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Directionality of effects between non-suicidal self-injury and identity formation: A prospective study in adolescents

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ABSTRACT

The aim of the present 1-year longitudinal study was to investigate the directionality of association between NSSI and identity formation. We also explored if identity synthesis and identity confusion differed among the control, cessation, onset, and maintenance NSSI groups over a period of one year. We collected data on NSSI and identity from 380 high school students (Mean age = 14.3 years; *SD* = 1.68; range 12 to 19 years; 52.4% females) using self-report questionnaires at two measurement waves separated by a one-year period. The lifetime prevalence of NSSI at Time 1 was 14.2% and the 12-month prevalence of NSSI at Time 2 was 7.7%. We performed cross-lagged analyses using structural equation modelling techniques to investigate the directionality of effects. Our findings suggest that the associations between NSSI and identity synthesis and confusion are likely to be bi-directional. Mean differences in identity synthesis and confusion were also observed among control, cessation, onset, and maintenance NSSI groups. Clinical implications of these findings are discussed.

1. Introduction

Non-Suicidal Self-Injury (NSSI) refers to 'the intentional destruction of one's body tissue without suicidal intent' (Nock, 2009). Common forms of NSSI include self-cutting, self-hitting, self-burning, head-banging, etc. Apart from the obvious physical sequelae of scarring and the risk of tissue infections, NSSI is also associated with psychiatric disorders like depression, anxiety, eating disorders, and personality disorders like Borderline Personality disorder (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Peterson, Freedenthal, Sheldon, & Andersen, 2008). NSSI is also related to increased risk of suicidal ideations and suicidal attempts (Nock et al., 2006). NSSI often has its onset in adolescence and its prevalence peaks during 14–15 years of age (Plener, Schumacher, Munz, & Groschwitz, 2015). In fact, a meta-analysis has indicated that NSSI is more prevalent in adolescents than in adults (Swannell, Martin, Page, Hasking, & St John, 2014). As effective treatment modalities for clinical management of NSSI are generally lacking (Calati & Courtet, 2016), identifying factors that increase vulnerability to NSSI is essential for prevention and early intervention.

The onset of NSSI and the subsequent peak in its prevalence coincides with the identity crisis phase of adolescence. According to Erikson, the adolescent identity crisis represents a normative developmental phase of transition in which one's childhood identity is no longer experienced as suitable, but a new identity is yet to be established (Erikson, 1968). A successful resolution of this crisis leads to identity synthesis, in which adolescents develop a set of self-identified ideals, values, and goals. However, if this crisis persists, identity confusion ensues (Schwartz, 2001). Identity synthesis leads to a coherent sense of self which is consistent across time and is often associated with higher self-esteem, purpose in life, and agency (Schwartz, 2007). On the other hand, identity confusion in adolescents is often associated with the inability to form intimate relationships, mood swings, rebelliousness, and heightened physical complaints (Erikson, 1950). Persistent identity confusion has also been connected to psychiatric disorders and personality disorder symptoms (Demir, Dereboy, & Dereboy, 2009).

Existing qualitative and observational research indicates that disturbances in the process of identity formation and NSSI may be related. For example, based on the online autobiographical accounts of NSSI, Breen, Lewis, and Sutherland (2013) concluded that NSSI may serve as a means of developing a sense of self-identity ("I am a self-injurer") by connecting with others who engage in similar behaviors. Breen and colleagues also suggested that NSSI may provide a basic sense of a coherent self that can persist across time. Observational studies in community

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and clinical samples provide more direct evidence for the association between disturbed identity formation and NSSI. For example, in a sample of high school students, Claes, Luyckx, and Bijttebier (2014) found that NSSI was negatively associated with identity synthesis and positively associated with identity confusion. Further, they also reported that identity confusion explained additional variance in lifetime NSSI beyond age, gender, and internalizing symptoms. These findings have been replicated in adolescent community samples (Gandhi, Luyckx, Maitra, Kiekens, & Claes, 2016; Luyckx, Gandhi, Bijttebier, & Claes, 2015) as well as in clinical samples. For example, Claes et al. (2015) found that eating disorder patients who engaged in NSSI reported significantly lower identity synthesis and higher identity confusion than eating disorder patients who did not engage in NSSI. This study also found that lack of identity synthesis explained additional variance in lifetime NSSI beyond age, gender, and internalizing symptoms.

Overall, the existing literature suggests that both identity synthesis and identity confusion may be uniquely and incrementally associated with NSSI. However, it is not clear if disturbances in identity formation precede or are a consequence of NSSI. Cross-sectional research has demonstrated that individuals who engaged in NSSI in the past are more likely to lack identity synthesis, whereas individuals who are currently engaging in NSSI are more likely to be experiencing identity confusion (Luyckx et al., 2015). These findings suggest a bi-directional association between disturbances in identity formation and NSSI such that a more cyclic pattern may be possible. That is, adolescents may engage in NSSI as a means of coping with the emptiness associated with disturbed identity formation, whereas engaging in NSSI may also give rise to developmental delays in identity formation. However, longitudinal research is necessary to confirm this hypothesis.

The present study serves to extend the work of Claes et al. (2014) and Luyckx et al. (2015) regarding the positive association between adolescents NSSI and disturbances in identity formation. More specifically, using a prospective study design we investigated if disturbances in identity formation in high school students' increases vulnerability to NSSI or if engaging in NSSI increases vulnerability to identity formation (i.e. the directionality of effect between NSSI and identity formation). In line with previous cross-sectional research (Luyckx et al., 2015), we expected this association to be bi-directional. We also explored if there were mean level differences in identity synthesis and identity confusion over a period of 1 year in the following four groups: (1) individuals who did not engage in NSSI at Time 1 and Time 2; (2) individuals who engaged in NSSI only at Time 1 and not at Time 2; (3) individuals who engaged in NSSI only at Time 2 and not at Time 1; and (4) individuals who engaged in NSSI at Time 1 and Time 2. Similar to the previous research, these groups were referred to as control, cessation, onset, and maintenance, respectively (Tatnell, Kelada, Hasking, & Martin, 2014). Given the small number of participants in the aforementioned four groups, this objective was treated as an exploratory research question. Nonetheless, based on the findings of the cross-sectional studies (Claes et al., 2014, 2015; Gandhi et al., 2016; Luyckx et al., 2015;), we expected the maintenance group to have greater identity disturbances (characterized by lower identity synthesis and higher identity confusion) as compared to the other groups.

2. Method

2.1. Participants and procedure

Data for the present longitudinal study were collected through convenience sampling from high school students located in the Dutch speaking part of Belgium in two measurement waves. The first measurement wave was collected in the beginning of 2015 and the second measurement wave was collected one year later. The students were allowed to participate in the study only if they had informed consent from their parents. Data collection was carried out during school hours. Students were provided with an envelope including an assent/consent form and the questionnaires. They were requested to return completed forms in a sealed envelope to the researchers who were present during the data collection. The same procedure was used at Time 2. Additionally, at Time 2, participants who had completed their high school education or left the school for other reasons were contacted via email and requested to complete the questionnaires online. All students who participated at Time 1 and Time 2 were given a movie ticket as a compensation for participation. To ensure confidentiality, all students were assigned a unique code number. The study was approved by the ethics committee of the Faculty of Psychology and Educational Sciences, University of Leuven.

Out of the total 1115 students contacted, 528 students participated at Time 1 (50.4% female; 95.5% Belgian nationality). Given the sensitive nature of the research topic and as we sought parental consent, the lower response rate of 47.35% was not unexpected. The mean age of the participants was 15 years ($SD = 1.84$ years; range 11 to 19 years). Overall, 382 students who participated at Time 1 also participated at Time 2 (Retention rate = 72.07%). Data from two participants were removed due to missing values. Hence, the final sample size consisted of 380 participants (Mean age = 14.3 years; $SD = 1.68$; range 12 to 19 years; 52.4% females). Attrition analyses indicated that, except for age ($F(1, 354) = 26.33$, $p = 0.001$), students who did and did not participate at Time 2 were similar in gender, nationality, and identity variables measured at Time 1. Higher mean age in the participants who left the study was expected as older participants who left the school after completing their high school education mostly did not participate at Time 2. Finally, a chi-square test indicated that attrition (non-participation in Time T2) was not associated with engagement or non-engagement in NSSI at Time 1 ($\chi^2 = 0.199$, $p = 0.656$). Further details of the attrition analysis are presented as an appendix accompanying the current manuscript.

2.2. Measures

2.2.1. Non-suicidal self-injury

At Time 1, we assessed the lifetime prevalence of NSSI by means of a single-item measure (i.e., "Have you ever injured yourself on purpose without an intent to die?"). At Time 2, new cases of NSSI (since Time 1) were again identified by means of a single-item measure (i.e., "In the past 12 months, have you deliberately injured yourself without an intent to die?"). We further assessed lifetime prevalence of seven different forms of NSSI (scratching, carving, cutting, hitting or bruising, burning, pricking with sharp objects, and head banging). At Time 2, the 12-month prevalence of the same seven forms of NSSI was measured again.

2.2.2. Identity formation

The identity subscale of the Erikson's Psychosocial Inventory (EPSI; Rosenthal, Gurney, & Moore, 1981) was used to measure identity synthesis and confusion at Time 1 and Time 2. The EPSI is a 12-item questionnaire that measures the extent to which participants have a clear sense of who they are and what they believe in (Schwartz, Zamboanga, Wang, & Olthuis, 2009). The EPSI has two subscales: identity synthesis (6 items; sample item: "The important things in life are clear to me") and identity confusion (6 items; sample item: "I don't really know who I am"). The Cronbach's alpha coefficient for identity synthesis was 0.74 both at Time 1 and Time 2. The Cronbach's alpha coefficient for identity confusion at Time 1 was 0.67 and at Time 2 it was 0.70. As an alpha coefficient above 0.60 is considered to be acceptable for scales up to 6 items (Giacobbi, 2002), reliability of all the scales was adequate.

2.3. Data analytic strategy

To establish the directionality of effects between NSSI and identity synthesis/confusion, we performed cross-lagged analyses using structural equation modelling. A cross-lagged model (shown in Fig. 1)