

The Within-Person Effect of Psychological Distress on Social Self-Efficacy: A Random Intercept Cross-Lagged Panel Model

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This study investigated the temporal relationship between social self-efficacy and psychological distress during 3 years in middle to late adolescence. The sample comprised 1508 participants (60.7% female; baseline mean age = 16.33, $SD = .62$; 52.9% high perceived family wealth; 70.6% born in Norway). We used a random intercept cross-lagged panel model to investigate the concurrent and subsequent associations between the two constructs. The results indicated (1) small to moderate and negative associations between the trait-like components and within-person fluctuations of social self-efficacy and psychological distress, (2) positive and significant carry-over stability effects on both constructs across time, and (3) that psychological distress predicted subsequent social self-efficacy more consistently across four time points, than social self-efficacy predicted later psychological distress.

Key words: social self-efficacy – psychological distress – random intercept cross-lagged panel model

Because psychological distress increases dramatically during middle to late adolescence (Hankin et al., 1998; Kleppang, Thurston, Hartz, & Hagquist, 2019; Rohde, Lewinsohn, & Seeley, 1991; Vannucci, Flannery, & Ohannessian, 2018; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000), this period can be regarded as a critical time of vulnerability for individuals. Psychological distress, that is, experiencing a state of mental suffering characterized by symptoms of anxiety (e.g., worrying, restlessness, feeling tense) and depression (e.g., hopelessness, negative affect) (Drapeau, Marchand, & Beaulieu-Prévost, 2012; Mirowsky & Ross, 2002), constitutes a major risk factor for suicide (Davidson, Wingate, Grant, Judah, & Mills, 2011; Windfuhr et al., 2008), educational impairments (Fletcher, 2008; Van Ameringen, Mancini, & Fervolden, 2003), increased rate of smoking, substance/alcohol misuse, and obesity (Hasler et al., 2005; Keenan-Miller, Hammen, & Brennan, 2007; Wolitzky-Taylor, Bobova, Zinbarg, Mineka, & Craske, 2012), as well as maladjustment (Benjamin, Harrison, Settapani, Brodman, & Kendall, 2013; Essau, Lewinsohn, Olaya, & Seeley, 2014). During recent decades, the prevalence of adolescents who experience psychological distress has been relatively stable in countries like the United States, France, and Latvia (Ottová-Jordan et al., 2015). However, in Northern Europe (Potrebny, Wiium, &

Lundegård, 2017), and particularly in the Nordic countries (Kosidou et al., 2010; von Soest & Wichstrøm, 2014), there are increasing levels of psychological distress reported by adolescents. According to a national Norwegian survey, the number of upper secondary school students who experience high levels of psychological distress has increased from 40.4% in 2014 to 52.5% in 2018 (Myhr, Anthun, Lillefjell, & Sund, 2020). Because high psychological distress, and its short- and long-term consequences, is a major issue for an increasing number of adolescents, research that investigates precursors and consequences of psychological distress in this age group is of great importance.

Social self-efficacy, that is, an individual's beliefs regarding their social capabilities and performances, seems to be related to the development of psychological distress through processes of vulnerability (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bandura, Pastorelli, Barbaranelli, & Caprara, 1999). Such processes refer to the role personal vulnerability and environmental stressors plays in the development of psychological disorders and symptoms of these (see Hankin & Abela, 2005). Although numerous studies have established negative concurrent associations between psychological distress and social self-efficacy in all stages of adolescence (e.g., Hermann & Betz, 2004, 2006;

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Muris, 2002; Riaz, Yasien, & Ahmad, 2014; Smith & Betz, 2002; Suldo & Shaffer, 2007; Tahmassian & Jalali Moghadam, 2011; Uhrlass, Schofield, Coles, & Gibb, 2009), the temporal relationship between the two constructs has not been sufficiently explored. There is a scarcity of longitudinal research that has focused on social self-efficacy as a precursor of psychological distress, and even more limited is research on psychological distress as an antecedent of social self-efficacy. Therefore, it is not evident whether social self-efficacy precedes psychological distress, psychological distress influences subsequent social self-efficacy, or both. Hence, the main goal of this study is to investigate the temporal and concurrent associations between social self-efficacy and psychological distress within individuals during 3 years in middle to late adolescence. This research will benefit our understanding of the developmental processes of psychological distress and self-beliefs in adolescence and might have implications for theoretical frameworks that aim to explain such processes, such as the helplessness–hopelessness theory (Alloy, Kelly, Mineka, & Clements, 1990) and self-efficacy theory (Bandura, 1977).

The Helplessness–Hopelessness Theory and Social Self-Efficacy

Central tenets of social self-efficacy (Bandura, 1977, 1997) have been shown to be critical in several areas of adolescent functioning and development, such as self-assertiveness and perceived capabilities for peer relationships (Ludwig & Pittman, 1999; Zullig, Teoli, & Valois, 2011). Social self-efficacy might provide an important element in the certainty of expectations individuals hold about their social interactions and feelings of helplessness. An adolescent with low social self-efficacy might know how to become friends with peers, work well with others, and express their opinions when people disagree with them, however, they do not believe they are socially capable enough to do it. As Abramson, Metalsky, and Alloy (1989) note, if a person is certain that nothing he or she does matters, why try? We suggest that feelings of certain helplessness in middle to late adolescence can occur when individuals believe they do not possess the necessary social assertiveness and capabilities for peer relationships and social activities (low social self-efficacy), resulting in symptoms of anxiety and depression (i.e., psychological distress).

The helplessness–hopelessness theory (Alloy et al., 1990) is an expansion of the hopelessness theory of depression (Abramson et al., 1989). The

framework was developed to provide an increasingly heuristic perspective on the co-occurrence of anxiety and depression symptoms (Alloy et al., 1990). The helplessness–hopelessness theory suggests that the association between anxiety and depression is contingent on varying degrees of the three components of *hopelessness*: negative outcome expectancy, helplessness expectancy, and certainty of these expectations. According to this framework, combinations of the three components form different conditions of psychological distress (Alloy et al., 1990). A person who expects to be helpless in controlling future outcomes, but is unsure about their helplessness, will exhibit *pure anxiety*. With an uncertain helplessness, the individual believes that future control is possible, and as a result experiences increased arousal and anxiety. If the person becomes certain about their helplessness, but is still unsure about the likelihood of future negative life events, a *mixed anxiety–depression syndrome* will develop (Alloy et al., 1990). In this situation, arousal will decline, and the individual will “give up” and become passive. However, they will still ruminate and worry about future outcomes. *Hopelessness depression* unfolds when the negative outcome expectancy becomes certain, and feelings of helplessness turn into hopelessness.

The helplessness–hopelessness theory suggests that individuals are likely to ruminate about their helplessness because the outcome involved is highly valuable to them (Alloy et al., 1990). Peer relationships and networks become increasingly important as time progresses in adolescence (Prinstein & Dodge, 2008), and adolescents with high psychological distress might be prone to ruminate about how incapable and inefficient they believe themselves to be in peer interactions. As such, because individuals with high levels of psychological distress might become increasingly sad and uneasy due to rumination, their cognitions about their self-efficacy beliefs will become even more negative. Furthermore, the level of self-efficacy individuals feel in a social interaction is determined by several past and current sources of information, such as previous performances in comparable situations, observations of others in similar circumstances, social feedback from others, and recollections of one’s physical and affective state from previous social interactions (Bandura, 1994; Maddux, 1995). Psychologically distressed individuals often misjudge their own behavior (Widiger, 2011), negatively compare themselves to others (McCarthy & Morina, 2020), are rated as less socially skilled compared to others (Rapee &

Spence, 2004), and suffer from negative affect and uneasiness on a general basis, including while interacting with others. Hence, there is reason to assume that psychological distress influences subsequent levels of social self-efficacy.

The Temporal Association Between Social Self-Efficacy and Psychological Distress

Social self-efficacy as a precursor of psychological distress. Several studies have demonstrated the predictive power of social self-efficacy on psychological distress in several age groups. For example, research has established that social self-efficacy predicts depressive symptoms in young adults (Hermann & Betz, 2004, 2006) and adolescents (Bandura et al., 1996; McFarlane, Bellissimo, & Norman, 1995). Another study found in an adolescent sample that social self-efficacy was associated with symptoms of anxiety disorder but not depressive symptoms (Muris, 2002). One earlier longitudinal study on how social self-efficacy predicts subsequent psychological distress found that social self-efficacy is a precursor of depressive symptoms (Bandura et al., 1999). Bandura et al. (1999) established that high social self-efficacy reduces vulnerability to depression, both directly and through prosocial behavior and curtailment of problem behavior. In a more recent longitudinal study, Steca et al. (2014) demonstrated that the association between hassles and depressive symptoms was stronger for children with low social self-efficacy and weaker for children with positive beliefs regarding their perceived social self-assertiveness and capabilities. Similarly, Wei, Russell, and Zakalik (2005) established that social self-efficacy mediated the association between loneliness and depression, when previous levels of depression were controlled.

Psychological distress as an antecedent of social self-efficacy. Although there is less research on how psychological distress impacts social self-efficacy, there is some empirical evidence supporting this direction of effect. For instance, some research has found that individuals high in social anxiety and attachment anxiety experience lower social self-efficacy compared to others (Kashdan & Roberts, 2004; Mallinckrodt & Wei, 2005). It has been established that psychologically distressed individuals often withdraw from social interactions, have unsatisfactory functioning in their social environment, and perceive family and peers as less supportive compared to others (Jaycox et al., 2009;

Schaefer, Kornienko, & Fox, 2011). Moreover, psychologically distressed individuals usually believe they are less able to interact with others effectively, which might result in avoidance behavior during periods of negative affect (Maddux & Meier, 1995). Withdrawal and avoidance behavior, unsatisfactory social functioning, and less supportive interactions might negatively impact individual's feelings of social self-efficacy due to severely limited and negative social feedback. In addition, individuals with high levels of psychological distress frequently experience difficulties in concentrating and have feelings of worthlessness (Epkins & Heckler, 2011), which implies that psychologically distressed people might erroneously think they perform inadequately in social settings and simultaneously believe they are unworthy of meaningful and supportive relationships. It has been demonstrated that psychological distress is associated with fears regarding failure and criticism, low self-worth, and negative self-perceptions that extend even beyond the social domain (Epkins, 1996). These fears might disrupt the desire to reach out to others and distort individuals' interpretation of how capable they are when they interact with their social environment. Lastly, it has been found that depressed individuals produce more stressors compared to nondepressed individuals (e.g., Hammen, 2005, 2006), which might have adverse effects on how efficacious individuals perceive themselves to be in social interactions (Matsushima & Shiomi, 2003; McKay, Dempster, & Byrne, 2014).

Bidirectional association between social self-efficacy and psychological distress. Individuals with low social self-efficacy might experience increased psychological distress due to feelings of helplessness in social interactions. This in turn can disrupt performance and increase social avoidance, self-criticism, repetitive rumination, and worry, thus lowering social self-efficacy further. This might create a negative cycle of influence between social self-efficacy and psychological distress over time, wherein both constructs influence each other at subsequent time points. Although research has largely investigated the unidirectional relationships between social self-efficacy and psychological distress, studies examining the bidirectional relationship between the two constructs are scarce. In order to disentangle the temporal precedence, it is important to consider the stability of both constructs and their concurrent association in the same model as directionality. One study on the bidirectional association between psychological distress

and social self-efficacy found that depressive symptoms predicted later social self-efficacy and not the other way around (Tak, Brunwasser, Lichtwarck-Aschoff, & Engels, 2017). Two studies investigating the temporal relationship between depressive symptoms and social self-competence, which generally refer to perceptions of one's social abilities, skills, or knowledge (Harter, 2012), found a temporal effect similar to that in Tak et al. (2017), wherein depressive symptoms predicted later social self-competence much more consistently than the reverse (Ohannessian & Vannucci, 2020; Ohannessian, Vannucci, Lincoln, Flannery, & Trinh, 2019). However, these studies have some limitations that are worth noting. First, the studies of Ohannessian et al. (2019) and Ohannessian and Vannucci (2020) only have two measurement waves, which might not be sufficient to determine the longitudinal association between two constructs. Second, Tak et al. (2017) used an urban Dutch sample from a depression prevention program, which might limit the study's generalizability. Lastly, all three studies describe processes that occur within individuals, that is, how a person's own self-efficacy or self-competence is associated to the same individual's risk of becoming depressed and vice versa. However, these studies have employed cross-lagged panel models without random intercepts, which can be regarded as insufficient in answering hypotheses regarding within-person associations.

Study Aims

Given the limitations in the literature on the within-person relationship between social self-efficacy and psychological distress, we aim at testing a longitudinal model across four time points, in which we investigate the concurrent and subsequent associations between social self-efficacy and psychological distress. Due to recent advancements in the analysis of longitudinal associations (Hamaker, Kuiper, & Grasman, 2015), we include two random intercepts (one for social self-efficacy and one for psychological distress) in a cross-lagged panel model. This heightens the accuracy of determining how much of the variation in the latent constructs and their associations is explained by between-people variations or fluctuations within individuals. Our model has several methodological advantages. First, random intercept cross-lagged panel models (RI-CLPMs) provide information about the association between constructs, both in the stable, trait-like component (i.e., how stable

individual differences in social self-efficacy are related to stable individual differences in psychological distress) and the within-person components at all time points (i.e., how deviations from individual's personal norm of social self-efficacy are related to deviations in their level of psychological distress concurrently). Second, it contributes to understanding the developmental processes within individuals (i.e., carry-over stability effects of social self-efficacy and psychological distress from one occasion to the next). Carry-over stability effects refer to whether deviating levels in one construct are associated with deviating levels in the same construct on subsequent time points. Most importantly, such models produce knowledge on how within-person fluctuations in one construct impact within-person fluctuations in another construct subsequently.

Hypotheses. Based on the theoretical assumptions of social self-efficacy (Bandura, 1994, 1997) and the helplessness–hopelessness theory (Alloy et al., 1990), and previous bidirectional models of psychological distress and social self-efficacy or social self-competence (Ohannessian & Vannucci, 2020; Ohannessian et al., 2019; Tak et al., 2017), we propose a reciprocal model of social self-efficacy and psychological distress. We have formed the following hypotheses:

- Hypothesis 1 (H_1): We hypothesize a negative relationship between social self-efficacy and psychological distress, both at the between-person level (i.e., the intercepts) and concurrently at each measurement occasion at the within-person level.
- Hypothesis 2 (H_2): High social self-efficacy improves individuals' social interactions, which in turn increase their social self-efficacy through positive social models, mastery experience, affect, and feedback. We hypothesize positive carry-over stability effects of social self-efficacy across time points (i.e., individuals with higher levels than expected of social self-efficacy at one time point are more likely to experience higher levels than expected of later social self-efficacy).
- Hypothesis 3 (H_3): Psychological distress intensifies a person's helplessness, which increases the likelihood of experiencing the same symptoms of anxiety and depression in the future. We hypothesize positive carry-over stability effects of psychological distress across time points (i.e., individuals with higher levels than expected of psychological distress at one time point are more

likely to experience higher levels than expected of later psychological distress).

- Hypothesis 4 (H_4): Low social self-efficacy (believing one does not possess the necessary social assertiveness and capabilities for peer relationships and social activities) leads to feelings of helplessness, resulting in psychological distress. We hypothesize a negative cross-lagged effect from social self-efficacy to later psychological distress (i.e., people with lower levels than expected of social self-efficacy have an increased likelihood of experiencing higher levels than expected of later psychological distress).
- Hypothesis 5 (H_5): Psychological distress negatively impacts social self-efficacy through several affective, cognitive, and behavioral symptoms (e.g., negative affect, poor social skills, social avoidance, self-criticism, negative self-evaluation, rumination, worry, etc.). We hypothesize a negative cross-lagged effect from psychological distress to later social self-efficacy (i.e., individuals with higher levels than expected of psychological distress have an increased likelihood of experiencing lower levels than expected of later social self-efficacy).

METHOD

Procedure and Participants

All upper secondary schools in four counties in Norway were invited to participate in the COMPLETE study (Larsen et al., 2018). COMPLETE is a randomized controlled trial developed to improve the psychosocial learning environment and as a result increase the completion rate in upper secondary school. In the study, there were two intervention groups (six schools each) and one control group (four schools). All students enrolled in the 1st grade of upper secondary school in August 2016 in the mentioned schools were invited to participate in the project. The sample comprised 1508 upper secondary school students who attended a general education program. The baseline mean age of the participants was 16.33 ($SD = .62$). At baseline, the majority of the participants reported that they were ethnic Norwegian (70.6%), while 5.5% were born in another country and 23.9% did not answer the question. In our sample, 39.3% ($N = 592$) were boys and 60.7% ($N = 916$) were girls. A median split of socioeconomic position on baseline indicated that 22.5% ($N = 340$) perceived their family as being in a low socioeconomic position (not well off or not at all well off), while 52.9%

($N = 797$) perceived their family as being in a high socioeconomic position (well off or very well off) and 24.6% ($N = 371$) did not answer the question.

The study was approved by the Norwegian Centre for Research Data (NSD), and the participants received written and oral information concerning the study's aims prior to participation. The data consist of four measurement occasions, stretching from the beginning of upper secondary school in 2016 to the adolescents' final year in 2019. In Norway, the grade levels of primary and secondary school consist of 13 grades, from age 6 to age 19. Upper secondary school (grade 11 to grade 13) is voluntary and free. Approximately 98% (SSB, 2021) of adolescents choose to begin an upper secondary school education.

Data collections were performed with intervals of 1 year, except for the two first measurement waves which took place at the beginning and nearing the end of the 11th grade, in August 2016 (T1) and in March 2017 (T2). This was done to acquire data from the cohort immediately when they started upper secondary school in August. The third and fourth time points were in March 2018 (T3) in the 12th grade and March 2019 (T4) in the 13th grade. Researchers and research assistants physically collected data at the school grounds using tablets. Students who were not present at the school during data collection were sent an invitation to participate online in the study via e-mail.

Instruments

Social self-efficacy. To measure social self-efficacy, the social subscale from the Self-Efficacy Questionnaire for Children (SEQ-C; Muris, 2001) was employed. Initially, the scale consisted of eight indicators. However, Muris (2001) found that one item ("How well do you succeed in preventing quarrels with other children?") had unsatisfactory loading on the social self-efficacy scale, hence this item was omitted. Furthermore, the wording of some indicators was slightly adapted to better fit the age group of the study sample, wherein "children" was replaced with "peers." As such, the social self-efficacy scale in the present study consists of seven indicators, measuring individuals' perceived capabilities for peer relationships (e.g., "How well can you become friends with peers?"), social activities (e.g., "How well can you work in harmony with your classmates?"), and social self-assertiveness (e.g., "How well can you express your opinions when other classmates disagree with you?"). The students responded on a Likert scale

ranging from 1 = “not at all” to 5 = “very well.” Cronbach’s alpha from previous studies has been found to be $>.81$ in middle to late adolescent samples (Minter & Pritzker, 2015; Muris, 2001, 2002).

Psychological distress. Psychological distress was measured using a short form of the Norwegian version of the Symptom Check List-90-R (SCL-90-R; Tambs & Moum, 1993), with indicators from the anxiety and depression subscales. The Norwegian Institute of Public Health has established that the SCL-90-R is well designed for assessing overall psychological distress and changes in the construct for use in a Norwegian context (Siqueland, Moum, & Leiknes, 2016). The short form consists of five indicators and has been estimated to be a valid, global measure of psychological distress (Tambs & Moum, 1993). It is important to note that the instrument is not a clinical measurement or a diagnostic tool for anxiety or depression, but instead an indicator of general symptoms of anxiety and depression. The students were asked to what degree they have felt bothered or distressed by the following issues in the last 14 days: “feeling fearful,” “nervousness or shakiness inside,” “feeling hopeless about the future,” “feeling blue,” and “worrying too much about things.” Students responded on a Likert -scale ranging from 1 = “not at all” to 4 = “very much.” Previous studies have found Cronbach’s alpha of the Symptom Check List-5 (SCL-5) ranging from .83 to .87 (Gjerde et al., 2011; Skrove, Romundstad, & Indredavik, 2013; Strand, Dalgard, Tambs, & Rognerud, 2003; Tambs & Moum, 1993).

Control variables. *Gender.* Boys were coded as 0 and girls as 1.

Socioeconomic position. Socioeconomic position (SEP: Iversen & Holsen, 2008) was measured by the question “How well off is your family?”. The participants responded on a 5-point Likert scale ranging from 1 “not at all well off” to 5 “very well off.” We created dummy variables based on a median split, wherein participants either rated their family as being in a low (coded as 0) or high (coded as 1) SEP. This variable was measured on each measurement occasion and was added as a time-varying covariate. Because earlier levels of SEP might have an impact on future levels of the study’s constructs, we also specified previous levels of SEP as covariates for later levels of psychological distress and social self-efficacy. Thus, T3 SEP functioned as a covariate for the constructs at T3 and T4, while T2 SEP was specified as a

covariate at T2, T3, and T4, and T1 SEP was included as a covariate for the constructs at all time points.

Ethnicity. Regarding ethnicity, the participants were asked which country they were born in at T1. We coded this variable as dichotomous, wherein ethnic Norwegian was coded as 1 and nonethnic Norwegian was coded as 0.

Intervention condition. To prevent possible over- or underestimation of effects in our model, we included the intervention condition (three intervention groups) as a control variable in our model, similar to other studies (e.g., Ringlever, Hiemstra, Engels, van Schayck, & Otten, 2013; Tak et al., 2017). We used the control group as a reference group and created two dummy variables, wherein participants were in that specific intervention group (coded as 1) or not (coded as 0).

STATISTICAL ANALYSES

Missing data

While investigating construct-level missingness on each measurement occasion, we considered response rate, full response rate, and partial response rate (Newman, 2014). Response rate refers to how many of the invited individuals responded to the survey. Full response rate indicates the number of respondents who replied to both scales in our study. Partial response rate refers to the number of respondents who replied to one of the scales, but not both. There were 16 schools with a total of 1508 students that were invited to participate in the study (see Appendix A for the number of respondents across measurement waves). Of the 1508 invited participants, surveys were returned by 1151 students at T1 (response rate = 76.3%; full response = 72.8%; partial response = 3.5%). At T2, 1184 students participated (response rate = 78.5%; full response = 75.1%; 3.4%). After T2, one school with 30 participants dropped out of the study. Of the 1478 students who were invited at T3, 949 students participated (response rate = 64.2%; full response = 61.9%; partial response = 2.3%). At T4, surveys were completed by 1016 of the 1478 invited students (response rate = 68.7%; full response = 65.6%; partial response = 3.1%). Because one school dropped out of the study, we investigated our hypothesized model with school level as a CLUSTER variable in conjuncture with the TYPE = COMPLEX analysis in *Mplus* as a robustness test. The model produced similar results to our original model, the standard errors of the coefficients in the

models did not substantially differ from each other, and a chi-square difference test was not significant ($p > .05$).

The missing data pattern across the four time points was not completely at random according to Little's missing completely at random (MCAR) test ($\chi^2 = 3285.053$, $df = 3144$, $p = .039$). It was found that the missing data were approximately equivalent to "pure missing at random" (MAR). Under MAR, it is assumed that missing in one variable (Y_{missing}) is related to another variable (X), but Y_{missing} is not related to Y after X is controlled (Newman, 2014). Social self-efficacy was not related to missingness in social self-efficacy on subsequent measurement waves when psychological distress was controlled and vice versa. Therefore, we retained our constructs across each time point for following analyses and used full information maximum likelihood (FIML) to handle potential construct-level missingness. Of note, although we did not have response rates lower than 30% on any measurement times, which would indicate high person-level missingness, we conducted several follow-up sensitivity analyses on our hypothesized model to investigate the potential impact of the person-level missingness in our study. The sensitivity analyses produced similar patterns of results when estimating models with participants with complete data, participants with intermittent missing data patterns, and all participants.

Preliminary analysis

We used SPSS version 25 and *Mplus* version 8 software (Muthén & Muthén, 1998–2017) to perform the following preliminary analyses. First, we investigated the omega reliability for the social self-efficacy and psychological distress factors. Second, a Pearson product-moment correlation analysis of psychological distress and social self-efficacy at all measurement waves was performed to establish significant associations within- and between the two constructs across time. Third, the intraclass correlation coefficient (ICC) of psychological distress and social self-efficacy was investigated on several levels—intervention condition, school membership, and personal level. Lastly, we investigated configural, metric, scalar, and strict longitudinal measurement invariance of social self-efficacy and psychological distress (Chen, 2007; Millsap, 2011; Wickrama, Lee, O'Neal, & Lorenz, 2016). This was performed by first specifying a configural model with no constraints on the indicators. Next, a metric model with constraints on like factor loadings

in both constructs across time was tested. After that, we added equality constraints to the corresponding indicator intercepts across time both constructs across time. Lastly, a strict model was specified by including constraints on the residual variance of corresponding indicators across time. If the model fit did not deteriorate significantly between models ($\Delta CFI < 0.01$, $\Delta RMSEA < 0.015$, and $\Delta SRMR < 0.03$; Chen, 2007), the model with the highest level of invariance was accepted and the constraints were kept in place for further modeling.

Primary analysis

Mplus version 8 software (Muthén & Muthén, 1998–2017) was used to perform structural equation modeling (SEM) in our primary analysis with maximum likelihood estimation. To examine the model fit of our SEM model, we relied on the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Although we included chi-square statistics in the evaluation of model fit, this indicator was not decisive, as it can often be sensitive to sample size (Hooper, Coughlan, & Mullen, 2007). We used the recommended cut-offs of $CFI > 0.95$, $RMSEA < 0.05$, and $SRMR < 0.08$ indicating a good model fit, and $CFI > 0.90$ and $RMSEA < 0.08$ indicating an acceptable model fit (Byrne, 2012; Hooper et al., 2007; Hu & Bentler, 1999).

To investigate the temporal and concurrent associations between social self-efficacy and psychological distress within individuals, we specified a random intercept cross-lagged panel model (RI-CLPM; Hamaker et al., 2015) of the two constructs with four time points. Each latent variable of social self-efficacy and psychological distress was decomposed into a stable trait-like part (individual's personal norm) and state-like part at each measurement wave (deviations within individuals). As such, individuals have their own stable and trait-like level of social self-efficacy and psychological distress over time; in other words, their random intercept score, and they fluctuate around this level at all measurement occasions. This specification was performed by first including two random intercepts, one for each construct. The four first-order latent factors of social self-efficacy and psychological distress were specified as the indicators of each intercept, wherein every factor loading was constrained to 1. The intercepts were allowed to freely covary in the model. Second, we specified

the within-individual component by regressing another latent factor on the corresponding first-order latent factor, with factor loadings constrained to 1 (Mulder & Hamaker, 2020). The resulting eight latent second-order factors (i.e., one for social self-efficacy and one for psychological distress at each of the four time points) were used to specify state-like concurrent correlation coefficients, carry-over stability coefficients, and cross-lagged coefficients. The error variance of the first-order latent factors was constrained to 0, which ensures that all variation in the latent factors was entirely captured by the within- and between factor structures (Hamaker, March 21, 2018). Next, we added gender, ethnicity, socioeconomic position, and intervention conditions as time-invariant and time-varying control variables in the model. We performed a chi-square difference test to investigate whether the effect of the control variables changed over time (first-order latent variables regressed on the control variables) or if the effects were invariant over time (intercepts regressed on the control variables). Because the chi-square difference test indicated no significant difference between the two models, we retained the model with the best model fit wherein the first-order latent variables were regressed on the control variables. Lastly, to test whether the within-person carry-over stability paths and cross-lagged paths were invariant across measurement occasions, we compared a freely estimated RI-CLPM against a model wherein carry-over stability paths and cross-lagged paths were constrained to be equal over time. If the chi-square difference between the two models was not significant ($p > 0.05$), the constrained model was retained. However, if the model fit deteriorated significantly, the effects between waves were not equal and the fully constrained model was rejected.

RESULTS

Descriptive Statistics, Correlation, and Intraclass Correlation

Table 1 contains the descriptive statistics and reliability of social self-efficacy and psychological distress and the correlation between the two variables at all measurement occasions. The constructs of social self-efficacy and psychological distress produced acceptable omega reliability at all time points ($\omega > 0.82$). The level of social self-efficacy in our sample is similar to those of other adolescent and young adult samples across cultures (Anderson

& Betz, 2001; Habibi, Tahmasian, & Ferrer-Wreder, 2014; Minter & Pritzker, 2015; Muris, 2001; Smith & Betz, 2000; Suldo & Shaffer, 2007). Findings from studies with adolescent samples that have used the same psychological distress measure as the current study reported lower levels of psychological distress compared to our sample (Pape, Bjørngaard, Holmen, & Krokstad, 2012; Skrove et al., 2013; Strand et al., 2003). However, it is worth noting that these studies are based on data that were collected in the late 1990s and early 2000s, which are expected to have somewhat lower levels of psychological distress than today, given the current development explained in the Introduction.

The effect sizes of the correlation coefficients were based on the values from Cohen (1988), wherein $r > .10$ is small, $r > .30$ is moderate, and $r > .50$ is large. The associations between psychological distress and social self-efficacy were negative and small to moderate, with coefficients ranging from $-.14$ to $-.35$. The correlation within the same construct between different time points was positive and moderate to large, ranging from $.45$ to $.70$. The correlation coefficients were larger with adjacent measurement times and smaller the more distal the measurement times.

The school-level ICC of social self-efficacy and psychological distress at each measurement wave was $r < .013$, indicating that the schools are not necessarily more similar than dissimilar concerning the study's constructs. Likewise, the ICC within the intervention conditions in social self-efficacy and psychological distress was negligible ($r < .003$). On the personal level, the results of the ICC for social self-efficacy indicated that 30.7% of the variance could be explained by between-person differences and 69.3% by fluctuations within individuals. The ICC for psychological distress demonstrated that 44.5% of the variance could be explained by between-person differences and 54.5% by fluctuations within individuals.

Measurement Invariance

The configural models of social self-efficacy and psychological distress produced acceptable model fit (see Table 2 for details). The metric models did not differ significantly from the configural models. The scalar model of social self-efficacy significantly deteriorated model fit compared to the metric model. We released one indicator intercept constraint and accepted partial scalar longitudinal invariance. The construct of psychological distress

TABLE 1
Descriptive statistics, omega reliability, and correlation matrix of social self-efficacy and psychological distress over four time points

	N	ω	M	SD	Range	Min	Max	1	2	3	4	5	6	7	8
1. T1 SSE	1128	.82	3.68	.66	4	1	5	–							
2. T2 SSE	1165	.85	3.71	.67	4	1	5	.70	–						
3. T3 SSE	930	.86	3.75	.70	4	1	5	.55	.64	–					
4. T4 SSE	976	.85	3.76	.75	4	1	5	.49	.58	.64	–				
5. T1 PD	1114	.90	1.82	.77	3	1	4	–.33	–.28	–.24	–.15	–			
5. T2 PD	1147	.90	1.95	.80	3	1	4	–.27	–.28	–.22	–.23	.64	–		
5. T3 PD	926	.90	1.99	.80	3	1	4	–.15	–.19	–.29	–.22	.51	.63	–	
5. T4 PD	994	.89	2.13	.81	3	1	4	–.22	–.20	–.29	–.35	.45	.56	.67	–

Note. All correlations are significant at the $p < .01$ level. SSE = social self-efficacy, PD = psychological distress. $N = 658$ – 973 within PD correlations; $N = 654$ – 999 within SSE correlations; $N = 650$ – 1133 between PD and SSE correlations.

TABLE 2
Longitudinal measurement invariance of social self-efficacy and psychological distress

	χ^2	df	RMSEA [90% CI]	CFI	SRMR	Δ RMSEA	Δ CFI	Δ SRMR
Social self-efficacy								
Configural	1096.148	302	0.042 [0.039, 0.045]	.941	.058			
Metric	1123.659	320	0.041 [0.038, 0.044]	.941	.061	.001	.000	.003
Scalar	1344.431	338	0.045 [0.042, 0.047]	.926	.061	.004	.015	.000
Partial scalar	1270.653	337	0.043 [0.040, 0.046]	.931	.061	.002	.005	.000
Psychological distress								
Configural	428.732	134	0.038 [0.034, 0.042]	.978	.027			
Metric	463.294	146	0.038 [0.034, 0.042]	.976	.031	.000	.002	.004
Scalar	560.233	158	0.041 [0.038, 0.045]	.970	.033	.003	.006	.002
Strict	622.648	173	0.042 [0.038, 0.045]	.966	.037	.001	.004	.004

Note. χ^2 = chi square; df = degree of freedom; RMSEA = the root mean square error of approximation; CI = confidence interval; CFI = comparative fit index; SRMR = standardized root mean square residual.

achieved strict longitudinal measurement invariance.

Random Intercept Cross-Lagged Panel Model of Social Self-Efficacy and Psychological Distress

The RI-CLPM of social self-efficacy and psychological distress with gender, ethnicity, socioeconomic position, and intervention condition as control variables and measurement invariance constraints produced an acceptable model fit: $\chi^2 = 2521.553$, $df = 1402$, $p < .001$, RMSEA = 0.039, 90% CI [0.036, 0.041], CFI = 0.923, SRMR = 0.062. To test equality assumptions of the regression coefficients across measurement waves, a model with autoregressive and cross-lagged constraints was compared to the original model. The fully constrained model did not differ significantly from the unconstrained model: $\chi^2 = 2527.772$, $df = 1410$, $p < .001$, RMSEA = 0.039, 90% CI [0.036, 0.041], CFI = 0.923, SRMR = 0.063 ($\Delta\chi^2 = 6.219$, $\Delta df = 8$, $p = .623$). Therefore, we decided that the equality assumption of the

stability and cross-lagged coefficients across measurement occasions was tenable, and the fully constrained model was retained. Figure 1 is a simplified representation of the model presented with standardized estimates and confidence intervals (CIs) (standardized and unstandardized estimates and standard errors from the model are presented in Appendix B).

At the between-person level, the correlation between the intercepts of social self-efficacy and psychological distress was significant, negative, and moderate in effect size. This implies that on a trait level, individuals with low psychological distress generally experienced high levels of social self-efficacy and vice versa during 3 years in middle to late adolescence.

On the within-person level, small, negative, and significant concurrent associations were found between psychological distress and social self-efficacy. Hence, adolescents who scored higher than expected (i.e., higher than their personal norm) on psychological distress also scored lower

Simplified Representation of the RI-CLPM of Social Self-Efficacy and Psychological Distress Across Four Measurement Occasions

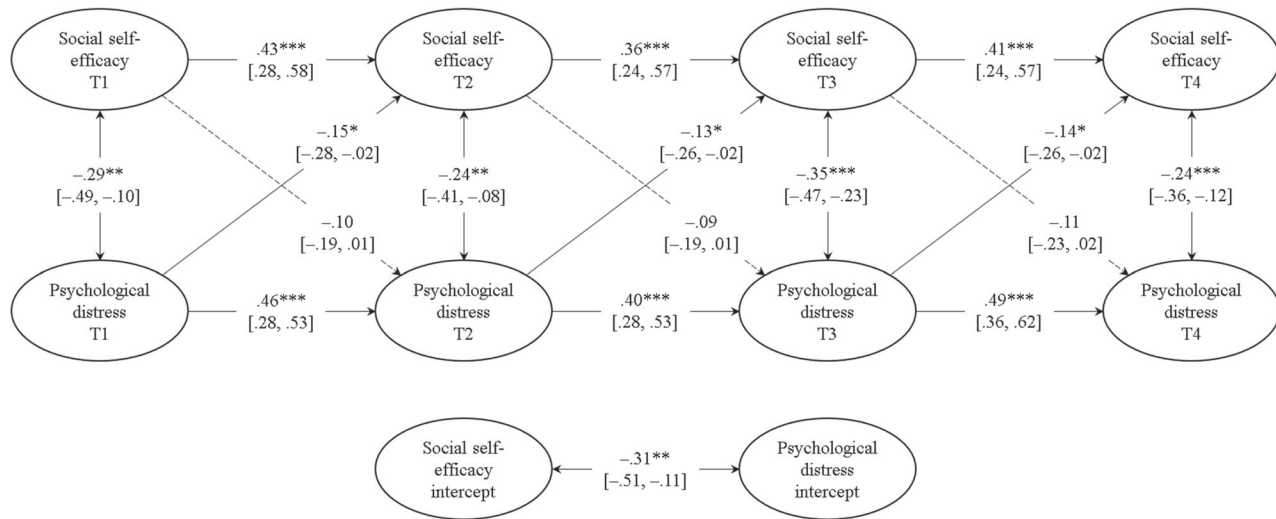


FIGURE 1 Simplified representation of the random intercept cross-lagged panel model (RI-CLPM) of social self-efficacy and psychological distress across four measurement occasions. *Note.* Standardized coefficients are presented with 95% confidence interval in brackets. *** $p < .001$, ** $p < .01$, * $p < .05$.

than expected on social self-efficacy concurrently at each measurement occasion. In contrast, adolescents who scored lower than expected on psychological distress scored higher than expected on social self-efficacy at the same time point. These results imply that adolescents with positive deviations from their normal trait level in one construct had increased probability of experiencing negative deviations from their expected scores in the other construct at the same time point.

On the within-person level, there were significant and positive carry-over stability (autoregressive) effects for both constructs. This implies that occasions on which an adolescent scored below their expected level were likely to be followed by an occasion on which they again scored below their expected level, and vice versa with higher than expected scores (Hamaker et al., 2015). For example, adolescents who reported social self-efficacy or psychological distress above their expected scores at the age of 16 were more likely to report above their expected scores in the same construct at the age of 17.

At the within-person level, significant and negative cross-lagged effects from psychological distress to subsequent social self-efficacy (but not from social self-efficacy to later psychological distress) were observed at all time points. This indicates that within-person deviations in psychological distress at all ages were negatively predictive of

within-person deviations in social self-efficacy at subsequent time points. As such, adolescents who reported higher than expected levels of psychological distress at one time point likely experienced lower than expected scores of social self-efficacy 1 year later. Similarly, individuals who experienced lower than expected levels of psychological distress on one occasion likely reported higher than expected scores of social self-efficacy on the following time point.

DISCUSSION

Our main goal was to investigate how social self-efficacy and psychological distress fluctuate within individuals and how these fluctuations relate to each other during 3 years in middle to late adolescence. We applied the concept of social self-efficacy (Bandura, 1994, 1997) to the theoretical assumptions of the helplessness–hopelessness theory (Alloy et al., 1990) and expanded on previous bidirectional models that have addressed the temporal associations between depression and social self-efficacy or depression and social self-competence (Ohannessian & Vannucci, 2020; Ohannessian et al., 2019; Tak et al., 2017). We proposed a reciprocal model of social self-efficacy and psychological distress, where we hypothesized negative concurrent correlations between the constructs, positive carry-over stability effects within each construct across

time, and negative cross-lagged effects between the constructs. To investigate the temporal associations, we used the recently developed RI-CLPM (Hamaker et al., 2015; Usami, Murayama, & Hamaker, 2019), which separates the within-person process from the stable between-person differences in a cross-lagged panel model.

The Concurrent Association Between Social Self-Efficacy and Psychological Distress

Our results support hypothesis 1 which stated a negative relationship between social self-efficacy and psychological distress, both at the between-person level (i.e., the intercepts) and at each measurement occasion at the within-person level. Preliminarily, we found that social self-efficacy and psychological distress were negatively related at all measurement occasions, which corroborate previous findings regarding the association between the two constructs among adolescents in samples from the general (nonclinical) population (e.g., Hermann & Betz, 2004, 2006; Muris, 2002; Riaz et al., 2014; Smith & Betz, 2002; Suldo & Shaffer, 2007; Tahmasian & Jalali Moghadam, 2011; Uhrlass et al., 2009). Furthermore, at the between-level, we observed a moderate and negative relationship between the stable trait-like components of social self-efficacy and psychological distress. This indicates that individuals with higher social self-efficacy, during the course of 3 years in middle to late adolescence, also tend to have lower psychological distress during the same time period, and vice versa. Concerning the results from the within-person associations, we found significant, negative, and small to moderate concurrent relationships between social self-efficacy and psychological distress at all four time points. The results imply that when adolescents experience unexpectedly high (or low) levels of psychological distress, they also experience unusually low (or high) levels of social self-efficacy at the same time point. Because we separated the between-person variations from the within-person fluctuations, these within-person concurrent associations have implications for our understanding of the relationship between the social self-efficacy and psychological distress within individuals. The significant and negative within-person associations support the theoretical benefit of combining the self-efficacy theory and helplessness–hopelessness theory to investigate how fluctuating levels of adolescents’ beliefs regarding their social capabilities and performances relate to concurrent fluctuations of experiences of negative affect and uneasiness.

Carry-Over Stability Effects in Middle to Late Adolescence

As mentioned, it seems that psychological distress increases during middle to late adolescence (e.g., Hankin et al., 1998; Rohde et al., 1991; Vannucci et al., 2018; Zahn–Waxler et al., 2000). Our study sheds some light on how fluctuations of psychological distress and social self-efficacy within individuals predict later variations in the same construct. In support of hypotheses 2 and 3, we found significant and positive carry-over stability effects between time points at the within-person level. This implies that when a person scored above or below their expected scores in one construct, they were likely to score above or below their expected score in the same construct approximately 1 year later. If an adolescent experienced an unexpected deviation in levels of social self-efficacy or psychological distress, it was quite likely that they experienced the same deviation a year later (i.e., unusually high or low levels from year to year). These carry-over effects might not be surprising, considering that adolescence is characterized by many social, educational, and physical challenges, which might result in fluctuations around individuals’ usual level of social self-efficacy beliefs and psychological distress. These results are in line with theoretical assumptions. Helplessness–hopelessness theory argues that increasing levels of psychological distress will further escalate the feelings of helplessness, which lead to a vicious cycle of increasing symptoms (Alloy et al., 1990). Although the self-efficacy theory does not make any explicit postulations regarding the continuity of high or low levels of social self-efficacy across time, the theory argues that self-efficacy influences behavior, and that behavior and performance influence both cognition and affect in a triangulation of reciprocal effect (Bandura, 1997). However, whether the within-person fluctuations of social self-efficacy and psychological distress are only typical and distinctive for middle to late adolescents, or these particular constructs need to be investigated in future studies in other age groups and compared to our results.

The Temporal Relationship Between Social Self-Efficacy and Psychological Distress

Concerning our hypotheses of a reciprocal longitudinal relationship between social self-efficacy and psychological distress, the results support hypothesis 5 but not hypothesis 4. We identified significant

and negative cross-lagged effects from psychological distress to later social self-efficacy, but not the other way around. Tak et al. (2017), Ohannessian et al. (2019), and Ohannessian and Vannucci (2020) found unidirectional effects from depression to subsequent social self-efficacy or social self-competence in bidirectional models. Importantly, our study found similar results when separating between- and within-person variations. Our findings, together with the previous studies, imply that across different cultural settings (Norway, the Netherlands, and the United States) and during different stages of adolescence, psychological distress predicts social self-efficacy or social self-competence more consistently than the reverse. In accordance with the helplessness–hopelessness theory, the temporal effect from psychological distress to social self-efficacy might be related to rumination, negative self-evaluations, poor social skills, worry, and self-criticism (Alloy et al., 1990). This effect might become more salient during middle to late adolescence due to the rapid cognitive development individuals experience in this time period. As adolescents mature, they become more conscious about how their anxious and depressive behavior negatively impacts their social functioning in the environment (Steinberg, 2005), which might impede their social self-efficacy belief. Because rumination is common in depressed and anxious individuals, negative thought patterns relating to how socially inept one is might become all-consuming during a time when peers progressively gain influence in one’s life and peer networks begin to expand. As such, the psychologically distressed youth might have recurring thoughts based on negative and incorrect interpretations of how successfully they interact with others, and as a result, they might withdraw from and avoid social situations (Schaefer et al., 2011), which severely limit social feedback and mastery experiences within the social domain.

The lack of significant longitudinal effects of social self-efficacy on later psychological distress in our study challenges one aspect of the helplessness–hopelessness theory (and other cognitive vulnerability models), which generally assume that cognitive vulnerabilities, such as low levels of social self-efficacy, are a cause of psychological distress. One explanation for the nonsignificant effect can be related to the helplessness expectancy and the uncertainty/certainty of one’s helplessness in future situations. As elaborated in the helplessness–hopelessness theory (Alloy et al., 1990), pure anxiety is likely to precede the mixed anxiety–

depression syndrome as well as hopelessness depression. Therefore, it is possible that low social self-efficacy is more related to the development of anxiety, wherein an individual is not yet certain of their helplessness, as opposed to mixed anxiety–depression. In line with this assumption, Muris (2001, 2002) found that social self-efficacy might be more related to anxiety in adolescent samples, compared to depression.

Limitations

There are some limitations worth mentioning when interpreting our results. First, the cross-lagged effects from psychological distress to social self-efficacy were small, which implies that this risk might not be major over the course of 3 years in middle–late adolescence. Thus, we recommend interpreting this result with caution. However, if these small effects spill over across time, the impact psychological distress has on social self-efficacy might be more considerable as time progresses. More studies based on the within-person association of social self-efficacy and psychological distress are needed to make any definitive statements about the relationship between the two constructs within individuals over time. Replication studies with more frequent data collections and a longer time span might further unravel the nature of psychological distress and its relationship to self-efficacy in the social domain.

Second, although we remove some of the bias regarding confounding variables by specifying random intercepts and including socioeconomic position as a time-varying covariate (Usami, 2021; Usami et al., 2019), we cannot infer causality (Cook, Campbell, & Shadish, 2002). Usami (2021) points out that within-person causal reciprocal effects can only be represented in the RI-CLPM if there are no model errors and no unobserved confounders in the model estimation (see Usami, July 3, 2020; Usami et al., 2019 for details). Because this is challenging computationally and for research, we recommend caution when interpreting our cross-lagged results.

Third, we also acknowledge the potential element of other mediating or moderating factors that might explain or increase/decrease the relationship between social self-efficacy and psychological distress (e.g., personality, cognitive factors, rumination, social withdrawal, etc.).

Fourth, it is worth noting that our sample is part of an intervention project. As a robustness test, we have performed several analyses to investigate the

impact intervention conditions has on the study's constructs and our hypothesized model. Initially, we investigated social self-efficacy and psychological distress ICC and mean level differences within- and between intervention groups. There were no significant mean differences between the intervention conditions or major intraclass correlations within the intervention conditions in social self-efficacy and psychological distress. Furthermore, we used intervention conditions as a cluster variable in a TYPE = COMPLEX analysis in *Mplus* on our hypothesized model. The results were similar to our original model and there were no significant differences in chi squares or standard errors of the model's coefficients. Although the intervention conditions showed virtually no effect on our variables or model, we included them as control variables in the model to safeguard against possible effects of the interventions, even as a by-product, similar to other studies (e.g., Ringlever et al., 2013; Tak et al., 2017).

Lastly, the study's sample is not nationally representative. Therefore, generalizing the results to the entire Norwegian adolescent population should be done with caution. Nevertheless, the study's participants are from a mix of rural, semiurban, and urban areas in small, medium, and large schools. Moreover, there is an approximate equal representation of both genders. Overall, the demographics in our study reflect the Norwegian middle to late adolescent population to a large degree.

Strengths and Future Directions

This is the first study, to our knowledge, that investigates the temporal relationship between social self-efficacy and psychological distress at the within- and between-person level in middle to late adolescence. This is a substantial asset, given that developmental processes are mainly a function of within-person fluctuations, not variations between individuals. By including random intercepts and several control variables, it allows us to exclude confounders such as gender, socioeconomic position, and ethnicity. While excluding such confounders and controlling for previous fluctuating levels of both constructs, it was found that young people who experience higher levels of psychological distress than they usually do also tend to experience lower than expected levels of subsequent social self-efficacy. The results contribute important knowledge concerning how social self-efficacy and psychological distress develop and influence each other in adolescence. It is possible that the

observed temporal relationship is particular to social self-efficacy as a construct, and as such, there is a need for more research on the directionality between psychological distress and social self-efficacy to further establish the path of effect. However, because similar results have been demonstrated in related constructs, such as social self-competence (Ohannessian & Vannucci, 2020; Ohannessian et al., 2019), our results might have an impact on how we understand and theorize developmental processes in adolescence in regard to the temporal precedence between social self-efficacy and psychological distress.

Future research should investigate the potential underlying mechanisms that might be involved in the association between psychological distress and social self-efficacy (e.g., rumination, dysfunctional coping or behavior, social withdrawal and avoidance, etc.). It would be beneficial to identify developmental pathways, precursors, and possible protective factors of psychological distress in adolescence. Such models would be helpful in future treatments or interventions in relevant arenas where adolescents spend much of their time, such as school. For instance, one meta-analysis on depression prevention in adolescent samples implies that the potential effectiveness of educational interventions has not been fully investigated (Merry, McDowell, Hetrick, Bir, & Muller, 2004), which indicates that there is a need for research in this area.

Evidence suggests that stressors (negative life events) might constitute as a key contributor to the development of psychological distress (see Compas, Grant, & Ey, 1994; Goodyer, 2001; Grant et al., 2003). Thus, it could be beneficial to include such measures in future studies that are interested in temporal models with psychological distress. Because the belief in social assertiveness and capabilities for social interactions and activities did not have a significant effect on the later psychological distress in our model, social self-efficacy might be more suited to be tested as a moderator in the association between stressors and psychological distress in middle to late adolescence. For example, Steca et al. (2014) found that social self-efficacy had a buffering effect on the relationship between stressors and depression in children. Therefore, we recommend including stressors in a longitudinal model with social self-efficacy and psychological distress to further unravel the relationship between the two constructs.

Further investigations with more measurement waves of the association between social self-efficacy, anxiety, and depression within individuals might identify critical periods of vulnerability in

adolescence. Although research indicates high comorbidity and association between anxiety and depression (e.g., Cummings, Caporino, & Kendall, 2014), it might be beneficial to replicate our RI-CLPM design and analyze the association between social self-efficacy and depression and anxiety separately, and not as indicators of psychological distress. Because research (e.g., Cole, Peeke, Martin, Truglio, & Seroczynski, 1998) and theory (Alloy et al., 1990) indicates that anxiety precedes depression, this would provide important information first, pertaining to the within-person development of both anxiety and depression over time and their temporal relationship. Second, a model with social self-efficacy and anxiety and depression addressed separately will further untangle the nature of their within-person associations. As such, random intercept cross-lagged panel models with social self-efficacy and anxiety and depression as separate constructs might provide important information that has major implications for the prevention of depression and anxiety and resulting impairments, risk behavior, and future psychological and physical problems.

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REFERENCES

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*(2), 358–372. <https://doi.org/10.1037/0033-295X.96.2.358>
- Alloy, L. B., Kelly, K. A., Mineka, S., & Clements, C. M. (1990). Comorbidity of anxiety and depressive disorders: A helplessness-hopelessness perspective. In J. D. Maser, & C. R. Cloninger (Eds.), *Comorbidity of mood and anxiety disorders* (pp. 499–543). Washington: American Psychiatric Association.
- Anderson, S. L., & Betz, N. E. (2001). Sources of social self-efficacy expectations: THEIR measurement and relation to career development. *Journal of Vocational Behavior*, *58*(1), 98–117. <https://doi.org/10.1006/jvbe.2000.1753>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior*, vol. 4 (pp. 71–81). New York: Academic Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, *67*(3), 1206–1222. <https://doi.org/10.2307/1131888>
- Bandura, A., Pastorelli, C., Barbaranelli, C., & Caprara, G. V. (1999). Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology*, *76*(2), 258–269. <https://doi.org/10.1037/0022-3514.76.2.258>
- Benjamin, C. L., Harrison, J. P., Settapani, C. A., Brodman, D. M., & Kendall, P. C. (2013). Anxiety and related outcomes in young adults 7 to 19 years after receiving treatment for child anxiety. *Journal of Consulting and Clinical Psychology*, *81*(5), 865–876. <https://doi.org/10.1037/a0033048>
- Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York: Routledge.
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*, 2nd edn. Hillsdale: Lawrence Erlbaum Associates.
- Cole, D. A., Peeke, L. G., Martin, J. M., Truglio, R., & Seroczynski, A. D. (1998). A longitudinal look at the relation between depression and anxiety in children and adolescents. *Journal of Consulting and Clinical Psychology*, *66*(3), 451–460. <https://doi.org/10.1037/0022-006X.66.3.451>
- Compas, B. E., Grant, K. E., & Ey, S. (1994). Psychosocial stress and child and adolescent depression: Can we be more specific? In W. M. Reynolds, & H. F. Johnston (Eds.), *Handbook of depression in children and adolescents* (pp. 509–523). New York: Plenum Press.
- Cook, T. D., Campbell, D. T., & Shadish, W. R. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin.
- Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of anxiety and depression in children and adolescents: 20 years after. *Psychological Bulletin*, *140*(3), 816–845. <https://doi.org/10.1037/a0034733>
- Davidson, C. L., Wingate, L. R., Grant, D. M., Judah, M. R., & Mills, A. C. (2011). Interpersonal Suicide Risk and Ideation: The Influence of Depression and Social Anxiety. *Journal of Social and Clinical Psychology*, *30*(8), 842–855. <https://doi.org/10.1521/jscp.2011.30.8.842>
- Drapeau, A., Marchand, A., & Beaulieu-Prévost, D. (2012). Epidemiology of psychological distress. In L. L'Abate (Ed.), *Mental illnesses – Understanding, prediction and control*. Rijeka: InTech.
- Epkins, C. (1996). Affective confounding in social anxiety and dysphoria in children: Child, mother, and father reports of internalizing behaviors, social problems, and

- competence domains. *Journal of Social and Clinical Psychology*, 15(4), 449–470. <https://doi.org/10.1521/jscp.1996.15.4.449>
- Epkins, C., & Heckler, D. (2011). Integrating etiological models of social anxiety and depression in youth: Evidence for a cumulative interpersonal risk model. *Clinical Child and Family Psychology Review*, 14, 329–376. <https://doi.org/10.1007/s10567-011-0101-8>
- Essau, C., Lewinsohn, P., Olaya, B., & Seeley, J. (2014). Anxiety disorders in adolescents and psychosocial outcomes at Age 30. *Journal of Affective Disorders*, 163, 125–132. <https://doi.org/10.1016/j.jad.2013.12.033>
- Fletcher, J. M. (2008). Adolescent depression: diagnosis, treatment, and educational attainment. *Health Economics*, 17(11), 1215–1235. <https://doi.org/10.1002/hec.1319>
- Gjerde, L. C., Røysamb, E., Czajkowski, N., Reichborn-Kjennerud, T., Ørstavik, R. E., Kendler, K. S., & Tambs, K. (2011). Strong genetic correlation between interview-assessed internalizing disorders and a brief self-report symptom scale. *Twin Research and Human Genetics*, 14(1), 64–72. <https://doi.org/10.1375/twin.14.1.64>
- Goodyer, I. M. (2001). Life events: Their nature and effects. In I. M. Goodyer (Ed.), *The depressed child and adolescent*, 2nd edn (pp. 204–232). New York: Cambridge University Press.
- Grant, K. E., Compas, B. E., Stuhlmacher, A. F., Thurm, A. E., McMahon, S. D., & Halpert, J. A. (2003). Stressors and child and adolescent psychopathology: moving from markers to mechanisms of risk. *Psychological Bulletin*, 129(3), 447–466. <https://doi.org/10.1037/0033-2909.129.3.447>
- Habibi, M., Tahmasian, K., & Ferrer-Wreder, L. (2014). Self-efficacy in Persian adolescents: Psychometric properties of a Persian version of the Self-Efficacy Questionnaire for Children (SEQ-C). *International Perspectives in Psychology: Research, Practice, Consultation*, 3(2), 93–105. <https://doi.org/10.1037/a0036059>
- Hamaker, E. (2018). How to run the RI-CLPM with Mplus. <https://www.statmodel.com/download/RI-CLPM%20Hamaker%20input.pdf>
- Hamaker, E., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods*, 20(1), 102–116. <https://doi.org/10.1037/a0038889>
- Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology*, 1, 293–319. <https://doi.org/10.1146/annurev.clinpsy.1.102803.143938>
- Hammen, C. (2006). Stress generation in depression: reflections on origins, research, and future directions. *Journal of Clinical Psychology*, 62(9), 1065–1082. <https://doi.org/10.1002/jclp.20293>
- Hankin, B. L., & Abela, J. R. (Eds.) (2005). *Development of psychopathology: A vulnerability-stress perspective*. Thousand Oaks: SAGE Publications Inc.
- Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology*, 107(1), 128–140. <https://doi.org/10.1037/0021-843X.107.1.128>
- Harter, S. (2012). *Self-perception profile for adolescents: Manual and questionnaires*. Denver: University of Denver.
- Hasler, G., Pine, D. S., Kleinbaum, D. G., Gamma, A., Luckenbaugh, D., Ajdacic, V., ... Angst, J. (2005). Depressive symptoms during childhood and adult obesity: the Zurich Cohort Study. *Molecular Psychiatry*, 10(9), 842–850. <https://doi.org/10.1038/sj.mp.4001671>
- Hermann, K., & Betz, N. (2004). Path models of the relationships of instrumentality and expressiveness to social self-efficacy, shyness, and depressive symptoms. *Sex Roles*, 51(1), 55–66. <https://doi.org/10.1023/B:SERS.0000032309.71973.14>
- Hermann, K., & Betz, N. (2006). Path models of the relationships of instrumentality and expressiveness, social self-efficacy, and self-esteem to depressive symptoms in college students. *Journal of Social and Clinical Psychology*, 25, 1086–1106. <https://doi.org/10.1521/jscp.2006.25.10.1086>
- Hooper, D., Coughlan, J., & Mullen, M. (2007). Structural equation modeling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, 6(1), 53–60. <https://doi.org/10.21427/D7CF7R>
- Hu, L. T., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Iversen, A., & Holsen, I. (2008). Inequality in health, psychosocial resources and health behavior in early adolescence: The influence of different indicators of socioeconomic position. *Child Indicators Research*, 1, 291–302. <https://doi.org/10.1007/s12187-008-9015-5>
- Jaycox, L. H., Stein, B. D., Paddock, S., Miles, J. N. V., Chandra, A., Meredith, L. S., ... Burnam, M. A. (2009). Impact of teen depression on academic, social, and physical functioning. *Pediatrics*, 124(4), 596–605. <https://doi.org/10.1542/peds.2008-3348>
- Kashdan, T. B., & Roberts, J. E. (2004). Social anxiety's impact on affect, curiosity, and social self-efficacy during a high self-focus social threat situation. *Cognitive Therapy and Research*, 28(1), 119–141. <https://doi.org/10.1023/B:COTR.0000016934.20981.68>
- Keenan-Miller, D., Hammen, C. L., & Brennan, P. A. (2007). Health outcomes related to early adolescent depression. *Journal of Adolescent Health*, 41(3), 256–262. <https://doi.org/10.1016/j.jadohealth.2007.03.015>
- Kleppang, A. L., Thurston, M., Hartz, I., & Hagquist, C. (2019). Psychological distress among Norwegian adolescents: Changes between 2001 and 2009 and associations with leisure time physical activity and screen-based sedentary behaviour. *Scandinavian Journal of Public Health*, 47(2), 166–173. <https://doi.org/10.1177/1403494817716374>
- Kosidou, K., Magnusson, C., Mittendorfer-Rutz, E., Hallqvist, J., Hellner Gumpert, C., Idrizbegovic, S., ...

- Dalman, C. (2010). Recent time trends in levels of self-reported anxiety, mental health service use and suicidal behaviour in Stockholm. *Acta Psychiatrica Scandinavica*, 122(1), 47–55. <https://doi.org/10.1111/j.1600-0447.2009.01487.x>
- Larsen, T., Urke, H. B., Holsen, I., Anvik, C. H., Olsen, T., Waldahl, R. H., ... Hansen, T. B. (2018). COMPLETE – a school-based intervention project to increase completion of upper secondary school in Norway: study protocol for a cluster randomized controlled trial. *BMC Public Health*, 18(1), 340. <https://doi.org/10.1186/s12889-018-5241-z>
- Ludwig, K. B., & Pittman, J. F. (1999). Adolescent prosocial values and self-efficacy in relation to delinquency, risky sexual behavior, and drug use. *Youth & Society*, 30(4), 461–482. <https://doi.org/10.1177/0044118X99030004004>
- Maddux, J. E. (1995). Self-efficacy theory. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: theory, research, and application* (pp. 37–68). New York: Springer.
- Maddux, J. E., & Meier, L. J. (1995). Self-efficacy and depression. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: theory, research, and application* (pp. 143–169). New York: Springer.
- Mallinckrodt, B., & Wei, M. (2005). Attachment, Social Competencies, Social Support, and Psychological Distress. *Journal of Counseling Psychology*, 52(3), 358–367. <https://doi.org/10.1037/0022-0167.52.3.358>
- Matsushima, R., & Shiomi, K. (2003). Social self-efficacy and interpersonal stress in adolescence. *Social Behavior and Personality: An International Journal*, 31(4), 323–332. <https://doi.org/10.2224/sbp.2003.31.4.323>
- McCarthy, P. A., & Morina, N. (2020). Exploring the association of social comparison with depression and anxiety: A systematic review and meta-analysis. *Clinical Psychology & Psychotherapy*, 27(5), 640–671. <https://doi.org/10.1002/cpp.2452>
- McFarlane, A. H., Bellissimo, A., & Norman, G. R. (1995). The role of family and peers in social self-efficacy: Links to depression in adolescence. *American Journal of Orthopsychiatry*, 65(3), 402–410. <https://doi.org/10.1037/h0079655>
- McKay, M. T., Dempster, M., & Byrne, D. G. (2014). An examination of the relationship between self-efficacy and stress in adolescents: the role of gender and self-esteem. *Journal of Youth Studies*, 17(9), 1131–1151. <https://doi.org/10.1080/13676261.2014.901494>
- Merry, S., McDowell, H., Hetrick, S., Bir, J., & Muller, N. (2004). Psychological and/or educational interventions for the prevention of depression in children and adolescents. *Cochrane Database for Systematic Reviews*, 7(5), 1–96. <https://doi.org/10.1002/14651858.CD003380.pub2>
- Millsap, R. E. (2011). *Statistical approaches to measurement invariance*. London: Routledge/Taylor & Francis Group.
- Minter, A., & Pritzker, S. (2015). Measuring adolescent social and academic self-efficacy: Cross-ethnic validity of the SEQ-C. *Research on Social Work Practice*, 27(7), 818–826. <https://doi.org/10.1177/1049731515615677>
- Mirowsky, J., & Ross, C. E. (2002). Measurement for a human science. *Journal of Health and Social Behavior*, 43(2), 152–170. <https://doi.org/10.2307/3090194>
- Mulder, J. D., & Hamaker, E. (2020). Three extensions of the random intercept cross-lagged panel model. *Structural Equation Modeling: A Multidisciplinary Journal*, 28(4), 638–648. <https://doi.org/10.1080/10705511.2020.1784738>
- Muris, P. (2001). A brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioral Assessment*, 23, 145–149. <https://doi.org/10.1023/A:1010961119608>
- Muris, P. (2002). Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences*, 32, 337–348. [https://doi.org/10.1016/S0191-8869\(01\)00027-7](https://doi.org/10.1016/S0191-8869(01)00027-7)
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide*. 8th edn. Los Angeles, CA: Muthén & Muthén.
- Myhr, A., Anthun, K. S., Lillefjell, M., & Sund, E. R. (2020). Trends in Socioeconomic Inequalities in Norwegian Adolescents' Mental Health From 2014 to 2018: A Repeated Cross-Sectional Study. *Frontiers in Psychology*, 11, 1472. <https://doi.org/10.3389/fpsyg.2020.01472>
- Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, 17(4), 372–411. <https://doi.org/10.1177/1094428114548590>
- Ohannessian, C. M., & Vannucci, A. (2020). A closer examination of the temporal relationship between self-competence and depressive symptoms during early adolescence. *The Journal of Early Adolescence*, 40(9), 1318–1335. <https://doi.org/10.1177/0272431619847527>
- Ohannessian, C. M., Vannucci, A., Lincoln, C. R., Flannery, K. M., & Trinh, A. (2019). Self-competence and depressive symptoms in middle-late adolescence: Disentangling the direction of effect. *Journal of Research on Adolescence*, 29(3), 736–751. <https://doi.org/10.1111/jora.12412>
- Ottova-Jordan, V., Smith, O. R. F., Gobina, I., Mazur, J., Augustine, L., Cavallo, F., ... Ravens-Sieberer, U. (2015). Trends in multiple recurrent health complaints in 15-year-olds in 35 countries in Europe, North America and Israel from 1994 to 2010. *European Journal of Public Health*, 25(Suppl 2), 24–27. <https://doi.org/10.1093/eurpub/ckv015>
- Pape, K., Bjørngaard, J. H., Holmen, T. L., & Krokstad, S. (2012). The welfare burden of adolescent anxiety and depression: a prospective study of 7500 young Norwegians and their families: the HUNT study. *British Medical Journal Open*, 2(6), e001942. <https://doi.org/10.1136/bmjopen-2012-001942>
- Potrebny, T., Wiium, N., & Lundegård, M.-M.-I. (2017). Temporal trends in adolescents' self-reported psychosomatic health complaints from 1980–2016: A systematic review and meta-analysis. *PLoS One*, 12(11), 1–24. <https://doi.org/10.1371/journal.pone.0188374>

- Prinstein, M. J., & Dodge, K. A. (Eds.) (2008). *Understanding peer influence in children and adolescents*. New York, NY: The Guilford Press.
- Rapee, R. M., & Spence, S. H. (2004). The etiology of social phobia: empirical evidence and an initial model. *Clinical Psychology Review, 24*(7), 737–767. <https://doi.org/10.1016/j.cpr.2004.06.004>
- Riaz, Z., Yasien, S., & Ahmad, R. (2014). Relationship between perceived social self-efficacy and depression in adolescents. *Iranian Journal of Psychiatry and Behavioral Sciences, 8*, 65–74.
- Ringlever, L., Hiemstra, M., Engels, R. C. M. E., van Schayck, O. C. P., & Otten, R. (2013). The link between asthma and smoking explained by depressive feelings and self-efficacy. *Journal of Psychosomatic Research, 74*(6), 505–510. <https://doi.org/10.1016/j.jpsychores.2013.03.002>
- Rohde, P., Lewinsohn, P. M., & Seeley, J. R. (1991). Comorbidity of unipolar depression: II. Comorbidity with other mental disorders in adolescents and adults. *Journal of Abnormal Psychology, 100*(2), 214–222. <https://doi.org/10.1037/0021-843X.100.2.214>
- Schaefer, D. R., Kornienko, O., & Fox, A. M. (2011). Misery Does Not Love Company: Network Selection Mechanisms and Depression Homophily. *American Sociological Review, 76*(5), 764–785. <https://doi.org/10.1177/0003122411420813>
- Siqveland, J., Moum, T., & Leiknes, K. A. (2016). *Psychometric assessment of Norwegian version of Symptom Checklist 90 (SCL-90-R)*. Retrieved from Norwegian Institute of Public Health: <https://www.fhi.no/publ/2016/maleegenskaper-ved-den-norske-versjonen-av-symptom-checklist-90-revidert-sc/>
- Skrove, M., Romundstad, P., & Indredavik, M. S. (2013). Resilience, lifestyle and symptoms of anxiety and depression in adolescence: the Young-HUNT study. *Social Psychiatry and Psychiatric Epidemiology, 48*(3), 407–416. <https://doi.org/10.1007/s00127-012-0561-2>
- Smith, H. M., & Betz, N. E. (2000). Development and validation of a scale of perceived social self-efficacy. *Journal of Career Assessment, 8*(3), 283–301. <https://doi.org/10.1177/106907270000800306>
- Smith, H. M., & Betz, N. E. (2002). An examination of efficacy and esteem pathways to depression in young adulthood. *Journal of Counseling Psychology, 49*(4), 438–448. <https://doi.org/10.1037/0022-0167.49.4.438>
- SSB (2021). Gjennomføring I Videregående Opplæring. Retrieved from <https://www.ssb.no/utdanning/videregaende-utdanning/statistikk/gjennomforing-i-videregaende-opplaering>
- Steca, P., Abela, J. R. Z., Monzani, D., Greco, A., Hazel, N. A., & Hankin, B. L. (2014). Cognitive vulnerability to depressive symptoms in children: the protective role of self-efficacy beliefs in a multi-wave longitudinal study. *Journal of Abnormal Child Psychology, 42*(1), 137–148. <https://doi.org/10.1007/s10802-013-9765-5>
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Sciences, 9*(2), 69–74. <https://doi.org/10.1016/j.tics.2004.12.005>
- Strand, B. H., Dalgard, O. S., Tambs, K., & Rognerud, M. (2003). Measuring the mental health status of the Norwegian population: A comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). *Nordic Journal of Psychiatry, 57*(2), 113–118. <https://doi.org/10.1080/08039480310000932>
- Suldo, S. M., & Shaffer, E. J. (2007). Evaluation of the self-efficacy questionnaire for children in two samples of American adolescents. *Journal of Psychoeducational Assessment, 25*(4), 341–355. <https://doi.org/10.1177/0734282907300636>
- Tahmassian, K., & Jalali Moghadam, N. (2011). Relationship between self-efficacy and symptoms of anxiety, depression, worry and social avoidance in a normal sample of students. *Iranian Journal of Psychiatry and Behavioral Sciences, 5*(2), 91–98.
- Tak, Y. R., Brunwasser, S. M., Lichtwarck-Aschoff, A., & Engels, R. C. M. E. (2017). The prospective associations between self-efficacy and depressive symptoms from early to middle adolescence: A cross-lagged model. *Journal of Youth and Adolescence, 46*(4), 744–756. <https://doi.org/10.1007/s10964-016-0614-z>
- Tambs, K., & Moum, T. (1993). How well can a few questionnaire items indicate anxiety and depression? *Acta Psychiatrica Scandinavica, 87*(5), 364–367. <https://doi.org/10.1111/j.1600-0447.1993.tb03388.x>
- Uhrlass, D. J., Schofield, C. A., Coles, M. E., & Gibb, B. E. (2009). Self-perceived competence and prospective changes in symptoms of depression and social anxiety. *Journal of Behavior Therapy and Experimental Psychiatry, 40*(2), 329–337. <https://doi.org/10.1016/j.jbtep.2009.01.001>
- Usami, S. (2020). *Within-person variability score-based causal inference: A two-step semiparametric estimation for joint effects of time-varying treatments*. <https://arxiv.org/pdf/2007.03973.pdf>
- Usami, S. (2021). On the differences between general cross-lagged panel model and random-intercept cross-lagged panel model: interpretation of cross-lagged parameters and model choice. *Structural Equation Modeling: A Multidisciplinary Journal, 28*(3), 331–344. <https://doi.org/10.1080/10705511.2020.1821690>
- Usami, S., Murayama, K., & Hamaker, E. (2019). A unified framework of longitudinal models to examine reciprocal relations. *Psychological Methods, 24*(5), 637–657. <https://doi.org/10.1037/met0000210>
- Van Ameringen, M., Mancini, C., & Farrowden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of Anxiety Disorders, 17*(5), 561–571. [https://doi.org/10.1016/S0887-6185\(02\)00228-1](https://doi.org/10.1016/S0887-6185(02)00228-1)
- Vannucci, A., Flannery, K. M., & Ohannessian, C. M. (2018). Age-varying associations between coping and depressive symptoms throughout adolescence and emerging adulthood. *Development and Psychopathology, 30*(2), 665–681. <https://doi.org/10.1017/S0954579417001183>
- von Soest, T., & Wichstrøm, L. (2014). Secular trends in depressive symptoms among Norwegian adolescents

- from 1992 to 2010. *Journal of Abnormal Child Psychology*, 42(3), 403–415. <https://doi.org/10.1007/s10802-013-9785-1>
- Wei, M., Russell, D. W., & Zakalik, R. A. (2005). Adult Attachment, Social Self-Efficacy, Self-Disclosure, Loneliness, and Subsequent Depression for Freshman College Students: A Longitudinal Study. *Journal of Counseling Psychology*, 52(4), 602–614. <https://doi.org/10.1037/0022-0167.52.4.602>
- Wickrama, K. K., Lee, T., O'Neal, C., & Lorenz, F. O. (2016). *Higher-order growth curves and mixture modeling with Mplus. A practical guide*. New York: Routledge.
- Widiger, T. A. (2011). Personality and psychopathology. *World Psychiatry*, 10(2), 103–106. <https://doi.org/10.1002/j.2051-5545.2011.tb00024.x>
- Windfuhr, K., While, D., Hunt, I., Turnbull, P., Lowe, R., Burns, J., ... Kapur, N. (2008). Suicide in juveniles and adolescents in the United Kingdom. *Journal of Child Psychology and Psychiatry*, 49(11), 1155–1165. <https://doi.org/10.1111/j.1469-7610.2008.01938.x>
- Wolitzky-Taylor, K., Bobova, L., Zinbarg, R. E., Mineka, S., & Craske, M. G. (2012). Longitudinal investigation of the impact of anxiety and mood disorders in adolescence on subsequent substance use disorder onset and vice versa. *Addictive Behaviors*, 37(8), 982–985. <https://doi.org/10.1016/j.addbeh.2012.03.026>
- Zahn-Waxler, C., Klimes-Dougan, B., & Slattery, M. J. (2000). Internalizing problems of childhood and adolescence: Prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Development and Psychopathology*, 12(3), 443–466. <https://doi.org/10.1017/S0954579400003102>
- Zullig, K. J., Teoli, D. A., & Valois, R. F. (2011). Evaluating a brief measure of social self-efficacy among U.S. Adolescents. *Psychological Reports*, 109(3), 907–920. <https://doi.org/10.2466/02.09.PR0.109.6.907-920>

APPENDIX
RESPONDENTS ACROSS MEASUREMENT WAVES

<i>Time point</i>	<i>N</i>	<i>Percent</i>	<i>Cumulative percent</i>
T1	55	3.6	3.6
T2	34	2.3	5.9
T3	23	1.5	7.4
T4	138	9.2	16.6
T1 + T2	144	9.5	26.1
T1 + T3	11	0.7	26.9
T1 + T4	16	1.1	27.9
T2 + T3	35	2.3	30.2
T2 + T4	17	1.1	31.4
T3 + T4	43	2.9	34.2
T1 + T2 + T3	190	12.6	46.8
T1 + T2 + T4	155	10.3	57.1
T1 + T3 + T4	38	2.5	59.6
T2 + T3 + T4	67	4.4	64.1
T1 + T2 + T3 + T4	542	35.9	100
Total	1508	100	

APPENDIX

**UNSTANDARDIZED AND STANDARDIZED COEFFICIENTS FROM THE RANDOM INTERCEPT
CROSS-LAGGED PANEL MODEL (RI-CLPM) OF SOCIAL SELF-EFFICACY AND PSYCHOLOGICAL
DISTRESS.**

	<i>Unstandardized</i>	<i>SE</i>	<i>Standardized</i>	<i>SE</i>
<i>Autoregressive coefficients</i>				
T1 SSE → T2 SSE	.434***	.087	.431***	.076
T2 SSE → T3 SSE	.434***	.087	.360***	.085
T3 SSE → T4 SSE	.434***	.087	.405***	.084
T1 PD → T2 PD	.475***	.066	.462***	.063
T2 PD → T3 PD	.475***	.066	.402***	.065
T3 PD → T4 PD	.475***	.066	.487***	.067
<i>Cross-lagged coefficients</i>				
T1 SSE → T2 PD	-.164	.096	-.100	.059
T2 SSE → T3 PD	-.164	.096	-.086	.051
T3 SSE → T4 PD	-.164	.096	-.106	.063
T1 PD → T2 SSE	-.094*	.039	-.149*	.067
T2 PD → T3 SSE	-.094*	.039	-.127*	.055
T3 PD → T4 SSE	-.094*	.039	-.140*	.059
<i>Correlation coefficients</i>				
T1 SSE ↔ T1 PD	-.032*	.013	-.291**	.100
T2 SSE ↔ T2 PD	-.021**	.007	-.244**	.086
T3 SSE ↔ T3 PD	-.046***	.009	-.351***	.061
T4 SSE ↔ T4 PD	-.029***	.008	-.238***	.062
SSE INTERCEPT ↔ PD INTERCEPT	-.034**	.013	-.311**	.101

Note. SSE = social self-efficacy; PD = psychological distress; SE = standard errors.

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