.001	**.34**	.035	.08	.640
ED-15 Eating concerns	2.97 (1.60)	2.72 (1.45)	3.73 (1.71)	**.23**	.010	-.07	.632	**.30**	.046
ED-15 Overall score	2.69 (1.66)	3.22 (1.46)	3.77 (1.60)	**.34**	<.001	.18	.204	.16	.279
ED-15 Binge-eating episodes	1.13 (2.04)	2.42 (4.91)	2.25 (4.44)	**.68**	.002	**.76**	.013	-.08	.813
ED-15 Vomiting episodes	0.58 (2.39)	0.95 (1.90)	2.30 (4.91)	**1.37**	<.001	.49	.186	**.89**	.016
ED-15 Laxative misuse days	0.19 (.92)	0.26 (0.93)	0.80 (1.90)	**1.41**	<.001	.31	.586	**1.11**	.041
ED-15 Exercise days	0.95 (2.10)	0.95 (1.84)	2.11 (2.89)	**.80**	<.001	.00	.996	**.80**	.030
ED-15 Eating restraint days	1.91 (2.68)	2.11 (2.73)	2.57 (2.87)	.30	.141	.10	.747	.20	.532
DERS Strategies	2.58 (1.13)	3.10 (0.92)	3.42 (1.13)	**.28**	<.001	**.18**	.048	.10	.301
DERS Nonacceptance	2.74 (1.25)	3.39 (1.20)	3.27 (1.20)	**.18**	.010	**.22**	.032	-.04	.726
DERS Awareness	2.56 (0.80)	3.07 (0.86)	3.11 (0.92)	**.20**	<.001	**.18**	.012	.01	.861

(Continues)

Table 2. (Continued)

	Non-NSSI group (*n* = 98)	Past NSSI group (*n* = 19)	Current NSSI group (*n* = 54)	Non-NSSI vs Current NSSI groups		Non-NSSI vs Past NSSI groups		Past NSSI vs Current NSSI groups	
	M (SD)	*M (SD)*	*M (SD)*	Estim.	*p-value*	Estim.	*p-value*	Estim.	*p-value*
DERS Impulse	2.57 (1.25)	2.73 (0.97)	3.19 (1.23)	**.21**	.005	.06	.609	.16	.194
DERS Goals	2.92 (1.12)	3.39 (0.96)	3.71 (1.15)	**.24**	<.001	.15	.070	.09	.292
DERS Clarity	2.32 (0.83)	2.85 (0.98)	2.89 (0.97)	**.22**	<.001	**.21**	.016	.01	.901
DERS Total	2.61 (0.84)	3.09 (0.74)	3.27 (0.89)	**.23**	<.001	**.17**	.020	.06	.442
UPPS-P negative urgency	2.61 (0.71)	2.69 (0.61)	2.87 (0.58)	**.09**	.026	.03	.629	.06	.340
Maternal invalidation	1.98 (0.87)	2.44 (0.82)	2.43 (1.05)	**.21**	.002	**.21**	.037	.00	.986
Paternal invalidation	2.05 (0.80)	2.68 (0.96)	2.39 (0.91)	**.15**	.017	**.27**	.004	-.11	.243
Chaotic family	1.61 (1.09)	2.68 (1.67)	2.11 (1.44)	**.78**	.020	**1.44**	.003	-.66	.189
Typical family	3.86 (1.42)	2.47 (1.43)	3.09 (1.39)	**-1.09**	<.001	**-1.77**	<.001	.69	.142
Perfect family	1.64 (1.03)	1.68 (0.89)	1.91 (1.33)	.28	.422	.28	.554	.00	.998
Validating family	2.44 (1.42)	2.63 (1.57)	2.51 (1.31)	.13	.661	.23	.619	-.10	.837

Note. Bold values highlight significant differences.

Abbreviations: BMI, body mass index; DERS, Difficulties in Emotion Regulation Scale; ED-15, Eating Disorder-15; Estim., estimate; NSSI, nonsuicidal self-injury.

The moderating role of difficulties in emotion regulation and negative urgency in the relationship between maternal/paternal invalidation and NSSI

Comparing the non-NSSI and current NSSI groups, statistical analyses showed that additive multiple moderator models that better fits to the data are the ones where maternal/paternal invalidation is moderated by emotional awareness and negative urgency (maternal invalidation model, AIC = 174.49, Bayesian information criterion [BIC] = 192.51, Adjusted-R^2 = .29; paternal invalidation model, AIC = 175.83, BIC = 193.69, Adjusted-R^2 = .28). The model structure was invariant for the invalidation type (maternal and paternal invalidation). These models are outlined in Figure 2.

As shown in the table 3, the maternal/paternal invalidation and the lack of emotional awareness interaction was positive (maternal invalidation x emotional awareness, estimate = .86, p = .005; paternal invalidation x emotional awareness, estimate = .62, p = .043). Therefore, as the difficulties in emotional awareness increase, the conditional effect of maternal/paternal invalidation in the presence of NSSI in the previous year becomes stronger: higher invalidation is associated with a higher likelihood of current NSSI, and this effect is exacerbated by increased difficulties in emotional awareness. For a better interpretation of this effect, the interaction is outlined in Figure 3a. In the case of simple moderator models (with a single moderator), a simple-slope analysis showed that when the difficulties in emotional awareness increase, exceeding 2.92, the conditional effect of maternal invalidation in the presence of the NSSI in the previous year becomes stronger. In the case of paternal invalidation, the moderator effect of the emotional awareness is only observed after controlling for the moderator effect of the negative urgency. A simple slope analysis applied to the additive moderator model in Figure 2, with a mean-center negative urgency, showed that when the difficulties in emotional awareness increase, exceeding 3.06, the conditional effect of the paternal invalidation in the presence of NSSI in the previous year becomes stronger. The remaining DERS subscales, including limited access to regulation strategies, non-acceptance of emotional responses, impulse control difficulties and difficulties engaging goal-directed behavior, were not significant moderators of the relationship between parental invalidation and NSSI among ED.

The maternal/paternal invalidation and the negative urgency interaction is negative (maternal invalidation x negative urgency, estimate = -1.06, p = .005; paternal invalidation x negative urgency, estimate = -1.16, p = .004). As the negative urgency increases, the conditional effect of maternal/paternal invalidation on NSSI becomes weaker. That is, maternal/paternal invalidation is a predictor of the presence of NSSI in individuals with low levels of negative urgency, but for individuals with high levels of negative urgency, invalidation no longer predicts NSSI because the predictive effect of negative urgency

on NSSI becomes stronger. Increased negative urgency alone contributes to increased likelihood of current NSSI, regardless the level of maternal/paternal invalidation. For a better interpretation of this effect, the interaction is outlined in Figure 3b. In the case of simple moderator models (with a single moderator), a simple-slope analysis showed that when the negative urgency increases from 1.45 until a limit of 2.89, the conditional effect of maternal invalidation in the presence of the previous year NSSI becomes weaker. In the case of paternal invalidation, a similar situation occurs when the negative urgency increases until a limit of 2.71 (with no lower limit).

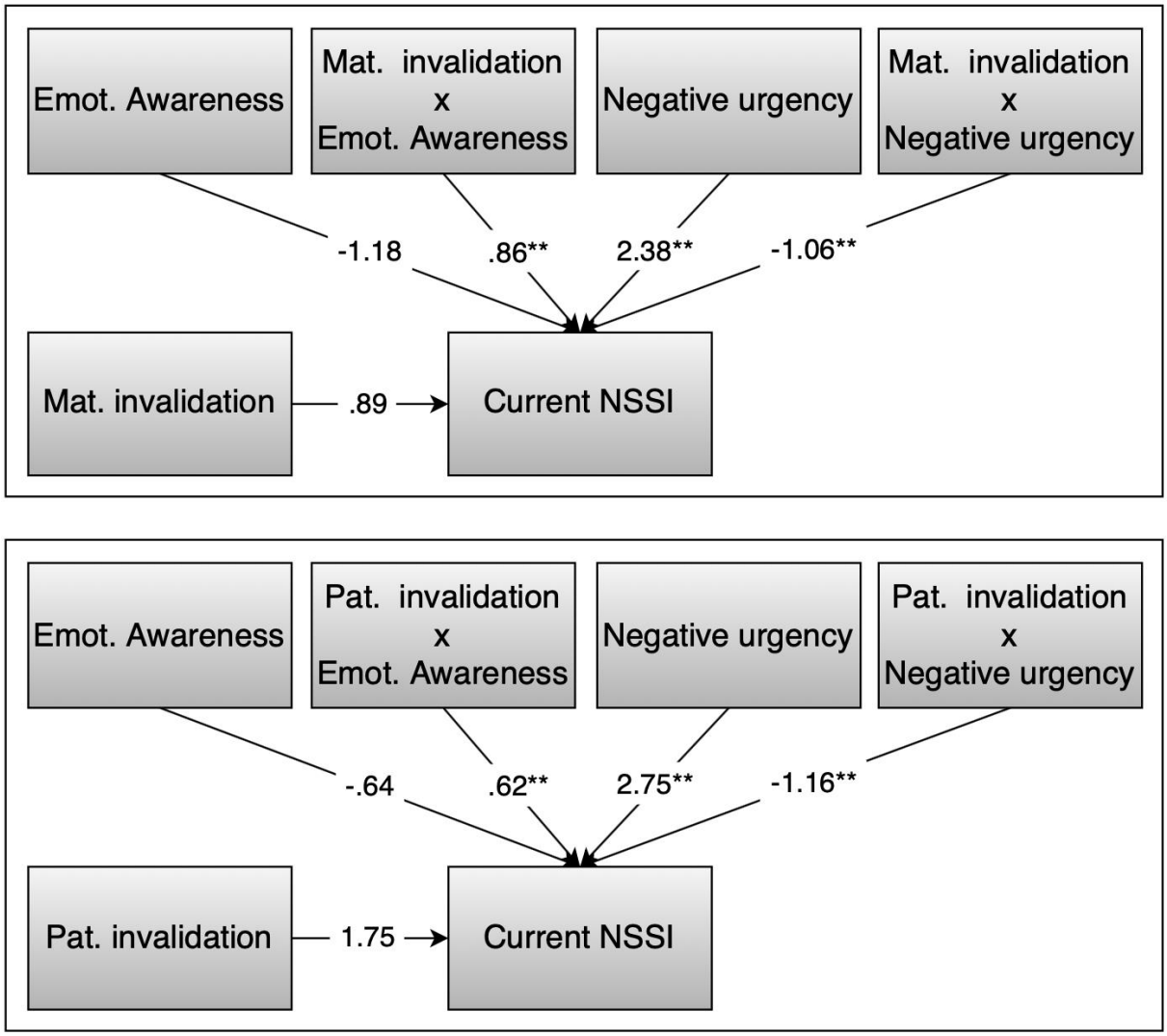


Figure 2. Additive multiple moderator model for the conditional effect of parental invalidation on the difference between the non-NSSI and current NSSI groups. Maternal invalidation (up) and paternal invalidation (down). NSSI, nonsuicidal self-injury

Table 3. Estimates of the multiple moderated models outlined in Figure 1

Coefficients	Estimate	*SE*	*p*-value
Maternal invalidation			
Intercept	-4.64	2.25	.039
Maternal invalidation	.89	.94	.341
Emotional awareness	-1.18	.67	.080
Negative urgency	2.38	.83	.004
Maternal invalidation x Emotional awareness	.86	.31	.005
Maternal invalidation x Negative urgency	-1.06	.38	.005
Paternal Invalidation			
Intercept	-6.89	2.73	.012
Paternal invalidation	1.75	1.13	.121
Emotional awareness	-.64	.73	.378
Negative urgency	2.75	.94	.003
Paternal invalidation x Emotional awareness	.62	.33	.043[a]
Paternal invalidation x Negative urgency	-1.16	.41	.004

[a]Significance of the likelihood ratio test.

(a)

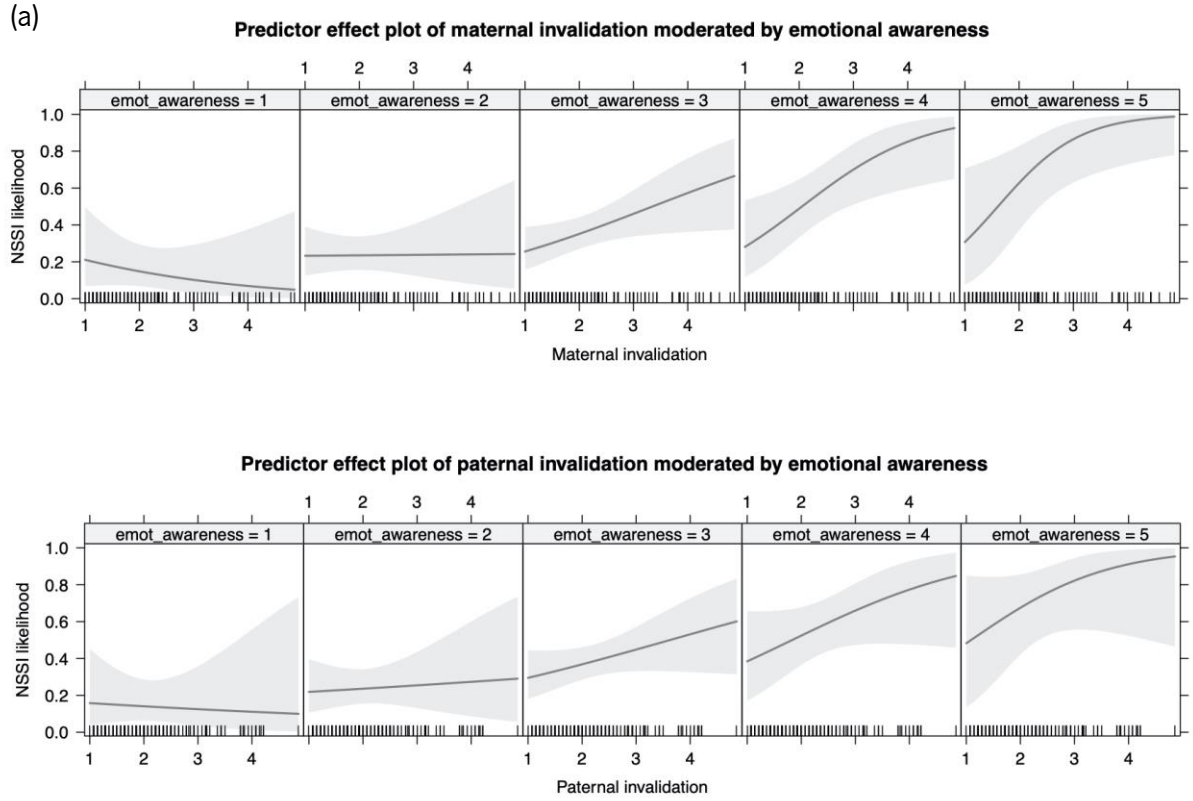


Figure 3. The conditional effect of maternal/paternal invalidation in the presence of NSSI (comparison between the non-NSSI and current NSSI groups), moderated by (a) the lack of emotional awareness and (b) negative urgency. Shaded area is a pointwise 95% confidence band for the fitted values, based on standard errors and computed from the covariance matrix of the fitted regression coefficients. (a) A total score for the lack of emotional awareness was obtained through item averaging, ranging from 1 to 5. (b) A total score for the negative urgency was obtained through item averaging, ranging from 1 to 4

(b)

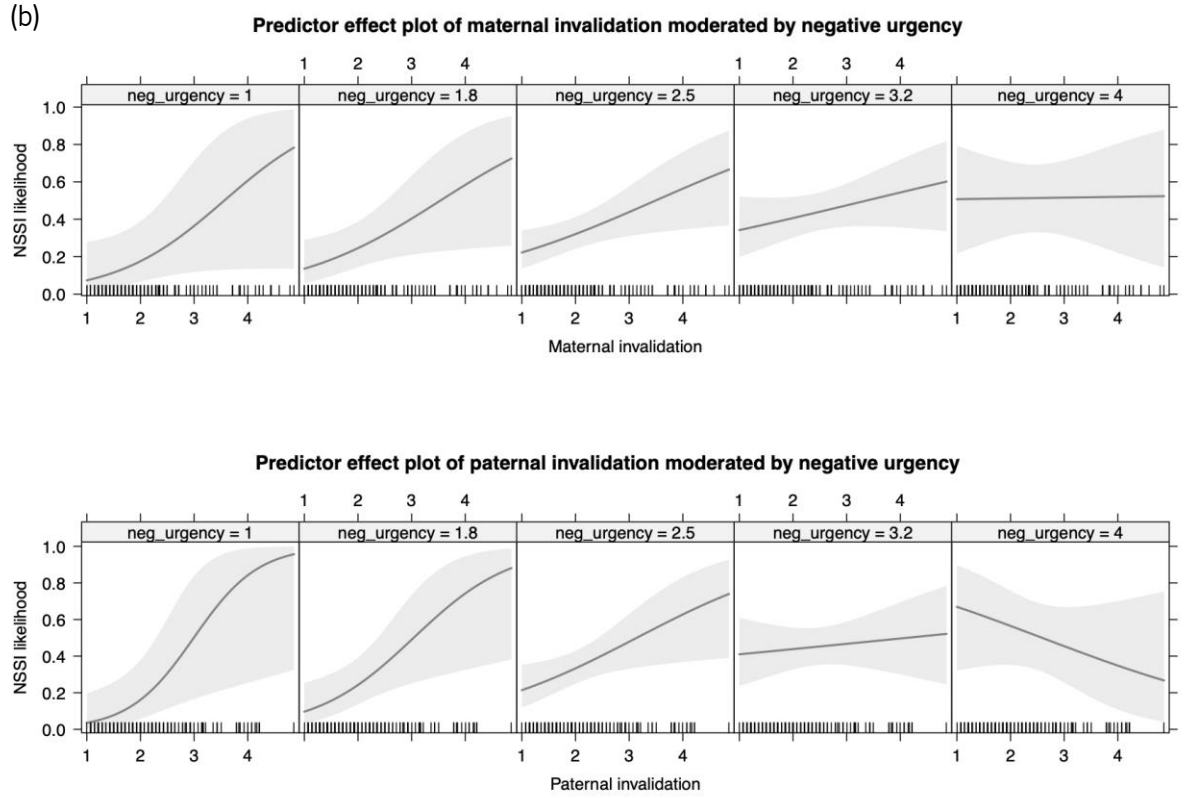


Figure 3. (Continued)

Discussion

The current study explored the frequency of NSSI and related characteristics in outpatients with ED and the differences in eating pathology, difficulties in emotion regulation, negative urgency and childhood invalidation between the non-NSSI, past NSSI and current NSSI groups. Additionally, this study examined the moderating role of difficulties in emotion regulation and negative urgency in the relationship between maternal/paternal invalidation and NSSI.

Our results showed that 11.1% of the sample reported NSSI over a year ago and 31.6% had engaged in these behaviors in the previous year. This frequency is in line with prior research among patients with ED (e.g., Pérez et al., 2018). The most frequent methods of NSSI were scratching and cutting, a significant portion of participants used two or more methods, and self-injurers reported feeling little or no pain during NSSI. Previous studies found similar results in patients with ED (Allen, Fox, Schatten, & Hooley, 2019; Claes, Vandereycken, & Vertommen, 2001; Smithuis et al., 2018), indicating that individuals who engage in NSSI use more than one method. The findings also provide support for Nock's model (2009), which includes the pain analgesia/opiate hypothesis as a specific risk factor for

NSSI. According to the model, self-injurers show pain analgesia that increases the likelihood of NSSI, and it is possible that this enhances the risk of other harmful behaviors, such as suicide attempts.

As in the existing literature (Claes et al., 2001; Smithuis et al., 2018), the most frequently injured body parts were the arms, hands/or nails (which are easily hidden), many participants had engaged in NSSI one to five times a month and less than once a day, and these behaviors were not planned, thus revealing their unintentional nature. Participants also reported that NSSI was performed because of its automatic reinforcement function, namely for reasons involving the avoidance or removal of negative feelings and for self-punishment. These results are consistent with findings from previous studies (Muehlenkamp et al., 2009; Braga & Gonçalves, 2014) and confirm that NSSI may have the ability to reduce negative emotions and to satisfy self-punishment desires (Hooley & Franklin, 2017; Nock & Prinstein, 2004).

In examinations of the differences between the groups, patients from the current NSSI group were younger than non-injurers or those with NSSI over a year ago. This result is consistent with research that has shown that NSSI is mostly common among youth (Muehlenkamp, Claes, Havertape, & Plener, 2012; Turner et al., 2014). Given that the current NSSI group was younger, its duration of treatment and ED is expected to be shorter than in the non-NSSI group. Among these participants, the mean age was higher, as was the frequency of cases with a long-term ED. The absence of between-group differences in BMI is still in accordance with an earlier study in which BMI did not differ between disordered eating groups with or without NSSI (Muehlenkamp, Peat, et al., 2012).

Regarding eating pathology, the current NSSI group scored higher on eating attitudes, binge-eating episodes, self-induced vomiting episodes, laxative misuse days and excessive exercise days than the non-NSSI group. In comparison with the past NSSI group, those who engaged in current NSSI also related more vomiting episodes, laxative misuse days and excessive exercise days. No significant differences were found between the groups on the number of eating restraint days. These findings suggest that purging behaviors and exercise are more associated with current NSSI than restrictive eating episodes, which supports prior evidence that self-harm occurs especially with binge eating/purging behaviors (e.g., Peebles, Wilson, & Lock, 2011), and that NSSI is associated with a greater severity of ED core symptoms.

According to the role of emotion dysregulation in the development of NSSI and ED (Svirko & Hawton, 2007), difficulties in emotion regulation were higher among participants with NSSI in the previous year than among participants without NSSI. Confirming the evidence of the association between negative urgency and NSSI and ED (Claes et al., 2015; Lockwood et al., 2017), the current NSSI group presented

a higher tendency to engage in impulsive behaviors when accompanied by negative affect than the non-NSSI group. Thus, specific forms of emotion dysregulation and negative urgency can differentiate between individuals with current NSSI and those who never engaged in these behaviors. On the other hand, these variables did not differ between the groups with NSSI in the past and in the previous year. Possibly, difficulties in emotion regulation and negative urgency are equally linked to past and ongoing NSSI, and even if these behaviors have ceased, the impairment in emotion regulation and impulse control remains.

Concerning parental invalidation, the NSSI groups differed from the non-NSSI individuals. Patients with ED and past or current NSSI showed greater perception of emotional invalidation by one's mother and father, as well as increased perception of growing up in chaotic or typical family environments. These data are in line with evidence that invalidation in childhood is related to NSSI and ED (Adrian et al., 2018; Mountford et al., 2007).

Finally, moderation analyses revealed an adequate fit to the data for the model that included moderating effects of lack of emotional awareness and negative urgency in the relationship between the perception of maternal/paternal invalidation and increased likelihood of engagement in NSSI in the previous year. Specifically, greater maternal or paternal invalidation was associated with greater likelihood of current NSSI, and this effect seems to be exacerbated by increased difficulties in awareness and understanding of current-state emotions. In addition, maternal or paternal invalidation was a predictor of NSSI when low levels of negative urgency were reported. In other words, when the negative urgency was high, it became a stronger predictor of NSSI than parental invalidation. This finding suggests a direct influence of increased negative urgency on current NSSI. That is, a higher negative urgency may represent a risk pathway for NSSI per se, regardless the level of parental invalidation. The process by which an invalidating childhood environment contributes to the engagement in NSSI can be more complex. The perception of maternal/paternal invalidation by itself is not enough to explain NSSI, and this family factor may be an important predictor of current NSSI within the context of increased difficulties in emotional awareness and lower levels of negative urgency.

Contrary to the existing literature that shows a strong association between NSSI and limited access to regulation strategies, non-acceptance of emotional responses, impulse control difficulties and difficulties engaging goal-directed behavior (e.g., Wolff et al., 2019), these difficulties in emotion regulation did not play a moderating role in the relationship between parental invalidation and current NSSI among ED. However, our model is in accordance with previous evidence showing significant associations between a poor emotion awareness and ED cognitions and NSSI (Racine & Wildes, 2013; Wolff et al., 2019). These findings may be related to the higher frequency of anorexia nervosa in our sample, when compared

to other diagnoses, since difficulties with emotional awareness seem to have a strong role in anorexia nervosa (Lavender et al., 2014, 2015). For example, those with anorexia nervosa show higher deficits in the ability to recognize emotions in others than those with bulimia nervosa (Wonderlich & Lavender, 2017). Nevertheless, as suggested in the work of Wolff et al. (2019), the construct of emotion dysregulation is complex and more research that examines each domain of the emotion dysregulation is needed, especially to understand that specific processes contribute to greater likelihood of NSSI.

In general, our results fit well with models in which NSSI and disordered eating behaviors may be considered as means of coping with internal distress or as negatively reinforced emotion-regulation strategies (e.g., Chapman et al., 2006; Claes & Muehlenkamp, 2014) and are consistent with previous evidence that perceived parental invalidation of emotions is related to adolescent emotion dysregulation (Buckholdt, Parra, & Jobe-Shields, 2014; Crowell et al., 2009). Congruent with Linehan's (1993) theory, in an invalidating childhood environment, individuals do not develop the ability to label, recognize and communicate their own emotional reactions. This inability facilitates the tendency to misunderstand and invalidate one's emotional experiences. Consequently, individuals with difficulties in awareness and understanding of emotions within an invalidating environment may be less able to manage intense or negative emotional experiences in adaptive ways, and may thus engage in maladjusted behaviors to reduce, avoid or punish their own emotions.

Moreover, in support of the present data, in a previous study, negative urgency predicted the onset of NSSI among college women, above and beyond all other impulsivity-related personality traits (Riley, Combs, Jordan, & Smith, 2015). In another research study examining the influence of the UPPS model of impulsivity on the co-occurrence of bulimic symptoms and NSSI, when the relationship of all four traits (lack of perseverance, lack of premeditation, sensation seeking and negative urgency) to each other and to bulimic symptoms and NSSI were modeled simultaneously, only negative urgency predicted the co-occurrence of these behaviors (Peterson & Fischer, 2012). Our findings confirm the central role of this personality trait and support the hypothesis that individuals with high levels of negative urgency are more likely to engage in maladaptive behaviors in response to negative affect (Peterson & Fischer, 2012). Recent evidence also documented that difficulties in emotion regulation and negative urgency were both related to NSSI and disordered eating symptoms, and these factors can be considered as common transdiagnostic mechanisms (Hasking & Claes, 2019). Therefore, simultaneous examination of perceptions of invalidation during childhood, difficulties in emotion regulation and negative urgency may further the understanding of NSSI in patients with ED.

Findings should be considered alongside some limitations. The cross-sectional nature of our study does not allow for the establishment of causality and directionality of effects. The lack of diversity of the sample in terms of gender and race/ethnicity limits the generalizability of the results. We compared groups with unequal numbers of participants, and the groups with NSSI were characterized by a smaller sample size. Problems have also been reported with the original six-factor solution of the DERS, namely relating the emotional awareness subscale (Bardeen, Fergus, & Orcutt, 2012; Lee, Witte, Bardeen, Davis, & Weathers, 2016; Hallion, Steinman, Tolin, & Diefenbach, 2018). Although, in the present study, all DERS subscales showed high Cronbach's alphas, our results should be interpreted with caution and more research is needed to confirm our main conclusions. The biases inherent to retrospective and self-report measures are still limitations. Nevertheless, the ICES holds the advantage of accessing, although retrospectively, the individual's perception of invalidation during childhood. Finally, we did not collect data on comorbid mental health diagnoses that could be contributing to difficulties in emotion regulation.

Further prospective designs, including both male and female, and mediation analyses are needed to confirm and extend the findings, as well as to understand the onset, course and maintenance of NSSI, identifying which factors can predict NSSI onset and which can be prospectively associated with persistent or current self-harm. Future longitudinal studies should consider equal sample sizes within each group, use other assessment approaches, including clinical interviews, and perform analyses controlling for comorbid mental health diagnoses (e.g., mood disorders, personality disorders). In general, the present study guides future research into the roles of invalidating childhood environments, emotion dysregulation, and impulsivity in both NSSI and ED.

Despite the limitations, this study, conducted in a Portuguese transdiagnostic sample of outpatients with ED, provides a detailed characterization of NSSI in the context of ED and, as far as we know, is the first to assess and compare participants without NSSI, with NSSI over a year ago and with NSSI during the previous year regarding different variables evaluated together: eating pathology, various aspects of emotion dysregulation, negative urgency and invalidating childhood environments. Our results confirm the presence of NSSI among individuals with ED, especially those of a younger age, highlight the relevance of addressing NSSI characteristics and functions (e.g., avoidance or removal of negative feelings, self-punishment), and reveals greater levels of eating pathology among those who endorse the presence of NSSI. In addition, in order to advance the study of the comorbidity between NSSI and ED, a model was specified and tested to illustrate the relationships between an invalidating childhood environment, difficulties in emotion regulation, negative urgency and NSSI among patients with ED. The results demonstrate specific emotion regulation impairments, forms of impulsivity and family relational

problems that may serve to identify patients with ED at risk of NSSI, allowing targeted prevention and treatment practices to be developed. Interventions integrating strategies drawn from evidence-based treatments, such as enhanced cognitive behavioral therapy, dialectical behavioral therapy or integrative cognitive-affective therapy that validate, frame and legitimize individual experiences and promote more adaptive emotion regulation and impulse control strategies, may be useful in the cessation of or recovery from NSSI and ED.

Acknowledgements

This study was supported by the following: the Foundation for Science and Technology (FCT) with the Human Capital Operational Programme (HCOP), supported by the European Social Fund and national funds of the Ministry of Science, Technology and Higher Education under doctoral grant SFRH/BD/116974/2016; and the Center of Mathematics (CMUP), University of Porto, which is financed by national funds through FCT under the project UIDB/00144/2020.

Supporting information

Additional Supporting Information may be found online in the supporting information tab for this article.

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CAPÍTULO 5

Group-based intervention for eating disorders with non-suicidal-self-injury: A case series[8]

Abstract

Objective: Eating disorders and non-suicidal self-injury frequently co-occur. Therefore, it is important to develop interventions that address this comorbidity. This study aimed to conduct a case series testing the feasibility, acceptability and preliminary effectiveness of a brief group-based intervention for eating disorders outpatients with non-suicidal self-injury. **Method:** The intervention integrates empirically based strategies drawn from cognitive-behavioral therapy approaches. Sixteen participants with eating disorders and a history of non-suicidal self-injury (M_{age} = 25.38 years, *SD* = 7.78) were enrolled in the group intervention. The recruitment, intervention adherence, retention and attrition rates, and satisfaction with the intervention were examined. The participants were compared at pre-intervention, post-intervention and 3-month follow-up on non-suicidal self-injury, eating pathology, emotion dysregulation, negative urgency and emotional body investment using standardized measures. **Results:** Twelve participants remained in the intervention. Overall, participants reported high satisfaction with the group, and stated that the main benefits were the shared experiences, support among members and coping skills learned. Pre- to post-intervention measures revealed a reduction of current non-suicidal self-injury and improvement trends in emotion regulation and body investment domains, especially in the access to emotion regulation strategies, acceptance of emotional responses, impulse control, and positive body image feelings and attitudes. Most of these changes were maintained or further improved at the 3-month follow-up. **Conclusions:** Results suggest the feasibility and acceptability of this brief group-based intervention.

Keywords: eating disorders, emotion dysregulation, impulsivity, intervention, non-suicidal self-injury

[8] Vieira, A. I., Rodrigues, T. F., Brandão, I., Timóteo, S., Nunes, P., & Gonçalves, S. (2020). *Group-based intervention for eating disorders with non-suicidal-self-injury: A case series* [Manuscript submitted for publication]. School of Psychology, University of Minho.

Introduction

The comorbidity between non-suicidal self-injury (NSSI), defined as intentional and self-inflicted destruction of body tissue without suicidal intent (Nock, 2010), and eating disorders (ED) is well established in research (Claes et al., 2012; Kostro et al., 2014). Previous studies found that between 33% and 37% of ED patients reported NSSI in their lifetime (Pérez et al., 2018; Vieira et al., 2017). Specifically, the presence of NSSI has been reported between 23.5% and 27.8% for bulimia nervosa (BN), between 19.7% and 26.2% for other specified ED (OSFED), 20% for binge eating disorder (BED), and 17% for anorexia nervosa (AN) (Claes at el., 2013; Islam et al., 2015).

Several studies have shown that ED patients with NSSI show more severe ED, dysfunctional personality traits, impulsive behaviors and traumatic experiences, when compared to ED patients without NSSI (Claes et al., 2003; Islam et al., 2015; Solano et al., 2005). Therefore, the comorbidity between these behaviors has clear implications for intervention and clinicians should assess NSSI throughout the course of treatment among ED patients.

Although cognitive-behavioral therapy (CBT) has been considered the gold-standard for treatment of ED (Agras et al., 2000), there is still a lack of evidence-based and specific treatments for NSSI (Turner et al., 2014). Consequently, approaches to the management of ED and NSSI are quite varied (Levitt et al., 2004) and include the dialectical behavior therapy (Miller et al., 2007; Safer et al., 2009), family-based treatment (Le Grange & Lock, 2007; Lock & Le Grange, 2013) and mentalization-based therapy (Robinson et al., 2016). In addition, group treatments, such as emotion regulation group intervention (Gratz & Gunderson, 2006) and developmental group psychotherapy (Wood et al., 2001), as well as a brief treatment for self-injurious behaviors (T-SIB; Andover et al., 2017), have been used to intervene towards NSSI. However, the dialectical behavior therapy was originally developed to treat borderline personality disorder (Linehan, 1993). This therapy is a multimodal, intensive and long-term approach, and individuals with NSSI and ED can also benefit from a shorter and more focused intervention on factors underlying both problems. Further, assessments of dialectical behavior therapy have addressed either NSSI or ED, rather than both concurrently (e.g., Miller et al., 2007; Safer et al., 2009). The remaining approaches, including emotion regulation group intervention, developmental group psychotherapy and T-SIB, have positive effects on the reduction of NSSI, but they included self-injury with and without suicidal intent or were evaluated with individuals diagnosed with personality disorders or depression, anxiety and substance-related disorders (Andover et al., 2017; Gratz & Tull, 2011; Robinson et al., 2016; Wood et al., 2001). In this way, it is not clear how these interventions can be effective among individuals who have NSSI in the context of other disorders, specifically ED.

Given the clinical relevance of the co-occurrence of ED and NSSI (Vieira et al., 2016), it is important to discuss new interventions that could address both problems in addition to treatment as usual (TAU) for ED. Treating the ED and NSSI comorbidity is essential to the recovery, as the presence of both conditions is associated with a higher severity of psychopathology (Davico et al., 2019). Additionally, there is a lack of research that examines interventions (e.g., CBT) for ED and NSSI concurrently (Peat, 2014). Thus, the development and testing of an intervention for patients with both problems offers important insights into clinical practice.

Considering that group intervention may be helpful as a component of a broader treatment, while promoting cohesion and support among members (Levitt et al., 2004), and that interventions previously used with NSSI were also brief in nature (e.g., emotion regulation group intervention: fourteen weeks; T-SIB: nine sessions), we developed a brief group-based intervention for ED outpatients with current or past NSSI. Our intervention integrates psychoeducation and well established and empirically based strategies mainly drawn from CBT (e.g., Barlow et al., 2011; Evans et al., 1999; Walsh, 2012) and enhanced CBT for ED (CBT-E; Fairburn et al., 2008) to improve coping skills for dealing with difficulties in risk domains potentially involved in the development and maintenance of ED and NSSI: emotion dysregulation, impulsivity and poor problem-solving skills, interpersonal difficulties (i.e., communication) and body dissatisfaction or the lack of investment towards the body.

The importance of targeting these risk domains is supported by the evidence on the overlap of ED and NSSI, which suggests that these psychosocial factors may play an important role in both problems (Claes & Muehlenkamp, 2014).

One of these psychosocial factors is that of emotion dysregulation. Previously, in a study with 120 patients with ED, including AN-restricting type (AN-R), AN-binge/purge type (AN-BP), BN and BED, all patients reported more difficulties in emotion regulation than healthy controls (Brockmeyer et al., 2014). Moreover, supporting the role of difficulties in emotion regulation as a transdiagnostic factor, patients with AN-R, AN-BP and BN did not differ in the emotion regulation domains, except for impulse control, in which patients with AN-BP reported more difficulties than those with AN-R and BED (Brockmeyer et al., 2014). Also, in a systematic review of Leehr et al. (2015), an emotion regulation model was proposed. This model includes negative emotions as a trigger for binge eating and relief of these negative emotions through binge eating. From the analysis of studies, Leehr et al. (2015) concluded that there is evidence for the triggering effect of negative emotions for binge eating in adult BED samples. Despite less investigated, findings have also supported the relief of negative emotions through binge

eating. In line with these findings, CBT-E addresses additional mechanisms that contribute to the maintenance of ED, including difficulties in coping with intense mood states (Fairburn et al., 2008).

Emotion dysregulation also appears to contribute to the co-occurrence of NSSI and disordered eating. For example, Anderson et al. (2017) tested a model integrating risk factors for ED and NSSI. The results showed that a limited access to emotion regulation strategies mediated the relationship between emotional distress and avoidance or suppression of negative feelings, which in turn was associated to NSSI and disordered eating. Thus, emotion dysregulation can be a pathological process involved in this comorbidity, and precursors such as personality traits, characteristics of the family environment, cultural context and early trauma might contribute to the development of this process (Svirko & Hawton, 2007). In support of this hypothesis, child sexual abuse victims with NSSI were found to have more difficulties in emotion regulation than the victims without NSSI (Demirci, 2018). In another study, emotion dysregulation and dissociation mediated the relationship between childhood trauma and eating psychopathology (Moulton et al., 2015). Possibly, experiencing traumatic events in childhood can lead to difficulties in emotion regulation, which in turn contributes to the development of maladjusted behaviors, in particular NSSI and disordered eating.

Nock and Prinstein (2004) also proposed that NSSI occur because of their automatically reinforcing (e.g., removal of a negative affective state or occurrence of a desired internal state) and/or socially reinforcing (e.g., to avoid interactions with others or to communicate information to another) nature. These behaviors also seem more common when patients have BN, binge eating, purging, a history of substance use and/or impulsive behaviors (Peebles et al., 2011; Vieira et al., 2018), as well as among individuals with poor problem-solving skills (Prinstein, 2008). On the same line, in a recent study, difficulties in emotion regulation and negative urgency were both related to dysregulated behaviors, including NSSI and disordered eating (Hasking & Claes, 2019). On the other hand, Pérez et al. (2018) found that ED patients with NSSI reported high discomfort with physical contact, negative feelings related to the body and fewer body protection activities. According to Orbach and Mikulincer (1998), negative bodily experiences can lead to self-destructive behaviors, while positive bodily experiences can prevent self-harm.

Considering the multifactorial nature of ED and NSSI, our intervention is based on CBT-E (Fairburn et al., 2008), which can address maintaining processes such as mood intolerance. However, the intervention is not focused on eating psychopathology, but rather acknowledges most of the relevant factors overlapping ED and NSSI and includes efforts to promote emotion regulation and impulse control strategies, interpersonal communication skills and body satisfaction/investment.

Thus, providing support for future randomized controlled trials (RCT), the aim of this study was to conduct a case series testing the feasibility and acceptability of the group-based intervention for ED outpatients with current or past NSSI. A secondary purpose was to assess the change in the main variables at the post-intervention and at the 3-month follow up.

Method

Intervention description

The group-based intervention is a short-term psychotherapy, in addition to psychiatric TAU for ED, which generally involves outpatient care (i.e. individual sessions with a psychiatrist). In these sessions, weight and ED symptoms are addressed with the goal of encouraging a change in eating behaviors. TAU can also include pharmacotherapy. In addition to outpatient care, when necessary, full hospitalization or a model of hospitalization that provides intensive treatment without disconnecting patients from the family, social or educational environment are available resources. However, all participants were outpatients during the intervention.

Our intervention consisted of six sessions, lasting 90 minutes each, and occurred once every two weeks. The sessions address specific topics, include elements of CBT and CBT-E (Barlow et al., 2011; Evans et al., 1999; Fairburn et al., 2008; Walsh, 2012) and combine psychoeducation with related activities.

The first session consists of introducing the intervention and building motivation for change. The second session focus on the understanding of emotions, recognizing and monitoring of emotion experiences, and promoting present-focused and nonjudgmental awareness. The third session consists of understanding emotion avoidance strategies and emotion-driven behaviors (e.g., social isolation, NSSI) and in developing appropriate and alternative actions or behaviors. The fourth session addresses impulsivity and is focused in promoting adaptive impulse control and problem-solving strategies. The fifth session aimed to explore the dimensions of body image, to identify body-related activities to improve body image attitudes and emotional involvement towards the body and to reduce behaviors such as body checking and body avoidance. The purposes of the last session are to strengthen assertive communication skills, to review the intervention learned contents and to finalize the group intervention. In addition to group sessions, the participants receive via e-mail addresses supplementary information developed for each session, including worksheets and monitoring forms to increase skills generalization and daily practice. An overview of the topics, goals and content of the group intervention is presented in Table 1.

Table 1. Overview of the topics, goals and content of the group intervention

Session	Topic	Goals	Content
Session 1 "Introducing the intervention"	Orientation to the intervention	To orient participants to the intervention; To promote a commitment to the intervention purposes.	Understand how the group intervention works and its goals; Understand the stages of change and determine in which stage the participants are; Explore the costs and benefits of changing; Establish a group contract.
Session 2 "Managing emotions"	Emotion regulation	To understand the emotions; To recognize emotional responses; To promote emotional awareness.	What are "emotions" and their functionality; Components of emotional experiences – thoughts, physical sensations/feelings and behaviors; Monitoring emotional experiences; Nonjudgmental and present-focused awareness (mindfulness exercise).
Session 3 "Avoid less, do more"	Emotion regulation	To understand emotion avoidance strategies and emotion-driven behaviors; To develop alternative and non-avoidant actions or behaviors.	Emotion avoidance strategies (e.g., distraction, safety signals); Conceptualize and identify the emotion-driven behaviors (e.g., social isolation, binge drinking, NSSI); Identify alternative actions.
Session 4 "Think & Solve"	Impulse control and problem-solving	To promote adaptive impulse control strategies; To learn problem-solving steps.	Definition of impulsivity; Deal with impulsivity – strategies to put into practice (e.g., remember the long-term negative consequences); Problem-solving training.
Session 5 "Me and my body"	Body image and body investment	To improve body image attitudes and emotional involvement towards the body; To reduce behaviors such as body checking and avoidance.	Understand the dimensions of body image: attractiveness, effectiveness, health, sexual characteristics, sexual behavior and body integrity; Identify body-related activities to improve body image attitudes and experiences; Identify participants' positive characteristics (not related to body shape or weight); Strategies to deal with body dissatisfaction - body checking and avoidance.
Session 6 "Communicate & Finalize"	Assertive Communication and Termination	To increase assertiveness skills; To review key intervention concepts and strategies; To finalize the group intervention.	Understand the communication styles; Assertiveness training; Review helpful skills and strategies for maintaining progress; Termination activity.

Note. Intervention incudes empirically based strategies (Barlow et al., 2011; Bower & Bower, 1976; D'Zurilla & Goldfried, 1971; Fairburn et al., 2008; Gonçalves, 1994; Levitt, Sansone, & Cohn, 2004; Walsh, 2012).

Participants

The group consisted of 16 female ED outpatients recruited from a specialized and public psychiatric service for the treatment of ED in northern Portugal. Inclusion criteria included: (a) participants aged 18 years or older; (b) enrolled in psychiatric treatment for ED (TAU); (c) current or past engagement in NSSI; and (d) regular internet/e-mail access (supplementary materials are delivered through the e-mail address). Exclusion criteria included: (a) current suicidal ideation and previous suicide attempts; (b) evidence of cognitive impairment, psychosis and physical health problems; (c) inability to read and understand Portuguese; and (d) being currently enrolled in another outpatient psychological treatment.

The baseline diagnostic and demographics are presented in Table 2. At the group intervention commencement, the mean age was 25.38 years (*SD* = 7.78) and mean body mass index (BMI) was 20.66 (*SD* = 4.89). Using Diagnostic and Statistical Manual of Mental Disorders criteria (5th ed.; DSM-5; American Psychiatric Association [APA], 2013), six participants (37.6%) met criteria for AN (5 restrictive, 1 binge-purge type), two (12.5%) for BN, three (18.8%) for BED, and five (31.3%) for OSFED. The mean duration of the ED was 86.94 months (*SD* = 64.66) and the mean duration of psychiatric treatment (TAU) was 30 months (*SD* = 40.85). Fourteen participants were under psychiatric medication (e.g., antidepressants, benzodiazepines) at the time of the intervention.

Feasibility and Acceptability

In order to assess intervention feasibility, we first examined the recruitment and intervention adherence, considering the participants who were referred to the group-based intervention, those who did not meet the inclusion criteria or who declined to participate in the intervention, and those who agreed to participate in the group. Second, participants' flow was examined to verify retention and attrition rates throughout the intervention. To describe and analyze the reasons for dropout, participants were contacted by researchers via phone or email.

Acceptability was assessed by considering the participant satisfaction with the intervention. The Client Satisfaction Questionnaire (CSQ-8; Attkisson & Zwick, 1982; Portuguese version Machado & Klein, 2002), described below, and additional questions to get qualitative feedback from participants were administered.

Measures

At baseline, participants completed a sociodemographic and clinical questionnaire that collected information on age, marital status, years of education, occupation, psychiatric medication use, duration of treatment, duration of the ED, and suicidal ideation/attempts (i.e., "Have you been thinking about suicide?"; "Have you recently attempted to commit suicide?").

The following measures were applied at pre-intervention, post-intervention and 3-month follow-up:

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008; Portuguese version Machado et al., 2014). The EDE-Q is a 28-item self-report measure that assesses the frequency and severity of core ED symptoms over the past 28 days. The EDE-Q is divided into four subscales: restraint, eating concern, shape concern, and weight concern. In the present study, Cronbach's alpha for the EDE-Q total score at each administration was .94, .95 and .86, respectively.

Self-Injury Questionnaire - Treatment Related (SIQ-TR; Claes & Vandereycken, 2007; Portuguese version Gonçalves, 2008). The SIQ-TR is a 60-item self-report measure that assesses the presence of NSSI. Participants were asked whether they deliberately injured themselves by means of scratching, bruising, cutting, burning, and biting (or other). For each method, participants indicate how long ago they performed the behavior: never, a week ago, a month ago, several months ago, or a year ago.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Portuguese version Coutinho et al., 2010). The DERS is a 36-item self-report measure that assesses emotion regulation difficulties on a five-point Likert-type scale across six dimensions: limited access to emotion regulation strategies; non-acceptance of emotional responses; lack of emotional awareness; impulse control difficulties; difficulties engaging in goal-directed behavior; and lack of emotional clarity. Higher scores suggest more difficulties in emotion regulation. Internal consistency in this sample at each administration was .97, .98 and .98, respectively.

UPPS-P Impulsive Behavior Scale - Negative Urgency Subscale (Whiteside et al., 2005; Portuguese version Lopes et al., 2013). The UPPS-P is a 12-item subscale that assesses an individual's tendency to engage in impulsive behaviors, when accompanied by negative affect. Items are assessed on a four-point Likert-type scale. Cronbach's alphas in the current sample were .89, .93 and .92, respectively.

Body Investment Scale (BIS; Orbach & Mikulincer, 1998; Portuguese version Vieira et al., 2020). The BIS is a 24-item self-report measure of emotional investment in the body. It consists of four factors: body image feelings and attitudes, comfort in touch, body care and body protection. Each item is scored on a five-point scale. Higher scores indicate a more positive feeling about the body, about touch, and

more body care and protection. In the present study, Cronbach's alphas for the body image feelings and attitudes at each administration were .87, .93 and .97, respectively. Cronbach's alphas for the comfort in touch were .81, .75 and .76. For the body care were .60, .63 and .77. Internal consistency for the body protection at each administration was .42, .50 and .79, respectively. In a previous study that examined the psychometric properties of the Portuguese version of the BIS, confirmatory factor analysis showed an acceptable fit for the four-factor solution of the BIS in a clinical sample of ED. Internal consistency was also excellent for the body image factor, good for both the body touch and body protection factors, and acceptable for the body care factor (Vieira et al., 2020).

At the end of the intervention, the CSQ-8 (Attkisson & Zwick, 1982; Portuguese version Machado & Klein, 2002) was administered. The CSQ-8 is an eight-item questionnaire to assess participant satisfaction with intervention. It is scored by summing the items' scores to produce a total range of 8 to 32, with higher scores indicating greater satisfaction. Cronbach's alpha for the CSQ-8 in the present study was .83. At the end of the CSQ-8, we added other questions: "What were the perceived main benefits of participating in the group intervention?; "Was there some aspect of the intervention that you did not find useful or that you would suggest changing?"; "Imagine that someone close to you was thinking of participating in the group intervention and you were called to give your testimony. Please write a brief testimony about your experience in the intervention".

Procedure

This study was approved by the Institutional Review Board Committee of the involved institutions (University of Minho and São João Hospital Center) and was conducted in accordance with the Declaration of Helsinki. All participants were diagnosed by their psychiatrists. At the time of referral for group intervention, diagnoses were reviewed by clinicians and researchers, according to the DSM-5 criteria. Assessments occurred at pre-intervention, post-intervention and 3-month follow-up and included the above-described measures. At pre-intervention, participants provided written informed consent. The intervention was conducted by two psychologists: a doctoral student enrolled in a clinical psychology PhD and a MSc research assistant in clinical psychology. Both were supervised by an expert trainer, a researcher and clinical psychologist with experience at treating ED.

The intervention protocol and group materials were developed by one of the psychologists who conducted the intervention, from a comprehensive review of the evidence on treatments of highlighted areas and associated factors. The choice of topics to be addressed in the intervention was also guided by

previous research on the main psychosocial factors that contribute to the development and maintenance of both ED and NSSI.

The protocol was discussed, reviewed and adjusted with the supervisor and with the co-therapist of the intervention. An overview of the intervention was still presented and discussed with the psychiatrists responsible for the TAU. Six sessions were organized, considering the content of the intervention and its brief nature, in order to provide an additional intervention to the TAU without overloading patients. Each session plan was developed taking into account the protocol and duration of the session (90 minutes).

The 16 participants were divided into two closed groups. One group included 11 participants and the other group included five participants. These groups were conducted at different times, always with the same therapists at the psychiatric service. Psychiatric sessions (focused on medication management and physical monitoring) were maintained during the intervention, as usual.

Statistical analyses

Statistical analyses were performed using IBM SPSS Statistics 24.0. Descriptive analyses were used to characterize the sample, to determine the proportion of the patients who declined or agreed to participate in the intervention, to examine the participant flow through the study and attrition rates at each stage, and to assess satisfaction with the intervention. Completers and non-completers were compared at outset of intervention using independent samples *t*-tests (*t*).

Post-intervention data were only available for 2 non-completers, while 3-month follow-up data of non-completers were unavailable. Thus, regarding changes in the main variables, analyses were reported for treatment completers (n = 12). Paired samples *t*-tests (*t*) and effect sizes using Cohen's *d* (Cohen, 1992) were conducted on all assessment measures from pre- to post-intervention, as well as from pre-intervention to 3-month follow-up A significance level of p = .05 has been chosen and Cohen's *d* effect sizes were described as small (.20), medium (.50) and large (.80).

Table 2. Baseline sociodemographic and clinical characteristics

Case	Age (years)	Type	Education	BMI (kg/m^2)	ED diagnosis	Medication	Duration of the ED (months)	Duration of treatment (months)
P1	43	Dropout	6th grade	33.27	BED	Antidepressants and benzodiazepines	98	14
P2	18	Completer	12th grade	14.11	AN-R	-	44	9
P3	33	Completer	12th grade	18.37	OSFED	Benzodiazepines	206	3
P4	21	Completer	12th grade	16.59	AN-R	Antidepressants and benzodiazepines	30	15
P5	18	Completer	12th grade	14.29	AN-R	-	7	4
P6	37	Completer	College	21.56	BED	Antidepressants	211	19
P7	22	Completer	College	24.77	OSFED	Antidepressants	124	6
P8	27	Dropout	College	17.19	OSFED	Antidepressants and benzodiazepines	149	149
P9	20	Completer	12th grade	15.73	AN-BP	Antidepressants and benzodiazepines	43	43
P10	18	Completer	12th grade	20.69	AN-R	Antidepressants and benzodiazepines	32	26
P11	18	Completer	12th grade	19.81	AN-R	Antidepressants	16	9
P12	23	Completer	12th grade	22.06	BED	Antidepressants and benzodiazepines	79	22
P13	36	Dropout	12th grade	24.39	OSFED	Antidepressants and benzodiazepines	110	110
P14	24	Dropout	College	20.58	OSFED	Antidepressants and benzodiazepines	29	29
P15	24	Completer	College	21.77	BN	Antidepressants	135	15
P16	24	Completer	College	25.34	BN	Antidepressants and benzodiazepines	78	7

Note. P = participant number; Dropout = participant who withdrew from the intervention; Completer = participant who remained in the intervention; AN-R = anorexia nervosa restrictive type; AN-BP = anorexia nervosa binge-purge type; BED = binge eating disorder; BN = bulimia nervosa; OSFED = eating disorder not otherwise specified (OSFED).

Results

Feasibility and Acceptability

To evaluate feasibility, we first examined the recruitment and intervention adherence. Participants were screened for eligibility between June 2017 and December 2018. A total of 41 patients was referred to the group intervention (Figure 1). These patients were contacted via telephone to confirm eligibility and to provide information about the intervention. Out of these, 24 individuals met the inclusion criteria and agreed to participate in the intervention. However, seven individuals did not attend to the pre-intervention assessment and one patient was excluded because of being referred as high risk of suicidal behavior.

We next examined attrition and retention of participants in this study. Of the 16 participants who started the intervention and attended the pre-intervention assessment, three withdrew because they started working/studying at the time of the sessions and one participant moved out of the country. Of these four participants, two attended the first and second sessions and they withdrew from the intervention in the third session. The other two participants attended only one session. One of them participated in the first session and did not return to the group. The other participant only attended the second session and did not return to the group. Twelve participants (75%) remained in the intervention. The average number of sessions attended for participants who remained in the intervention was 4.50 (*SD* = 1.00). Twelve participants completed post-intervention and 3-month follow-up assessments.

Finally, acceptability was examined by considering the satisfaction with the intervention. Overall, participants reported high satisfaction with the intervention (*M* = 28.67, *SD* = 3.14, range = 22-32). Specifically, 10 participants (83.3%) reported a high level of satisfaction and two (16.7%) reported a medium level of satisfaction. Most participants (75%, *n* = 9) reported that if they were to seek help again, they would come back to intervention. When asked to report the main benefits of the group intervention, five participants stated the value of sharing personal experiences, as well as the perceived support and understanding from the remaining members, two noted the utility of the learned coping strategies and five participants noted both benefits. Regarding to the less useful aspects or that they would like to change, two participants noted the brief duration of the intervention, two indicated that that more time should be dedicated for sharing of experiences, one noted the duration of the sessions, one reported the interpersonal communication skills session, and one reported remaining participants' abstinence to the sessions. The remaining five participants did not report any negative aspect. When asked to give their testimony, one of the participants stated, *"The group makes us talk or think about sensitive and complicated issues in a way that we come to see them from different perspectives. Therapists' support is excellent, and they are always willing to clarify doubts or deepen an important point"*. Another

participant sated, *"The group made me understand that I am not alone. The group gave me strategies to deal with negative thoughts and emotions. These strategies are as important as medication."* One participant wrote, *"I can recommend the group because all the participants will have strategies that will allow them to improve their lives, relationships with others and with themselves".* Finally, another participant wrote, *"I was able to reflect on emotions, behaviors and thoughts in order to find a solution and act without impulse".*

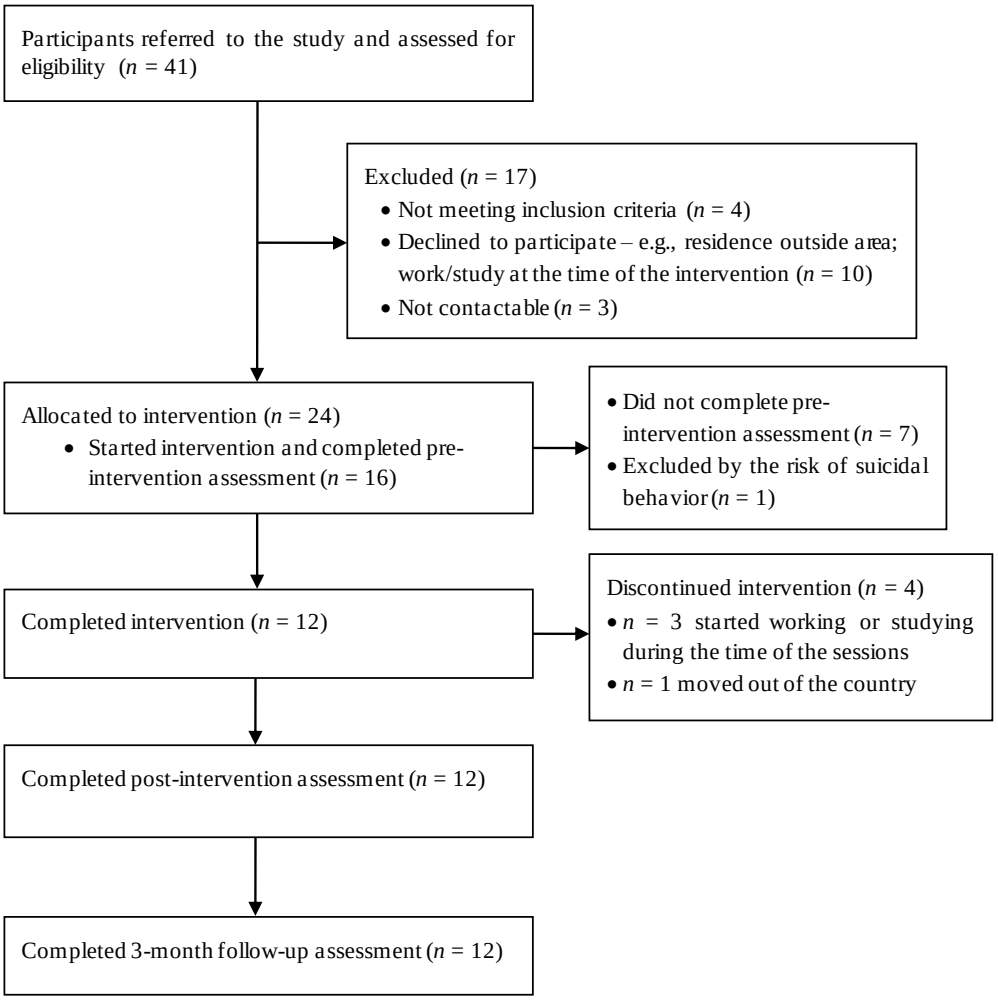


Figure 1 Participants' flow through the study

Comparison between completers and non-completers at outset of group intervention

In comparison to non-completers (n = 4), participants who remained in the intervention (n = 12) showed a younger age, $t(14) = -2.43$, $p = .03$. The mean age was 23.00 (SD = 6.12) and 32.50 years old (SD = 8.66) for completers and non-completers, respectively. Completers also reported a shorter duration of treatment, $t(14) = -3.32$, $p = .01$, and greater difficulties in acceptance of emotional responses,

$t(14) = 2.51$, $p = .03$, than non-completers. The mean scores for duration of treatment were 14.83 (*SD* = 11.49) and 75.50 (*SD* = 64.65) for completers and non-completers, respectively, and the mean scores for difficulties in acceptance of emotional responses were 21.58 (*SD* = 7.56) and 11.50 (*SD* = 4.12) for completers and non-completers, respectively. There were no significant differences regarding other variables, including eating pathology, number of methods of NSSI, other dimensions of emotion dysregulation, negative urgency and emotional investment in the body.

Change in NSSI behaviors

The total sample had a history of NSSI. Methods included cutting (83.3%, *n* = 10), scratching (75%, *n* = 9), bruising (50%, *n* = 6), biting (33.3%, *n* = 4), and other – e.g., hair-pulling (25%, *n* = 3). All participants used more than one method of NSSI. At pre-intervention, five participants (41.7%) reported NSSI within the past week or month. Of these, one participant did not report these behaviors within the previous several months or more than a year ago. On the other hand, 11 participants (91.7%) had engaged in NSSI within the previous months or more than a year ago. At the post-intervention and at the 3-month follow-up, of the five participants who initially reported NSSI within the past week or month, two related these behaviors currently, that is, in the past week or month. Of the 11 participants who had initially reported NSSI within the previous several months or more than a year ago, at the post-intervention assessment only one presented these behaviors within the past week or month. However, at the 3-month follow-up, this participant was not recently involved in NSSI.

Change in eating pathology, difficulties in emotion regulation, negative urgency and body investment

Table 3 displays the results from paired-samples *t* tests. BMI showed no change over the course of the group intervention. For the EDE-Q scores, the observed means indicated that restraint, eating concern, shape concern and weight concern decreased over the course of the intervention, but there were no significant differences from pre- to post-intervention. There was only a significant reduction in eating concerns from pre-to 3-month follow-up.

With regards to DERS scores, descriptive data indicated a decreasing trend in limited access to emotion regulation strategies, non-acceptance of emotional responses, lack of emotional awareness and DERS total score from pre- to post-intervention and from pre-intervention to 3-month follow-up. Impulse control difficulties also decreased from pre-intervention (*M* = 19.50, *SD* = 7.62) to post-intervention (*M* =15.67, *SD* = 7.06), but the mean score increased in the follow-up period (*M* =16.08, *SD* = 7.72).

Nevertheless, this score remained below baseline levels. Likewise, the mean score for difficulties engaging in goal-directed behavior decreased from pre- (M = 18.00, SD = 6.58) to post-intervention (M = 16.17, SD = 6.67), remaining almost unchanged at follow-up (M = 16.00, SD = 6.41). The mean score for the lack of emotional clarity at the end of the intervention (M = 12.42, SD = 4.80) was similar to the score at the start of the intervention (M = 12.92, SD = 4.72), but the results indicated a decreasing trend from pre-intervention to 3-month follow-up (M = 11.83, SD = 6.51). In paired-samples t tests, significant reductions were also found from pre- to post-intervention assessments on limited access to emotion regulation strategies, non-acceptance of emotional responses, impulse control difficulties and DERS total score. Although effect sizes were small to medium, significant reductions in these dimensions of emotion dysregulation were also observed between the pre-intervention and the 3-month follow-up assessments. Specifically, for DERS total score, nine participants revealed a reduction, one showed no changes and two showed an increase from pre- to post-intervention assessments. When compared to pre-intervention, at the 3-month follow-up, DERS total scores increased only for two participants (Table 4).

Regarding BIS scores, descriptive data indicated an improvement trend from pre- to post-intervention, especially in positive body image feelings and attitudes. Mean body image improved from 1.93 (SD = .91) at the start of the intervention to 2.61 (SD = .97) at the end of the intervention. This improvement trend was less prominent in comfort in touch. The observed means for comfort in touch were 3.04 (SD = .82) and 3.17 (SD = .68) at pre-intervention and post-intervention, respectively. At 3-month follow-up, the mean scores for the body investment domains increased slightly, except for body care which decreased but remained above baseline levels. Considering pre-intervention, post-intervention and follow-up scores for each case (Table 4), for body image feelings and attitudes, seven participants showed increased scores and five participants did not change throughout the intervention. For six participants, the improvements were either maintained or further improved upon at 3-month follow-up. Only one participant showed a reduction from pre-intervention to follow-up.

Finally, means scores for negative urgency were 35.92 (SD = 7.91), 34.92 (SD = 7.57), and 33.00 (SD = 7.82) at pre-intervention, post-intervention, and 3-month follow-up, respectively, and no significant changes were found over the course of the group intervention or at the follow-up (Table 3).

Table 3. Means, standard deviations, and differences for study variables from pre- to post-intervention and 3-month follow-up

	Pre-intervention		Post-intervention		3-month follow-up		Pre-to post-intervention comparison			Pre-to 3-month follow-up comparison		
	M	*SD*	*M*	*SD*	*M*	*SD*	*T*	*p*	*D*	*t*	*p*	*d*
BMI	19.59	3.81	19.65	3.96	20.50	3.51	-.32	.756	.11	-2.29	**.043**	.18
EDE-Q												
Restraint	2.38	1.60	2.00	1.84	1.77	1.62	1.18	.263	.33	1.42	.183	.41
Eating concerns	2.63	1.38	2.40	1.56	1.73	1.37	.75	.471	.21	2.28	**.044**	.49
Shape concerns	3.89	1.54	3.71	1.74	3.27	2.09	.68	.511	.20	1.06	.311	.26
Weight concerns	3.21	1.90	3.10	1.79	2.83	1.37	.32	.754	.10	.75	.468	.17
Total	3.03	1.41	2.80	1.46	2.40	1.32	1.06	.312	.26	1.67	.123	.34
DERS												
Strategies	25.75	8.95	22.58	9.67	22.00	10.39	3.47	**.005**	**1.05**	3.05	**.011**	.27
Non-acceptance	21.58	7.56	18.75	8.89	14.42	8.31	2.34	**.039**	**.67**	4.66	**.001**	**.64**
Awareness	16.33	5.63	15.83	5.73	14.92	4.58	.58	.575	.17	1.35	.204	.20
Impulse	19.50	7.62	15.67	7.06	16.08	7.72	2.66	**.022**	**.77**	3.06	**.011**	.32
Goals	18.00	6.58	16.17	6.67	16.00	6.41	1.46	.172	.43	1.84	.093	.22
Clarity	12.92	4.72	12.42	4.80	11.83	6.51	.59	.568	.17	1.32	.214	.14
Total	114.08	37.46	101.42	38.25	95.25	39.64	2.46	**.032**	**.71**	3.82	**.003**	.35
UPPS-P – Negative urgency	35.92	7.57	34.92	7.91	33.00	7.82	.63	.541	.18	1.60	.138	.27
BIS												
Body image	1.93	.91	2.61	.97	2.69	1.20	-3.61	**.004**	**1.04**	-2.70	**.021**	**.52**
Comfort in touch	3.04	.82	3.17	.68	3.36	.76	-.81	.433	.24	-1.43	.180	.30
Body care	3.76	.65	4.04	.73	3.90	.72	-1.97	.075	.58	-1.05	.318	.15
Body protection	3.13	.70	3.46	.78	3.51	.92	-2.15	.054	.64	-2.04	.066	.33

Note. Strategies = limited access to emotion regulation strategies; Non-acceptance = non-acceptance of emotional responses; Awareness = lack of emotional awareness; Impulse = impulse control difficulties; Goals = difficulties engaging in goal-directed behavior; Clarity = lack of emotional clarity. Cohen's *d* effect sizes small (.20), medium (.50) and large (.80).

Table 4. Emotion regulation and body investment scores at pre-intervention, post-intervention and 3-month follow-up for each completer

	Eating concerns			Strategies			Non-acceptance			Impulse			DERS Total			Body image		
	Pre	Post	FU	Pre	Post	FU	Pre	Post	FU	Pre	Post	FU	Pre	Post	FU	Pre	Post	FU
P2	2.00	1.80	.80	23	24	21	22	21	13	18	16	15	110	109	97	1	1	1
P3	.60	.40	1.80	20	14	16	17	8	8	12	11	13	74	54	60	3	4	4
P4	1.60	.60	3.00	40	39	38	30	28	25	30	25	29	163	151	159	2	3	2
P5	1.00	3.00	.40	9	8	8	6	6	6	6	6	6	38	46	40	3	4	4
P6	3.40	4.20	1.20	22	18	16	17	11	8	20	14	15	108	84	87	1	2	2
P7	4.00	1.80	.60	20	18	15	22	25	11	10	13	8	88	101	67	1	2	4
P9	3.40	3.00	2.40	24	20	25	14	11	8	15	13	13	103	94	90	1	3	3
P10	2.20	1.20	1.20	39	38	34	30	30	25	26	26	24	168	163	145	1	3	3
P11	1.60	2.00	1.20	24	13	10	30	20	11	22	7	12	117	66	59	2	2	2
P12	5.20	5.60	5.20	35	31	38	29	30	30	30	26	30	153	142	155	2	2	1
P15	4.00	3.80	2.40	31	27	27	24	24	20	23	20	17	133	128	110	2	2	2
P16	2.60	1.40	.60	22	21	16	18	11	8	22	11	11	114	79	74	4	4	4

Note. Strategies = limited access to emotion regulation strategies; Non-acceptance = non-acceptance of emotional responses; Impulse = impulse control difficulties; Pre = pre-intervention; Post = post-intervention; FU = 3-month follow-up. Participants' scores are reported for those variables in which significant changes from pre- to post-intervention or pre-intervention to 3-month follow-up were found.

Discussion

The aim of this study was to examine the feasibility and acceptability of a new group-based intervention for ED with comorbid NSSI, using a case series.

The findings supported the feasibility and acceptability of the intervention, in that 75% of the participants remained in the group, ratings on satisfaction were high, and participants related positive experiences in participating in the intervention. Thus, a group psychotherapy in which participants are connected to peers and therapists, in which difficulties are explored may have advantages, such as to demystify behaviors and to promote cohesion, support and positive feedback among members (Forster & Shaw, 2018; Levitt et al., 2004). Also, this intervention does not involve high economic costs because it is a short-term treatment, and the group intervention proved being suitable for patients with different ED diagnoses, which confirms the usefulness of interventions based on approaches, such as the transdiagnostic CBT for ED (Fairburn et al., 2003) and the unified protocol for transdiagnostic treatment of emotional disorders (Barlow et al., 2011). In addition, at the outset of the intervention, in comparison with non-completers, treatment completers revealed a younger age, a shorter duration of ED treatment and greater difficulties in acceptance of emotional responses, but no significant differences were found in other baseline variables. The group may have less impact on older patients and with a long-term ED, possibly due to a more serious and chronic condition. This may suggest the need for a more in-depth approach to these patients, but the examination of the findings in larger samples is needed to confirm these hypotheses.

Providing preliminary support for the effectiveness of this group, at the post-intervention and at the 3-month follow-up, of five participants who initially reported NSSI within the past week or month, only two related these behaviors in the present, that is, in the past week or month. Except for the lack of emotional clarity, which at post-intervention had a score similar to that of the baseline, we also found a decreasing trend from pre- to post-intervention in the remaining dimensions of emotion dysregulation. This decreasing trend was especially prominent in limited access to emotion regulation strategies, non-acceptance of emotional responses, impulse control difficulties and in the DERS total score. Compared to the pre-intervention, scores of these variables at 3-month follow-up were similar or even lower, indicating that intervention gains were maintained. These findings are comparable to those of a feasibility study on emotion regulation therapy for adolescents with NSSI, in which there were significant improvements in emotion regulation difficulties and past-month NSSI engagement from pre- to post-treatment, and these improvements were either maintained or further improved at a 6-month follow-up

(Bjureberg et al., 2017). However, this acceptance-based behavioral therapy was not tested with ED patients.

Additionally, our data indicated an improvement trend from pre- to post-intervention in body investment domains, specifically in positive body image feelings and attitudes, in which seven participants showed a higher mean score at the end of the intervention. At follow-up, the mean scores for body investment domains increased slightly, except for body care which decreased but remained above baseline levels. These findings confirm that it is appropriate to consider these factors of the emotional investment in the body, which may be related to self-destructive tendencies (Orbach & Mikulincer, 1998), as assessment and intervention targets among ED patients with NSSI.

Despite the positive results observed in the mean scores between the assessment moments, only small or non-significant improvements were found on ED symptoms, negative urgency, difficulties engaging in goal directed behavior, lack of emotional awareness and clarity, body care, body protection and comfort in touch after intervention. The number of sessions and the group format do not allow us to explore, in more detail, individual issues and triggers for impulsive behavior, as well as for all dimensions of emotion dysregulation and negative attitudes towards the body. On the other hand, our intervention is more focused on coping skills than on ED symptoms, which is addressed in TAU. The small sample size also reduces our statistical power and the replication of this study with more participants is needed.

Important limitations are to be considered. First, the lack of a control group. Given this limitation, no causal inferences may be made, and future research would need to introduce an RCT to demonstrate efficacy of this group-based intervention. Second, despite the use of the effect size, the small sample size affects the investigation of statistical significance, increases the likelihood of type II errors and limits the generalizability of our findings. Even so, we conducted statistical analyses to provide an initial investigation of patterns of change in the main variables at the post-intervention and at the 3-month follow up. Similarly, the sample of female ED outpatients recruited from a specialized and public psychiatric service limits the generalizability to males and to other clinical settings. Third, suicidal behaviors and NSSI often co-occur and the exclusion of patients with current suicidal ideation and previous suicide attempts may have limited the participation of patients with NSSI. Fourth, there may be biases with respect to data interpretation given the overreliance on self-report measures and the fact that the researchers who collected and analyzed the data were also the ones who conducted the intervention. Future research benefiting from the use of other methods (e.g., interviews, blinding of outcome assessors) and examining this group-based intervention in larger and mixed-gender samples is needed.

In sum, participants reported that the group was a beneficial and satisfactory approach, and these findings support the feasibility of adding to the TAU a psychological intervention in group format focused on coping skills for dealing with difficulties in risk domains potentially involved in the development and maintenance of ED and NSSI. In particular, the intervention seems effective in reducing current NSSI and improve certain strategies of emotion regulation (e.g., access to emotion regulation strategies, impulse control), as well as body image feelings and attitudes. Thus, along with attention to core eating psychopathology, there is additional support for utility of targeting emotion regulation difficulties. Moreover, these results show that it is important to evaluate and intervene in aspects of body investment, in addition to the usual focus on body image evaluation.

Despite these results and the group-based intervention introducing important themes and strategies, it is unlikely that all difficulties in psychosocial domains are adequately addressed in six sessions. Future adaptations of the intervention may involve the extension of the number of sessions and the inclusion of more tools and more time to practice them. Supporting this conclusion, participants highlighted the brief nature of the intervention and the time dedicated to sharing experiences as aspects worth to change. A more controlled evaluation is still warranted to further investigate the efficacy of this group-based intervention.

Acknowledgements

This work was supported by the Foundation for Science and Technology (FCT) with the Human Capital Operational Programme (HCOP), supported by the European Social Fund and national funds of the Ministry of Science, Technology and Higher Education under doctoral grant [SFRH/BD/116974/2016].

Conflict of Interest Statement

No potential conflict of interest was reported by the authors.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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DISCUSSÃO

A presente tese teve como principais objetivos: (i) avaliar a frequência e caraterísticas dos NSSI em pacientes com PCA; (ii) identificar potenciais fatores de risco para os NSSI nas PCA e testar um modelo de relações entre esses fatores; (iii) examinar as propriedades psicométricas da versão Portuguesa de um instrumento de autorrelato para avaliar a exposição a um ambiente invalidante na infância; (iv) investigar se as dificuldades na regulação emocional e a urgência negativa moderam a relação entre a experiência de invalidação parental e o envolvimento em NSSI entre pacientes com PCA; e (v) desenvolver, implementar e avaliar a viabilidade e aceitação de uma breve intervenção psicológica em grupo, dirigida a pacientes com PCA e história de NSSI.

Nesta última secção, os principais resultados dos cinco estudos são sumarizados e articulados, à luz dos objetivos definidos inicialmente e das evidências e modelos concetuais anteriores. São igualmente descritas as forças, limitações e sugestões para futura investigação. Por fim, são discutidas as implicações para a prática clínica.

1. Sumário dos principais resultados

O Capítulo 1 ("Putative risk factors for non-suicidal self-injury in eating disorders") corrobora as evidências nacionais e internacionais de uma elevada frequência de NSSI em pacientes com PCA (e.g., Cucchi et al., 2016; Muehlenkamp et al., 2011; Vieira et al., 2016), dado que 33% da amostra clínica relatou esses comportamentos em algum ponto das suas vidas. Este capítulo também está em conformidade com os resultados mais recentes de Carlson et al. (2018), sugerindo que os NSSI são mais comuns nas PCA do tipo ingestão compulsiva/purgativo do que nas PCA do tipo restritivo. Portanto, estes dados indicam que a concomitância entre PCA e NSSI deve ser motivo de preocupação e de atenção clínica.

Relativamente aos fatores de risco, variados estudos (e.g., Hasking & Claes, 2019; Peebles et al., 2011; Stein et al., 2004) sugerem que o comportamento alimentar disfuncional e os NSSI estão associados a múltiplas variáveis psicossociais. Na mesma linha, os resultados expostos no Capítulo 1 indicaram que a autoavaliação negativa, as tentativas de suicídio e o uso de substâncias foram mais comuns em pacientes com PCA e NSSI, conjuntamente, do que em pacientes sem estes últimos comportamentos. No domínio familiar, em comparação com os participantes sem NSSI, aqueles que apresentaram uma história destes atos também demonstraram maior exposição a problemas de alcoolismo dos pais, tensão familiar às refeições e baixo peso dos pais. Em adição, e de acordo com a investigação prévia (Copeland et al., 2015; Esposito et al., 2019; Klonsky & Moyer, 2008; Rayworth et al., 2004), os participantes com PCA e NSSI foram mais expostos a experiências de abuso físico e sexual

na infância e à agressão por parte dos pares. Por conseguinte, os NSSI e o comportamento alimentar disfuncional podem servir como estratégias inadequadas para lidar com emoções, memórias e experiências negativas. Em conformidade com esta hipótese, na exploração de acontecimentos de vida ocorridos no ano anterior ao desenvolvimento da PCA, os participantes com NSSI apresentaram maiores níveis de exposição a experiências de luto, abuso físico e outros acontecimentos negativos. No seu conjunto, os dados deste capítulo permitiram identificar potenciais fatores de risco a serem tomados em consideração.

No Capítulo 2 ("Eating disorders and non-suicidal self-injury: Structural equation modelling of a conceptual model"), um modelo de equação estrutural, especificado na amostra do primeiro estudo e baseado modelo concetual de Claes e Muehlenkamp (2014), foi testado para explicar as relações entre potenciais fatores de risco e a presença de NSSI nas PCA. Esse modelo integrou os fatores identificados no Capítulo 1, considerando a sua natureza distal (baixo peso dos pais, tensão familiar às refeições, problemas de alcoolismo dos pais, agressão pelos pares e abuso na infância) e proximal (autoavaliação negativa, tentativas de suicídio e uso de substâncias), e os acontecimentos de vida antecedentes (e.g., luto). Foram encontradas relações significativas entre os fatores associados ao ambiente familiar que, por sua vez, estavam associados às experiências de abuso na infância e à agressão pelos pares. Os dados encontrados também atestaram o modelo de Claes e Muehlenkamp (2014), na medida em que as experiências de abuso físico e sexual atuaram como possíveis fatores de risco distais para os NSSI nas PCA, cuja relação foi mediada por fatores de risco proximais, como a autoavaliação negativa, as tentativas de suicídio e o uso de substâncias. De igual modo, a relação entre a agressão pelos pares e o envolvimento em NSSI emergiu através da autoavaliação negativa e de acontecimentos de vida negativos e antecedentes à PCA. É possível que as experiências adversas de abuso e *bullying* tenham um forte impacto na autoestima ou na forma como o próprio se avalia e que, ao longo do tempo, facilitem o envolvimento em outros comportamentos desajustados, como o uso de substâncias, ou contribuam para o desenvolvimento de sintomatologia depressiva grave, incluindo as tentativas de suicídio.

Os resultados do Capítulo 2 também apoiaram o papel precipitante de certos acontecimentos de vida, especialmente na presença de vulnerabilidades mais distais no tempo ou fatores predisponentes, que aumentam o risco de NSSI entre indivíduos com sintomatologia alimentar. Na ausência de estratégias adequadas e alternativas, os indivíduos podem recorrer a comportamentos alimentares disfuncionais e aos NSSI como formas de lidar com o sofrimento decorrente de acontecimentos adversos, o que, por sua vez, irá influenciar e reforçar os fatores de risco proximais (Claes & Muehlenkamp, 2014; Nock & Prinstein, 2004).

Considerando que as variáveis familiares parecem ter um papel relevante no desenvolvimento e manutenção dos NSSI no contexto das PCA, e que não existia uma medida específica e adaptada à população Portuguesa para avaliar a exposição a um ambiente familiar invalidante, no Capítulo 3 ("Psychometric properties of the Portuguese version of the Invalidating Childhood Environment Scale"), examinou-se a versão Portuguesa da ICES. Esta escala mostrou ter adequadas propriedades psicométricas numa amostra comunitária e numa amostra clínica de pacientes com PCA. Contrariamente à versão original, constituída por um só fator relativo aos comportamentos paternos e maternos (um fator para os itens respeitantes ao pai e um fator para os itens relativos à mãe), na análise fatorial exploratória com a amostra comunitária foi encontrada uma solução de dois fatores para cada um dos progenitores, que demonstrou um bom ajustamento à amostra clínica na análise fatorial confirmatória. Este resultado é consonante com a adaptação da ICES em outros países, como França (Compagnone & Lo Monaco, 2015), sendo que um fator incluiu os itens que caracterizam um ambiente familiar invalidante e o outro fator abrangeu os itens que, maioritariamente, se referem ao comportamento validante dos pais, tal como o teorizado por Linehan (1993). Estes fatores também apresentaram uma elevada consistência interna, sendo fiáveis para explorar a exposição a um ambiente invalidante na infância.

A análise de diferenças entre as amostras comunitária e clínica na ICES permitiu ainda constatar que os pacientes com PCA percecionaram maiores níveis de invalidação materna e paterna do que os estudantes do ensino secundário e superior. A amostra clínica também relatou uma maior exposição aos estilos familiares invalidantes – caótico e perfeito – do que a amostra comunitária. A par disto, a invalidação materna e os estilos familiares caótico e perfeito foram associados a maior psicopatologia alimentar, nomeadamente aos comportamentos bulímicos. Estes resultados estão de acordo com o estudo de Mountford et al. (2007), no qual a invalidação materna estava associada a comportamentos bulímicos, e fornecem suporte para a relevância de considerar a exposição a um ambiente invalidante na infância como uma variável de interesse na avaliação e tratamento das PCA.

O Capítulo 4 ("Nonsuicidal self-injury, difficulties in emotion regulation, negative urgency and childhood invalidation: A study with outpatients with eating disorders") apresentou um estudo com 171 participantes diagnosticados com PCA, dos quais, 31.6% relataram, pelo menos, um tipo de NSSI no último ano e 11.1% reportaram o envolvimento nesses comportamentos há mais de um ano. Consonante com a investigação anterior (Claes et al., 2001; Pérez et al., 2018; Smithuis et al., 2018), arranhar e cortar a própria superfície corporal foram os métodos mais prevalentes, as partes do corpo mais feridas foram os braços e mãos/unhas, e uma grande parte da amostra evidenciou usar dois ou mais métodos

de NSSI, sem os planear e com pouca ou nenhuma dor associada. Também de acordo com estudos anteriores (e.g., Hooley & Franklin, 2017; Nock & Prinstein, 2004), as razões mais evidenciadas pelos participantes para o envolvimento em NSSI foram o evitamento ou remoção de emoções negativas e a autopunição. Ainda assim, as funções de reforço social, como "para mostrar a mim própria/o o quão forte sou" ou "para evitar fazer algo desagradável, que não queria fazer", também foram mencionadas.

Quando comparados, o grupo com NSSI no último ano apresentou uma média de idades menor do que os grupos com NSSI há mais de um ano e sem uma história destes comportamentos. Os participantes com NSSI também apresentaram maiores níveis de patologia alimentar, mais dificuldades na regulação emocional, maior urgência negativa e maior perceção de invalidação parental do que os participantes sem NSSI. Estes resultados atestam evidências anteriores (e.g., Claes & Muehlenkamp, 2014) e sugerem que elevados níveis de gravidade e de sintomatologia aumentam o risco para desenvolver NSSI no contexto das PCA.

Além disso, no Capítulo 4, as dificuldades na regulação emocional e a urgência negativa foram exploradas como potenciais moderadores da relação entre invalidação materna/paterna e NSSI no último ano. Por um lado, a força da associação entre uma maior invalidação parental e a maior probabilidade de NSSI no último ano foi exacerbada por mais dificuldades na consciência emocional. Por outro lado, a invalidação parental foi um potencial preditor dos NSSI em indivíduos com baixos níveis de urgência negativa. Ou seja, quando a urgência negativa estava a níveis mais elevados, esta variável tornava-se um preditor mais forte dos NSSI do que a invalidação parental. Então, uma elevada urgência negativa pode desempenhar um papel de risco para o envolvimento em NSSI, independentemente do nível de invalidação parental. Estes resultados suportam os modelos que consideram os NSSI como estratégias desadequadas de regulação emocional (e.g., Chapman et al., 2006; Selby et al., 2008) e são consistentes com as evidências de que a invalidação emocional por parte dos pais está relacionada com a desregulação emocional (Buckholdt et al., 2014; Crowell et al., 2009). Adicionalmente, o estudo suporta a hipótese de que os indivíduos com elevados níveis de urgência negativa têm maior probabilidade de se envolverem em comportamentos desajustados, em resposta a emoções negativas (Peterson & Fischer, 2012).

Por último, partindo da revisão da literatura e dos resultados acima apresentados, o estudo piloto do Capítulo 5 ("Group-based intervention for eating disorders and non-suicidal-self-injury: A case series") apresentou o desenvolvimento, implementação e avaliação de uma intervenção em grupo, de natureza breve, dirigida a pacientes com PCA e história de NSSI. Esta intervenção foi baseada em estratégias empiricamente suportadas, de orientação cognitivo-comportamental (Barlow et al., 2011; Fairburn et al.,

2008; Walsh, 2012). Teve como principal objetivo promover competências adaptativas para lidar com dificuldades em domínios de risco potencialmente envolvidos no desenvolvimento e manutenção das PCA e dos NSSI: desregulação emocional, impulsividade e limitadas aptidões de resolução de problemas, dificuldades na comunicação interpessoal e insatisfação corporal ou falta de investimento emocional no corpo.

Dezasseis participantes com PCA foram envolvidos, sendo que 12 mantiveram-se na intervenção e completaram os três momentos de avaliação (pré-intervenção, pós-intervenção e *follow-up* aos 3 meses). No geral, os participantes relataram uma elevada satisfação com a intervenção, destacando, como principais benefícios, a partilha de experiências, o apoio e a compreensão gerada entre os membros e as competências ou estratégias promovidas. Quanto a aspetos menos úteis da intervenção ou que os participantes gostariam de mudar, a breve duração da intervenção e o tempo limitado para a partilha de experiências foram exemplos referidos.

Relativamente às diferenças ou tendências de mudança nas principais variáveis entre os momentos de avaliação, os resultados sugeriram que a intervenção em grupo foi útil na redução dos NSSI, já que, no final, dos cinco participantes que inicialmente relataram NSSI na última semana ou mês, apenas dois assumiram esses comportamentos no presente, isto é, na última semana ou mês. Também entre o início e o fim da intervenção, foram encontradas reduções nos *scores* médios da maioria das dimensões da desregulação emocional, sendo que essas reduções foram significativas no acesso limitado a estratégias de regulação emocional, na não-aceitação de respostas emocionais e nas dificuldades no controlo de impulsos ao experimentar emoções negativas. Reduções significativas nestas dimensões da desregulação emocional também foram encontradas entre os momentos pré-intervenção e *follow-up* aos 3 meses. Estes dados são consistentes com os resultados da terapia individual da regulação emocional em adolescentes com NSSI (Bjureberg et al., 2017), ainda que esta terapia não tenha sido testada em pacientes com PCA. Adicionalmente, entre os momentos pré e pós-intervenção, observaram-se aumentos nos *scores* médios dos domínios do investimento corporal. Especificamente, estes aumentos foram significativos nos sentimentos e atitudes positivas face à imagem corporal. No *follow-up* aos 3 meses, os *scores* médios dos domínios de investimento corporal também aumentaram ligeiramente, exceto o do fator do cuidado corporal que diminuiu, mas permaneceu acima dos níveis iniciais. No seu conjunto, estes resultados reforçam a pertinência de abordar os aspetos do investimento corporal, os quais são pouco considerados nas intervenções dirigidas às PCA e aos NSSI. Não obstante, as melhorias menos proeminentes ou a ausência de diferenças significativas noutras variáveis da regulação emocional e do investimento corporal, bem como na urgência negativa, sugerem, não só, a

necessidade de replicar a intervenção com um maior número de participantes, como também de introduzir alguns ajustes, tais como dedicar um maior tempo à abordagem das variáveis-alvo, sem comprometer a adesão dos participantes à intervenção.

2. Pontos fortes

A tese detém pontos fortes que suportam a sua contribuição para o conhecimento científico da comorbilidade entre as PCA e os NSSI.

De forma geral, e até onde se sabe, esta foi a primeira investigação em Portugal voltada para o estudo dos NSSI entre indivíduos com PCA. Esta temática assume particular relevância no âmbito da saúde mental, já que as PCA, especialmente a anorexia nervosa, apresentam elevadas taxas de mortalidade e o suicídio é uma causa de morte frequente nestas perturbações (Arcelus et al., 2011; Fichter & Quadflieg, 2016). De igual forma, embora os NSSI, por definição, não envolvam a intenção de pôr temo à vida, são fortes preditores de tentativas de suicídio (Mars et al., 2019) e, por isso, o seu estudo é clinicamente pertinente. Por outro lado, os NSSI ainda são pouco estudados em Portugal, nomeadamente no contexto de perturbações mentais especificas, como as PCA.

Considerando também os cinco capítulos apresentados, um ponto forte a assinalar é que os respetivos estudos e os seus objetivos seguiram uma lógica sequencial, na qual os resultados de um estudo serviram para informar e delinear objetivos e hipóteses subsequentes. Por exemplo, no último capítulo apresentou-se o desenvolvimento, implementação e avaliação da intervenção em grupo, que foi informada pelos capítulos anteriores, nos quais foram identificados fatores potencialmente envolvidos na coocorrência de PCA e NSSI. Em todos os estudos destaca-se, ainda, que as amostras analisadas foram recrutadas em contexto clínico, especializado no tratamento de PCA, e foram constituídas através da referenciação por uma equipa médica, o que maximizou a especificidade diagnóstica. À exceção dos Capítulos 1 e 2, em que se seguiu a mesma amostra, nos Capítulos 3, 4 e 5, houve lugar ao recrutamento de diferentes amostras para cada um dos estudos apresentados nesses capítulos.

Em particular, o estudo do Capítulo 1, conduzido numa ampla amostra de PCA (N = 245), avaliada retrospetivamente através de uma entrevista semiestruturada (RFI; Fairburn et al., 1997), permitiu identificar potenciais fatores de risco, especificamente envolvidos na comorbilidade entre PCA e NSSI, e demonstrou a importância de uma compreensão multifatorial desta problemática. Ainda assim, as relações entre esses fatores e as potenciais trajetórias de risco para o desenvolvimento de ambos os problemas permaneciam por esclarecer e, no Capítulo 2, o estudo realizado permitiu delinear um modelo interativo, que incluiu as variáveis individuais, familiares e sociais do primeiro estudo. A testagem desse

modelo possibilitou examinar as relações entre as variáveis e destacar os processos intermediários ou fatores proximais, através dos quais certos fatores distais podem levar aos NSSI no contexto das PCA.

Este trabalho também envolveu o estudo das caraterísticas psicométricas da versão Portuguesa da ICES, um questionário para avaliar a exposição a um ambiente invalidante na infância (Capítulo 3). Desta forma, contribuiu-se para o estabelecimento de uma medida Portuguesa válida, fiável e de fácil aplicação. Adicionalmente, foi possível verificar como a psicopatologia alimentar estava associada à experiência de invalidação parental na infância, o que reitera a importância de avaliar este fator de natureza distal e social e orientar o tratamento para a validação e regulação de experiências emocionais.

O penúltimo estudo, exposto no Capítulo 4, avaliou, não só, a frequência dos NSSI, como também os métodos, funções e caraterísticas desses comportamentos em indivíduos com psicopatologia alimentar. Além disso, pelo que se sabe, este foi o primeiro estudo que, com uma amostra de pacientes com PCA, diferenciou três grupos de participantes – participantes com NSSI no último ano; participantes com NSSI há mais de um ano; e participantes sem história de NSSI – nas seguintes variáveis, analisadas conjuntamente: psicopatologia alimentar, dificuldades na regulação emocional, urgência negativa e exposição a um ambiente invalidante na infância. Os resultados relativos aos modelos de moderação enfatizaram as relações entre invalidação parental, baixa consciência emocional, urgência negativa e envolvimento atual em NSSI, entre pacientes com PCA. Tais resultados podem, não só, clarificar potenciais determinantes e circunstâncias do desenvolvimento de NSSI em concomitância com as PCA, como também orientar práticas de avaliação, prevenção ou tratamento de ambos os problemas.

Usando os resultados dos estudos anteriores, o estudo apresentado no Capítulo 5 ilustrou o desenvolvimento, implementação e avaliação de uma intervenção psicológica em grupo, adicional ao tratamento habitual e dirigida a pacientes com PCA e história de NSSI. Assim, este estudo apoiou o desenho de novas formas de intervenção, de baixo custo, numa área importante para a saúde mental, onde escasseiam tratamentos específicos e empiricamente suportados. A intervenção também obedeceu a critérios de qualidade, já que foi desenhada com base na prévia avaliação e em estratégias manualizadas e empiricamente validadas, e incluiu a avaliação da viabilidade e aceitação, através da análise do recrutamento, adesão à intervenção, retenção dos participantes e satisfação com a intervenção, assim como a avaliação dos resultados pré e pós-intervenção e *follow-up* aos 3 meses. Os resultados obtidos sugerem a viabilidade, utilidade e aceitação da intervenção.

3. Limitações

Apesar da relevância dos resultados encontrados, a tese apresenta limitações que devem ser reconhecidas e explanadas nesta secção.

Em primeiro lugar, os estudos dos Capítulos 1 e 2, ainda que metodologicamente suportados por uma entrevista semiestruturada, foram retrospetivos e, por isso, sujeitos ao viés da memória. Nos Capítulos 3 e 4, um dos instrumentos usados, a ICES, também foi de natureza retrospetiva, o que pode ter resultado em imprecisões, devidas a distorções na recordação e à contaminação das memórias pelas experiências atuais. Adicionalmente, no Capítulo 3, não foi possível reaplicar a versão Portuguesa da ICES, analisando a fidelidade teste-reteste. A limitação da avaliação retrospetiva foi ainda aplicável ao questionário para avaliar os NSSI, já que os participantes tinham de considerar a ocorrência desses comportamentos na última semana ou mês, há vários meses ou há mais de um ano.

Outra limitação foi o *design* transversal dos estudos, que não nos permite retirar conclusões acerca da sequência temporal nem considerar os resultados obtidos como relações de causa e efeito, mas sim como associações. Por exemplo, no Capítulo 1, embora tenhamos usado regressões logísticas e *odds ratio* para identificar as variáveis preditoras da probabilidade de ter uma história de NSSI*,* podemos apenas dizer que as variáveis encontradas são prováveis fatores de risco, sendo necessário realizar estudos longitudinais para confirmar a natureza desses fatores. Paralelamente, nos Capítulos 3, 4 e 5 apenas foram usados instrumentos de autorrelato. Embora tenham um formato estandardizado e sejam ferramentas versáteis, de fácil e rápida administração, que foram preenchidas na presença dos investigadores responsáveis, as respostas a estas medidas podem ter sido influenciadas por vários fatores de enviesamento, tais como a desejabilidade social.

No Capítulo 4, por exemplo, os grupos em comparação tinham diferentes números amostrais, sendo menores nos grupos com NSSI, especialmente no de participantes que apenas evidenciaram esses comportamentos há mais de um ano. Uma limitação adicional foi o amplo intervalo de idades das amostras usadas neste trabalho, o que significa que adolescentes e adultos foram avaliados conjuntamente. É certo que esta diversidade de idades limita a especificidade a cada etapa desenvolvimental e pode condicionar os resultados obtidos, mas também é verdade que a variedade de idades é caraterística do contexto clínico onde a recolha de dados foi concretizada, e os comportamentos avaliados, nomeadamente os NSSI, têm ganho a atenção da investigação tanto em adolescentes como em adultos. No que respeita às amostras, é ainda de realçar que foram maioritariamente compostas por mulheres com PCA, recrutadas num serviço público da região norte de Portugal, o que limita a

generalização dos resultados a pacientes do sexo masculino, a diferentes contextos clínicos e comunitários e a outras regiões.

O estudo de série de casos, relativo à intervenção e exposto no Capítulo 5, também foi concretizado com um baixo número de participantes, que embora aceitável para um estudo piloto, limita o poder estatístico. Adicionalmente, não foi possível constituir um grupo de controlo. Estas limitações condicionaram a realização de análises estatísticas mais robustas, impossibilitaram inferências mais conclusivas sobre a relação entre a intervenção e os resultados e diminuíram a representatividade do estudo. O período de *follow-up* foi ainda de 3 meses, o que impediu a retirada de conclusões acerca da manutenção de possíveis ganhos terapêuticos por um período mais longo.

Por fim, ainda que os NSSI tenham sido descritos em termos de frequência, métodos e caraterísticas, as amostras dos estudos foram divididas em grupos de participantes com ou sem NSSI, limitando a diferenciação dos participantes que se envolveram uma vez ou esporadicamente em NSSI daqueles que se envolveram repetidamente nesses comportamentos.

4. Sugestões para futura investigação

De acordo com modelos etiológicos explicativos da coocorrência de PCA e de NSSI (Claes e Muehlenkamp, 2014; Svirko e Hawton, 2007), os estudos apresentados exploraram fatores de risco potencialmente envolvidos nessa comorbilidade. Contudo, para a ocorrência de NSSI, o modelo de Nock (2009) propõe seis hipóteses relativas a fatores de risco específicos a esses comportamentos: hipótese da aprendizagem social; hipótese da autopunição; hipótese da sinalização social; hipótese pragmática; hipótese do opiáceo/analgésico da dor; e a hipótese da identificação implícita. Na mesma linha de investigação, Hooley e Franklin (2017) postulam um modelo em que os NSSI têm benefícios percebidos (e.g., satisfação do desejo de autopunição) e que a maioria das pessoas não acede a esses benefícios porque existem barreiras, como a falta de exposição ou consciência sobre os NSSI e as normas sociais. Até onde se sabe, a investigação não tem examinado esses fatores de risco específicos ou benefícios percebidos, nem as possíveis barreiras associadas aos NSSI. Da mesma forma, escasseia investigação em torno de potencias fatores protetores do desenvolvimento desses comportamentos, nomeadamente em comorbilidade com as PCA, tais como a autocompaixão, a autoestima e o suporte social ou elevada conexão com os pais e outros adultos (Lin et al., 2017; Taliaferro et al., 2018; Xavier et al., 2016; Wichstrøm, 2009). Então, estudos adicionais são necessários neste âmbito, especialmente para informar práticas de prevenção.

Considerando o *design* transversal e/ou retrospetivo dos estudos apresentados, uma sugestão para futura investigação é conduzir estudos prospetivos para verificar as relações de causalidade, a direção dos efeitos e a evolução dos comportamentos, bem como elucidar acerca dos fatores de risco que contribuem para iniciar e manter os NSSI em pacientes com PCA. Também será importante concretizar estudos que confirmem a adequação da versão Portuguesa da ICES, incluir outras metodologias de avaliação, para além dos instrumentos de autorrelato (e.g., entrevistas, avaliação momentânea ecológica) e, tal como o sugerido por Sansone e Sansone (2004), desenvolver um instrumento que avalie conjuntamente a psicopatologia alimentar e os NSSI. Desta forma, poderá ser garantida uma avaliação mais ampla do que aquela que é atualmente oferecida pelas medidas disponíveis, que avaliam as problemáticas de forma independente, apesar da frequente comorbilidade.

Outras direções para futura investigação consistem em avaliar a psicopatologia comórbida, como perturbações da personalidade, executar uma avaliação mais extensa para aferir o grau de risco de suicídio e equiparar o número de participantes nos grupos em comparação. Isto permitirá comparar, confirmar e expandir os resultados encontrados. Maiores amostras que possam abranger grupos de pacientes com diferentes idades, caraterísticas e níveis de gravidade dos NSSI (com base na frequência, número e tipo de métodos, funções, correlatos, etc) serão ainda pertinentes, uma vez que permitirão explorar fatores ou caraterísticas que distingam esses grupos e perceber se existem diferentes classes de NSSI em indivíduos com PCA. Esta diferenciação poderá informar os protocolos e orientações de tratamento para cada classe.

Considerando que ao contrário das restantes dificuldades na regulação emocional, os nossos resultados apenas demonstraram o papel moderador da baixa consciência emocional na relação entre a invalidação materna/paterna e o envolvimento em NSSI no último ano, mais estudos são necessários para confirmar estes resultados. Tal investigação servirá para compreender que dimensões específicas da desregulação emocional contribuem para uma maior probabilidade de envolvimento em NSSI e para explorar se o tipo de PCA tem influência nos resultados.

Relativamente à intervenção desenvolvida neste trabalho, para melhorar a sua robustez, interpretação e validade, será necessário estendê-la a um maior número de participantes. Ao considerar uma maior amostra, com diferentes características, é provável que exista uma maior representatividade da população de interesse (Kooistra et al., 2009). Além disso, estudos futuros devem continuar a explorar a adaptabilidade e as implicações desta intervenção na prática clínica e, principalmente, avaliar a sua eficácia num ensaio clínico, controlado e aleatorizado, cujos participantes sejam aleatoriamente

atribuídos ao grupo experimental, sujeito à intervenção em grupo em adição ao tratamento habitual para as PCA, e ao grupo de controlo, sujeito apenas ao tratamento habitual.

5. Implicações para a prática clínica

Em linhas gerais, esta tese fornece dados relevantes quanto à epidemiologia e caraterização, em Portugal, da coocorrência de PCA e de NSSI. Adicionalmente, a presente investigação reforça que a sobreposição entre psicopatologia alimentar e NSSI constitui-se como um problema de saúde pública, pelo que é importante identificá-la, preveni-la nos indivíduos em maior risco e delinear planos de intervenção, que abranjam essa comorbilidade.

Especificamente, este trabalho chama a atenção de investigadores e clínicos para a importância de avaliar e identificar precocemente os NSSI em pacientes com PCA. Os nossos resultados podem também auxiliar a reflexão e discussão sobre a potencial perturbação de autolesão não suicida, enquanto categoria nosológica independente, tal como o proposto pelo DSM-5 (APA, 2013).

O primeiro e o quarto estudos mostram que cerca de 1/3 dos pacientes avaliados, em tratamento para as PCA, apresentam história passada ou atual de NSSI. Estes números chamam a atenção para uma realidade relativamente desconhecida e que pode ser importante quando se considera a intervenção clínica em PCA. Por outro lado, a identificação dos potenciais fatores de risco e da sua possível interação visa o aumento do entendimento do contexto em que estes comportamentos coocorrem e orienta a identificação de casos de risco. Este conhecimento pode conduzir a programas de prevenção e tratamento que incidam em fatores de risco, desde o domínio mais individual até ao familiar ou social. Dado ainda que os NSSI são reconhecidos como preditores de tentativas de suicídio (e.g., Mars et al., 2019), uma intervenção atempada poderá impedir a escalada para atos mais graves e letais.

Tendo em conta os resultados do primeiro estudo, é imperativo atender às especificidades do ambiente familiar, à gravidade da sintomatologia alimentar e à existência de psicopatologia comórbida. Ademais, a literacia em saúde mental e a sensibilização para problemas como a depressão e o uso de substâncias, o treino de resolução de problemas ou de estratégias de *coping* e a promoção da autoestima e de redes de suporte, na família e na escola, podem ser alvos de particular interesse.

No que concerne ao segundo estudo, os resultados favorecem a compreensão de possíveis trajetórias de risco e alertam para a relevância de uma ampla avaliação, que permita examinar fatores distais, como o abuso na infância e *bullying*, que podem influenciar o desenvolvimento de outros mais proximais no tempo, como a autoavaliação negativa e o uso de substâncias, que facilitam a coocorrência de comportamentos alimentares disfuncionais e NSSI. Estas variáveis de natureza proximal ou

precipitante, nas quais os acontecimentos de vida negativos também se incluem, devem ser atendidas no tratamento. Por exemplo, o treino de estratégias de regulação emocional e a terapia cognitivo-comportamental, centrada na identificação e modificação de crenças e pensamentos negativos e automáticos, ligados a emoções e atos desajustados (Beck, 2011), podem influenciar a mudança comportamental. Além disso, a abordagem terapêutica a experiências adversas ou traumáticas do passado, assim como ao seu possível impacto na autoavaliação, podem ser cruciais.

O instrumento de autorrelato examinado no terceiro estudo, a ICES, pode ser bastante útil no contexto clínico, uma vez que permite identificar a experiência de invalidação na infância, na perspetiva do paciente, a qual pode ser alvo de intervenção. Paralelamente, os resultados do quarto estudo, que sugerem os efeitos moderadores das dificuldades na consciência emocional e da urgência negativa na associação entre a invalidação materna/paterna e NSSI, fornecem suporte para o delineamento e implementação de intervenções que enquadrem e validem experiências individuais e que favoreçam o reconhecimento, consciência e compreensão das emoções, bem como o controlo de impulsos. Ainda no quarto estudo, os resultados sinalizam a importância de uma avaliação funcional dos NSSI, assim como dos seus antecedentes e consequentes, para identificar as razões de natureza emocional, cognitiva e social, que levam a esses comportamentos ou que contribuem para o seu reforço e manutenção. Por sua vez, o plano de tratamento deverá ser norteado por essa avaliação, envolvendo a identificação de ações alternativas aos NSSI, como exercícios de respiração ou de *mindfulness*, comunicação com os pares, escrita ou expressão artística, entre outras (Walsh, 2012). Além disso, os resultados evidenciam que mais do que uma forma de comunicação ou um pedido de ajuda, os NSSI podem representar um estado de intenso sofrimento e incapacidade de lidar com o mesmo. Portanto, a promoção de competências de regulação socioemocional pode ser útil neste âmbito.

Por fim, no quinto estudo, ainda que o baixo número de participantes na intervenção em grupo e as subsequentes limitações na análise dos dados impeçam atestar a sua eficácia, é de destacar que a intervenção foi aplicada em contexto hospitalar (junto de pacientes em regime de ambulatório), o que implicou variadas necessidades, como adequar a intervenção às especificidades do contexto, promover a adesão do grupo às sessões e aos momentos de avaliação, gerir as caraterísticas individuais e a dinâmica grupal, e assegurar o equilíbrio entre a partilha de experiências e o foco nos tópicos da intervenção. Além disso, a maioria dos participantes envolvidos permaneceu na intervenção e demonstrou uma elevada satisfação com as estratégias promovidas e com o ambiente de grupo gerado. Então há suporte para depreender que uma intervenção psicológica breve, difundida em clima grupal e centrada nos fatores psicossociais associados à psicopatologia alimentar e aos NSSI, pode ser uma mais

valia em adição ao tratamento habitual para as PCA. Considerando ainda as diferenças observadas entre os momentos de avaliação, principalmente em variáveis da regulação emocional e do investimento corporal, conclui-se que é importante avaliar estas dimensões e considerá-las como alvos de tratamento.

No seu todo, a intervenção desenvolvida, mais do que contribuir para a redução de sintomas das PCA, pode antes transmitir competências e recursos adaptativos para lidar com dificuldades nos principais domínios de risco para a psicopatologia alimentar e para os NSSI. Desta forma, é dada uma atenção mais específica a estes domínios que, no tratamento habitual para as PCA, podem ser menos refletidos. Atendendo à incorporação de estratégias focadas na capacidade de lidar com as emoções, os impulsos, o corpo e as relações interpessoais, e ao facto de envolver baixos recursos humanos e materiais, a intervenção desenvolvida tem ainda o potencial de ser replicada em outros contextos e populações, como adolescentes da comunidade. Por conseguinte, garantindo a aproximação da investigação à comunidade, o protocolo da intervenção foi inserido na Plataforma de Recursos OPP (Ordem dos Psicólogos Portugueses, 2016), o que favoreceu a sua disseminação e potenciou a sua utilidade para a prática da Psicologia.

6. Conclusão

A presente tese reforçou e expandiu os conhecimentos prévios a nível internacional e favoreceu a compreensão alargada da relação dos NSSI com as PCA. Por sua vez, essa compreensão dirigiu o desenvolvimento e a implementação de uma intervenção psicológica especifica aos NSSI no contexto das PCA. Esta intervenção mostrou-se viável no seu âmbito de aplicação, satisfatória para os participantes e potencialmente capaz de promover competências úteis. Considera-se, assim, que o atual projeto de doutoramento correspondeu aos objetivos propostos, garantiu a aplicação da ciência psicológica a uma realidade prática, acrescentou conhecimento ao campo científico e contribuiu para o desenvolvimento de competências científicas e clínicas relevantes.

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