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Longitudinal Bidirectional Associations between Dispositional Mindfulness, Maladaptive Schemas, and Depressive Symptoms in Adolescents

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Abstract

Objectives: Grounded on transactional models of psychopathology, the aim of the present study was to examine whether there are bidirectional long-term predictive associations between mindfulness facets, maladaptive schemas and depressive symptoms during adolescence. **Methods:** A sample of 855 students (417 girls, $M_{age} = 14.60$, $SD = 1.00$) was assessed at three time points separated by 6 months. They completed the Short Form of the Five Facet Mindfulness Questionnaire, the disconnection/rejection domain of Young Schema Questionnaire and the Center for Epidemiologic Studies Depression Scale. **Results:** Depressive symptoms predicted schemas and lower describe, non-reacting, and non-judging. Schemas predicted higher depression, observe, and non-reacting and lower describe, acting with awareness, and non-judging. Describe and acting with awareness predicted reductions of schemas and depressive symptoms, respectively. These bidirectional relationships were mostly similar for a high depression group and a low depression group. Subsequent bootstrapping analyses supported significant mediating effects. **Conclusion:** These findings support the use of transactional models and the inclusion of bidirectional relationships in explanatory models of psychopathology. Furthermore, depressive symptoms and cognitive vulnerabilities can worsen mindfulness facets in adolescents.

Keywords: mindfulness; maladaptive schemas; depression; adolescents.

Depression rises dramatically during adolescence (Costello et al., 2003; Hankin et al., 2015). It is the principal cause of illness and disability in adolescence, being the second most common cause of death in those aged between 15 and 29 and leading to long-term impairments in academic, social and familiar functioning in adolescents (World Health Organization, 2020). Moreover, depression in adolescence is a strong predictor of depression in adulthood (Rutter et al., 2006). Therefore, it is important to identify both vulnerability and protective factors for the development of depression in adolescence.

Cognitive theories have contributed to the understanding of the vulnerability factors for the development of depression (Abela & Hankin, 2008; Hankin et al., 2016). In this context, the Schema Therapy model (Young et al., 2003) proposes the existence of Early Maladaptive Schemas (EMSs), which are conceptualized as “broad, generalized, dysfunctional patterns, comprising memories, emotions, cognitions, and bodily sensations about oneself and one’s relationships with others” (Young et al., 2003, pg. 6-7). These patterns are developed during childhood and adolescence, and elaborated throughout one’s lifetime (Young et al., 2003).

Empirical research supports that EMSs act as vulnerability factors for depression (Dozois & Rnic, 2015). For instance, they show trait properties in depressed patients after a 9-year follow-up (Halvorsen et al., 2010; Wang et al., 2010). Consistently with studies conducted with adults, EMSs have also shown predictive associations with depression in adolescents (Alba & Calvete, 2019; Calvete et al., 2015; Orue et al., 2014).

EMSs are classified into several domains, depending on the child’s need (connectedness, autonomy, worthiness, reasonable expectations, and realistic limits) that was not adequately satisfied. Specifically, findings suggest that the schema domain related to disconnection/rejection contents—which involves the belief that basic needs of security,

safety, nurturance, and respect will not be fulfilled—is particularly relevant for depression (e.g., Calvete, Orue, & Hankin, 2013; Dozois et al., 2009; Eberhart et al., 2011).

Although most of the studies in the field have just considered the role of EMSs as predictors of changes in depressive symptoms (e.g., Cámara & Calvete, 2012), more recently, bidirectional associations between these constructs have been highlighted. The transactional model of stress vulnerability (Hankin & Abramson, 2001), in line with other recent models of psychopathology (Leve & Cicchetti, 2016; Masten & Cicchetti, 2010), states that the relationships between cognitive vulnerabilities (including EMSs), risk factors, and depression may be dynamic and reciprocal. Depressive mood may worsen cognitive vulnerabilities, and ultimately contribute to even greater increases in depressive symptoms over time, creating a vicious circle where all these factors mutually influence each other (Abela & Hankin, 2008). Lewinsohn et al. (1981) also stated that experiencing depression can worsen individuals' depression vulnerabilities, including negative cognitive styles (scar hypothesis). In this way, an adolescent experiencing depression may develop a hopeless view of the world and the future. For instance, Rohde et al. (1994) found several psychosocial scars in adolescents after depressive episodes and suggested that these had a higher impact on them than in adults. In support of these models of psychopathology, the available longitudinal research with adolescents indicates that the predictive associations between the disconnection/rejection domain and depressive symptoms are bidirectional (Alba & Calvete, 2019; Calvete et al., 2019; Calvete, Orue, & Hankin, 2013).

Beyond research on vulnerability factors, the study of protective factors against depression has become an important focus of interest too. As part of this approach, trait mindfulness—conceptualized as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145)—is one of the most studied factors. Although there

is not a consensus about the dimensions that dispositional mindfulness comprises, one of the most extended models is that proposed by Baer et al. (2006), which includes five facets: observe (noticing the inner or external experience), describe (using words to describe the experience), non-judging (a non-evaluative attitude towards the experience), acting with awareness (paying attention to the present moment), and non-reacting (letting the experience come and go without getting caught up in it).

Dispositional mindfulness has been related to lower levels of depression in adults (Brown & Ryan, 2003, Cash & Whittingham, 2010; Desrosiers et al., 2013; Radford et al., 2014), and this association has shown stability over time (Dixon & Overall, 2016; Jury & Jose, 2019; Pagnini et al., 2019; Petrocchi & Ottaviani, 2016). However, there is scarce longitudinal research in youth on the role dispositional mindfulness plays in depression. Overall, the available studies suggest that acting with awareness (Calvete et al., 2019; Ciesla et al., 2012), non-reacting (Royuela-Colomer & Calvete, 2016), and non-judging (Barnes & Lynn, 2010) are the most predictive facets of depression over time.

In general, apart from some exceptions (e.g., Calvete et al., 2018; Jury & Jose, 2019), there is little research exploring bidirectional relationships between protective factors and psychological symptoms. Regarding dispositional mindfulness, a few studies have examined whether depressive symptoms predict changes in mindfulness, with contradictory results. In a study conducted with university students (Elhai et al., 2018), the severity of depression was inversely associated with a general measure of mindfulness one month later. In contrast, in another study developed with adults, depressive symptoms predicted a composite measure of all mindfulness facets positive and significantly from the third to the sixth month (Jury & Jose, 2019). There are even fewer studies exploring this predictive association on each mindfulness facet. Raphiphatthana et al. (2016) found that negative affect predicted lower levels of non-judging and non-reacting in university students. These findings support the

application of transactional models to the role of dispositional mindfulness and highlight the need of further research on this area.

The association between mindfulness facets and cognitive vulnerabilities, such as EMSs, remains unclear. Some recent studies using the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), which is a measure of acting with awareness, observed cross-sectional negative associations in men (Shorey, Brasfield, et al., 2015), women (Shorey, Anderson, et al., 2015), and general adult samples (Martin et al., 2018). Similar associations between EMSs and a general measure of mindfulness have been shown in youth (Fischer et al., 2016). Regarding specific schemas, in a study conducted with university students (Yalçın et al., 2017), defectiveness and pessimism schemas were found to be negatively associated with mindfulness levels. With respect to mindfulness facets, when they were examined in a sample of undergraduate students with a dimensional measure, the results showed that EMSs correlated negatively with most of them (Thimm, 2017). Specifically, all of the measured schemas correlated negatively with non-judging, whereas none of the schemas correlated with observe, suggesting once again that different facets may play different roles. These findings connecting the vulnerability and protective factors for depression are consistent with some emerging new therapeutic approaches that pose the combination of mindfulness and Schema Therapy, or at least the inclusion of mindfulness core elements in Schema Therapy (van Vreeswijk et al., 2012; van Vreeswijk et al., 2014). However, despite the fact that mindfulness and EMSs show cross-sectional associations, to our knowledge, only one longitudinal study has examined predictive relationships between mindfulness and EMSs (Calvete et al., 2019). This study only examined whether acting with awareness—measured with an adapted version of the MAAS for adolescents (MAAS-A; Brown et al., 2011)—predicted a reduction of disconnection/rejection schemas but it did not examine bidirectional associations between the two variables.

Thus, although previous research in the field of depression has demonstrated the dysfunctional role of maladaptive schemas in the maintenance of depression over time (Hankin et al., 2016) and has identified potential protective individual variables such as dispositional mindfulness (e.g., Ciesla et al., 2012; Tan & Martin, 2016), there is a gap in the study of the dynamics between maladaptive schemas, mindfulness, and depressive symptoms over time (for exceptions, see Calvete et al., 2019; Martin et al., 2018). According to transactional and cascade models of psychopathology (Leve & Cicchetti, 2016; Masten & Cicchetti, 2010) relationships between vulnerabilities, protective factors, and depression may be bidirectional. Therefore, the longitudinal associations between maladaptive schemas, mindfulness, and depressive symptoms could be reciprocal.

In the current study, we propose that both maladaptive schemas and dispositional mindfulness may affect the trajectory of depressive symptoms but that, at the same time, depressive symptoms can worsen maladaptive schemas and reduce mindfulness facets. Moreover, mindfulness facets and maladaptive schemas could influence each other. Therefore, the present study aimed to test a transactional model including predictive paths from depressive symptoms to EMSs and mindfulness; from mindfulness to EMSs and depression; and from EMSs to depression and mindfulness. We hypothesized that significant predictive associations would appear between the study variables. Figure 1 displays the conceptual model. According to this model, there would be several mediating mechanisms between the variables over time. Finally, as maladaptive schemas can be more prominent and more active in adolescents with depression, we also aimed to examine whether there were different transactional mechanisms in a group with high levels of depression and a group with low levels of depression.

Method

Participants

The initial sample was made up of 956 participants who were enrolled in Secondary Education centers in Bizkaia (Basque Country, Spain). All the participants who completed at least two of the three waves of the study ($N = 855$) were included in the analysis. They were between 12 and 17 years old ($M = 14.60$, $SD = 1.00$, Median = 14.53). On average, participants who completed at least two waves of the study were younger ($M_{age} = 14.60$, $SD = 1.00$) than those who did not ($M_{age} = 15.13$, $SD = 1.05$), and this difference was significant, $t(954) = 5.03$, $p = .001$. There were no significant sex differences between those who completed at least two waves of the study and those who did not, $\chi^2(1) = 1.39$, $p = 0.24$. Table 1 presents sample distribution by age, gender, grade, and parents' socioeconomic status. Parents' socioeconomic status was determined following the standards of the Spanish Society of Epidemiology and the Spanish Society of Family and Community Medicine (2000).

Procedure

This study was approved by the Ethics Committee of University of Deusto. Informed consent was sent to parents, giving them the option of refusing their children's participation in case of objection. Students filled in the questionnaires in their regular classrooms, during normal class time. They took around 60 min to complete them. Assessment measures were administered by psychologists at three waves: baseline (W1), 6-month follow-up (W2), and 1-year follow-up (W3). Participants were informed that their responses were confidential and that participation was voluntary. In order to pair the questionnaires of W1, W2, and W3, a code known only by the participant was used.

Measures

Depressive Symptoms

Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977; Spanish version of Calvete & Cardeñoso, 1999). It

consists of 20 items on a four-point scale ranging from 0 (*rarely*) to 3 (*most or almost all the time*). The CES-D is widely used with young people, and it has shown good psychometric properties among Spanish adolescents (Calvete & Cardeñoso, 1999).

Dispositional Mindfulness

Mindfulness facets were assessed with the Short Form of the Five Facet Mindfulness Questionnaire–Adolescents (FFMQ-A-SF; Cortazar et al., 2019), which is based on the original version of the questionnaire (Baer et al., 2006). This short form consists of just 25 items, 5 per facet: observe (e.g., “I pay attention to sensations, such as the wind in my hair or the sun on my face”), describe (e.g., “I’m good at finding the words to describe my feelings”), acting with awareness (e.g., “When I do things, my mind wanders off and I’m easily distracted”), non-judging (e.g., “I criticize myself for having irrational or inappropriate emotions”) and non-reacting (e.g., “In difficult situations, I can pause without reacting immediately”). A factor analysis confirmed the five-facet structure of this short version for adolescents, and each subscale showed good internal consistency (Cortazar et al., 2019).

Answers range from 1 (*never or rarely true*) to 5 (*very often or always true*).

Early Maladaptive Schemas

Schemas of the disconnection/rejection domain were assessed with the Young Schema Questionnaire-3 (YSQ-3; Young, 2006; Spanish version of Calvete, Orue, & González-Díez, 2013). Participants were asked to respond to 20 items corresponding to four schemas: Abandonment describes the perception that significant others will not continue to provide support (e.g., “I need other people so much that I worry about losing them”); the mistrust/abuse schema is related to the belief that others will hurt, abuse, or deceive one (e.g., “I feel that people will take advantage of me”); emotional privation refers to the belief that one’s emotional support needs will not be adequately satisfied (e.g., “For much of my life, I haven’t felt that I am special to anyone”); and defectiveness refers to the feeling that one is

imperfect, invalid, or unwanted by others (e.g., "I am incompetent when it comes to performing any task"). These schemas are grouped into the disconnection/rejection domain, which, as mentioned, refers to the expectation that one's needs of security, acceptance, and respect will not be fulfilled. Students rated the questionnaire on a scale ranging from 1 (*totally disagree*) to 6 (*totally agree*), with higher scores indicating a stronger presence of dysfunctional beliefs. When only the schemas of the disconnection/rejection domain have been assessed, and this model has been examined, results support the use of a general domain score (Calvete et al., 2019).

Data Analyses

Little's MCAR (Missing Completely At Random) test was statistically significant [$\chi^2(1068) = 1263, p < .001$]. Therefore, we used the Full Information Maximum Likelihood (FIML) method to manage missing values with LISREL 10.20. The goodness-of-fit of the path analyses models were evaluated using the Comparative Fit Index (CFI), Non-Normative Fit Index (NNFI), the Root Mean Square Error of Approximation (RMSEA), the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the Parsimonious Normed Fit Index (PNFI). CFI and NNFI values of .90 or higher and RMSEA values lower than .06 indicate excellent fit (Little, 2013). AIC, BIC, and PNFI are approximate fit indices where lower values indicate a better fit.

The hypothesized model included autoregressive paths from the measures at W1 to the same measures at W2 (mindfulness facets, depressive symptoms, and disconnection/rejection schemas) and from the measures at W2 to the repeated measures at W3. It also included longitudinal cross-lagged predictive paths from each mindfulness facet and depressive symptoms to disconnection/rejection schemas; from each mindfulness facet and disconnection/rejection schemas to depressive symptoms; and from depressive symptoms and disconnection/rejection schemas to all the mindfulness facets (Figure 1). The significance

of the mediation effects was tested via a bootstrapping procedure. In this study, 5,000 bootstrapping samples were created from the original dataset by random sampling with replacement, and the covariance matrix was estimated for each sample. The second step was to conduct the path analysis model 5,000 times with these 5,000 bootstrap covariances to yield 5,000 estimations of each path coefficient. The third step was to use LISREL's saved output of the estimations of each path coefficient to calculate the indirect effect ($a * b$; where a is the path between the predictor and the mediator, and b is the path between the mediator and the outcome). The final step was to determine whether the 95% CI for the estimated indirect effect included zero. The indirect effect was considered significant at the .05 level if the 95% confidence level did not include zero (Shrout & Bolger, 2002).

Finally, we performed additional analyses to test whether the model was invariant in a group with high levels of depression and a group with low levels of depression. For this purpose, based on CES-D scores, two groups were created. In previous studies, a cut-off score below 16 has been considered indicative of "minimal" depressive symptoms and a cut-off score of 24 or higher has been considered indicative of "moderate/severe" depressive symptoms in adolescents (Rushton et al., 2002). Therefore, those participants who scored below 16 on the questionnaire constituted the low depression group, and those who scored at or above 24 constituted the high depression group. All data are available at the open Science Framework (<https://osf.io/AZP4W/>).

Results

Descriptive Statistics

Table 2 displays the descriptive statistics of the variables, and Table 3 displays the correlation coefficients between them. Describe, acting with awareness and non-judging facets correlated negatively and significantly with depressive symptoms and the disconnection/rejection schemas at all three waves, whereas observe correlated positively

with depressive symptoms and the disconnection/rejection schemas at all three waves. Non-reacting correlated negatively and significantly with depressive symptoms only at baseline and at the 6-month follow-up. Depressive symptoms and disconnection/rejection correlated positively and significantly at all three waves and across waves. Finally, all the measures correlated positively and significantly with depressive symptoms and the disconnection/rejection schemas across the waves.

Predictive Model

The predictive model via path analysis displayed excellent fit indexes, FIML $\chi^2(89, N = 855) = 358.01, p < .001$, RMSEA = .060, 90% CI [.053, .066], NNFI = .948, CFI = .981, AIC = 62,765.02, BIC = 63,539.27, PNFI = 0.364. This model included several statistically significant paths. In addition, the modification indices provided by LISREL 10.2 indicated that the fit of the model could improve by including a direct path from W1 depressive symptoms to W3 depressive symptoms and from W1 disconnection/rejection and W3 disconnection/rejection. Therefore, these paths were included in the model. Next, a parsimonious model was conducted to facilitate bootstrapping analysis, in which only significant paths were included. This new model showed excellent fit indexes, FIML $\chi^2(125, N = 855) = 367.82, p < .001$, RMSEA = .048, 90% CI [.042, .053], NNFI = .967, CFI = .982, AIC = 62,660.83, BIC = 63,164.45, PNFI = 0.051. Figure 2 displays the unstandardized paths of the model with their standard errors. The autoregressive paths for depressive symptoms, disconnection/rejection, and all the mindfulness facets were statistically significant, indicating the stability of these variables over time. Regarding mindfulness facets as predictors of depressive symptoms and schemas, describe predicted a reduction of maladaptive schemas at both time intervals (from W1 to W2 and from W2 to W3) and acting with awareness predicted a reduction of depressive symptoms at the second one (from W2 to W3).

Regarding schemas and depressive symptoms as predictors of mindfulness, the disconnection/rejection schema domain predicted lower acting with awareness, and depressive symptoms predicted lower non-reacting consistently over time. Both variables, schemas and depressive symptoms, predicted reductions of non-judging at both time intervals (from W1 to W2 and from W2 to W3), and decrease at the first one (from W1 to W2). In contrast, an increase of observe and non-reacting was predicted by EMSs at the second interval (from W2 to W3). Finally, depressive symptoms predicted disconnection/rejection schemas at both intervals (from W1 to W2 and from W2 to W3), and disconnection/rejection schemas predicted depressive symptoms at the first one (from W1 to W2).

Differences between a High Depression Group and a Low Depression Group for the Predictive Model

We examined whether the above model was invariant for a high depression group and a low depression group. First, the model was estimated separately for those participants scoring less than 16 points in the depression scale, FIML $\chi^2(125, N = 478) = 338.41, p < .001$ RMSEA = .060, 90% CI [.052, .068], NNFI = .944, CFI = .971, AIC = 33,398.21, BIC = 33,840.19, PNFI = 0.502, and for those who scored 24 points or more in depression, FIML $\chi^2(125, N = 160) = 172.89, p = .003$ RMSEA = .049, 90% CI [.029, .026], NNFI = .962, CFI = .980, AIC = 11,964.27, BIC = 12,290.23, PNFI = 0.491. Secondly, we tested the configural invariance of the model to demonstrate that the pattern of fixed and free parameters was equivalent across subsamples. This model displayed good fit indexes, FIML $\chi^2(250, N = 855) = 511.30, p < .001$ RMSEA = .057, 90% CI [.050, .064], NNFI = .982, CFI = .981, AIC = 45,446.47, BIC = 46,653.25, PNFI = 1.00. Thirdly, we estimated a model in which longitudinal paths were constricted to be equal across both subsamples, but this imposition did not increase chi square significantly, $\Delta\chi^2(34, N = 855) = 42.65, p = .147$. Therefore, the paths were similar in both samples.

Bootstrapping Analyses of the Mediating effects

The above findings suggested 14 possible mediating paths, which were tested by bootstrapping analysis. The 95% confidence intervals for possible mediating effects are presented in Table 4. As can be noted, all of the confidence intervals supported significant mediation effects, as they did not include zero. Depressive symptoms mediated changes in schemas and the relationship between schemas and mindfulness. Disconnection/rejection schemas predicted higher levels of depressive symptoms which, in turn, predicted lower levels of schemas and higher levels of non-judging and non-reacting.

Disconnection/rejection schemas mediated the relationship between describe and the other four mindfulness facets and the association between depressive symptoms and mindfulness facets (acting with awareness, non-judging, observe, and non-reacting). On the one hand, describe predicted lower levels of schemas. The reduction of schemas led to higher levels of acting with awareness and non-judging, and lower levels of observe and non-reacting. On the other hand, depressive symptoms predicted an increase in schemas that, in turn, predicted less acting with awareness and non-judging, and more observe and non-reacting.

Finally, describe mediated changes in disconnection/rejection schemas and the relationship between depressive symptoms and schemas. Both depressive symptoms and schemas predicted lower levels of describe, and those lower levels of describe predicted higher levels of maladaptive schemas. Acting with awareness mediated the association between schemas and depressive symptoms. Schemas predicted a decrease of acting with awareness, and these lower levels of this facet predicted an increase of depressive symptoms.

Discussion

Numerous previous studies have examined the role of dispositional mindfulness and maladaptive schemas in the development of depression. Transactional models of

psychopathology extend previous research and propose cascade models based on the notion that vulnerability and protective factors could influence each other reciprocally (Leve & Cicchetti, 2016; Masten & Cicchetti, 2010). Consistently with these models, the aim of the present study was to examine whether there are bidirectional predictive associations between mindfulness facets, maladaptive schemas, and depressive symptoms in adolescents, and whether there are mediating effects in these relationships. Findings indicate several predictive associations between the study variables.

Regarding the associations between mindfulness facets and depressive symptoms, only acting with awareness predicted a decrease of depressive symptoms, and this effect was limited to the interval between W2 and W3. Previous longitudinal research had also found that this facet could be a predictor of fewer depressive symptoms (e.g., Calvete et al., 2019; Royuela-Colomer & Calvete, 2016). However, our results highlight a different and relatively new perspective, with depressive symptoms playing a stronger role as predictors of a worsening of mindfulness facets. Namely, depressive symptoms predicted decreases of non-judging from W1 to W2 and from W2 to W3, describe from W1 to W2 and non-reacting from W2 to W3. These findings are partially consistent with those obtained in a study where negative affect predicted decreases of non-judging and non-reacting one month later (Raphiphatthana et al. 2016). However, our study provides long-term evidence for this effect.

With regard to the association between depressive symptoms and maladaptive schemas, on the one hand, disconnection/rejection schemas predicted an increase of depressive symptoms only from W1 to W2. This finding is relatively consistent with the maladaptive role that these schemas have shown in previous available longitudinal studies (e.g., Calvete, Orue, & Hankin, 2013; Orue et al., 2014) and with some therapeutic approaches based on this notion (Young et al., 2003). On the other hand, we found that depressive symptoms predicted an increase of these schemas consistently from W1 to W2

and from W2 to W3. These findings support those obtained in a four-wave longitudinal study with adolescents, in which depressive symptoms systematically predicted a worsening of maladaptive schemas (Alba & Calvete, 2019). This fact seems to favor the notion that depressive moods affect cognitions. In depressed individuals, there would be more access to negative memories and interpretations about the self, others, and the world (Beck, 1976), a fact that has been also observed in samples of adolescents (e.g. Orchard et al., 2016).

Finally, regarding the association between mindfulness facets and maladaptive schemas, only describe predicted a decrease in maladaptive schemas consistently from W1 to W2 and from W2 to W3, whereas EMSs predicted several decreases of mindfulness facets (acting with awareness and non-judging from W1 to W2 and from W2 to W3, and describe from W1 to W2). EMSs also predicted an unexpected increase of non-reacting from W2 to W3. The latter should be considered with caution, as the cross-sectional associations between these variables were not statistically significant. Overall, these findings suggest that schemas consisting of beliefs and feelings of defectiveness, being rejected and abused by others (i.e., disconnection and rejection schemas) could predispose adolescents to lower levels of present moment attention and more critical attitudes. From the results, a picture begins to emerge in which depressive symptoms activate maladaptive schemas, and these, in turn, undermine some mindfulness facets. It has been hypothesized that depressive symptoms interfere with individuals' ability to be mindful, because the negative cognitive processing, characteristic of depression, would make them more prone to judge experiences poorly and to become absorbed and entangled in negative evaluations of them (Raphiphatthana et al., 2016). Our results are consistent with this standpoint and underline the fact that maladaptive schemas play a relevant role in depression-related cognitive processing. The utilization of maladaptive non-mindful forms of emotion regulation, such as schema avoidance and schema surrender, could predispose adolescents to develop lower levels of trait mindfulness (Martin et al.,

2018). In fact, maladaptive schemas have been found to predict rumination (Alba & Calvete, 2019) and avoidance coping responses (Mairet et al., 2014), and these maladaptive response styles can block a conscious attitude towards experiences. Moreover, the above findings were supported by several significant mediational mechanisms. Specifically, maladaptive schemas acted as mediators between depression and lower non-judging and acting with awareness. Thus, depressive mood could exacerbate maladaptive interpretations of oneself and the relationships with others, and these interpretations, in turn, would potentiate negative emotional responses and reactions, including a deterioration of Awareness and the mindfulness facets related to acceptance.

Several other mediational mechanisms emerged. Depression predicted disconnection/rejection schemas through decreases in the describe facet of mindfulness. This suggests that adolescents with higher depressive symptoms could feel incapable of describing their feelings, which in turn would contribute to activate dysfunctional schemas. Moreover, our results suggest that the relationship between schemas and depression could be mediated by lower levels of acting with awareness. Previous research had found that acting with awareness can buffer the relationship between schemas and depression (Calvete et al., 2019; Martin et al. 2018), meaning that being aware of these schemas could prevent the emergence of depressive symptoms. Our results provide evidence of a different mechanism to explain the associations between these variables. They suggest that maladaptive schemas can worsen adolescents' acting with awareness facet, and thus increase depressive symptoms. Noticing the schemas may be the first step to coping with them appropriately and preventing the perpetuation of depressive symptoms. As Young (2003) stated, identifying and consciously articulating the maladaptive cognitive and affective content of activated schemas is the first objective in the schema-focused therapy.

Finally, depressive symptoms mediated the association between schemas and two mindfulness facets: non-rudging and non-reacting. Changes in mood derived from maladaptive schemas could be the mechanism through which these dysfunctional patterns exert their effects on mindfulness. The belief that basic needs of security, safety, nurturance, and respect will not be fulfilled would increase depressive symptoms, and these could, in fact, lead to biased negative judgments and automatic reactions

The pattern of longitudinal associations between variables was similar in adolescents who scored high in depression and those who scored low. This suggests that the above mechanisms can operate even in adolescents who do not present high depressive symptomatology.

In summary, findings indicate that EMSs and depressive symptoms can predict certain facets of mindfulness both directly and indirectly. Mindfulness, in turn, mediates the two-way relationship between depression and maladaptive schemas in both directions. It is also important to consider the role that depressive symptoms play as enhancers of maladaptive schemas and as weakeners of mindfulness facets. Depressive symptoms not only predicted increases in disconnection/rejection schemas, but also decreases of describe, non-judging, and non-reacting.

Apart from contributing to existing research about potentially modifiable mechanisms that underlie depression, these results support the use of transactional models of psychopathology (Hankin & Abramson, 2001; Leve & Cicchetti, 2016; Masten & Cicchetti, 2010). Future studies should be open to the possibility of changes in depression explaining changes in mindfulness and schemas, and not just the other way around. Adolescents may get entangled in a depression-maintenance spiral through these transactional processes. All these mechanisms conjointly are important and could help us understand some of the processes linking depression to vulnerability and protective factors. Adolescents experiencing

depressive symptoms could be trapped in a loop, where depressive symptoms worsen maladaptive schemas, and depressive symptoms and maladaptive schemas both worsen their mindfulness skills, with all these mechanisms contributing to perpetuating depressive symptoms. The present study constitutes an example of the application of integrative psychopathological models. The cause and maintenance of suffering could be understood in terms of systems of influences, and therefore, multiply determined.

This conceptual approach would have potential clinical or practice implications, for instance, in the prevention of mental health problems in adolescents. Specifically, these results are in line with the proposal of Young et al. (2003) of resorting to emotion regulation techniques such as mindfulness to overcome the avoidance of schemas. Based on this idea, interventions for depression combining mindfulness and Schema Therapy have been developed (van Vreeswijk et al., 2014). Preventive interventions should be implemented early in adolescence, before depressive symptoms peak. By doing so, adolescents would avoid falling into the aforementioned circle of maintenance and worsening of depression.

Limitations and Future Research

This study presents some limitations that provide opportunities for future research. Firstly, we only focused on the disconnection/rejection schema domain because it is probably the most relevant domain for depression within the schema therapy model (Young et al., 2003). Nevertheless, it would be interesting to examine the dynamics between dispositional mindfulness and other schema domains such as impaired autonomy and impaired limits. These schema domains may be relevant for other psychological problems such as anxiety and aggressive behavior, and thus, the hypotheses of the current study could be examined in relation to several other problems. Future studies could also use alternative analysis approaches such as network analysis with time series of the variables of interest (Borsboom & Cramer, 2013). Finally, all the variables were measured by means of self-reports, which

could have contributed to inflate the associations between variables due to shared variance between self-reports. A multiple-source approach to measurement, including parent-reports and clinical interviews, would improve the validity of the study.

Despite the above limitations, this study also has important strengths. It was conducted in a large sample of adolescents who represent a wide socioeconomic range. Furthermore, its longitudinal design also represents a strong point, including 6-month and 1-year follow-ups. The significant associations between variables are especially relevant in the context of a longitudinal study with high stability of the measures.

Compliance with Ethical Standards

Conflict of Interest: The authors declare that they have no conflict of interest.

Ethical Standards: The procedures of this study have been approved by the institutional research committee of the University of Deusto and have been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Informed Consent: Informed consent was obtained from all individual participants included in the study and their parents/guardians.

Author Contributions JG: collaborated with the design of the study, analyzed the data, wrote the paper, prepared the tables, and revised the references. EC: designed the study, collaborated with the writing of the study, analyzed the data, and wrote part of the results. All authors approved the final version of the manuscript for submission.

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References

Abela, J. R. Z. & Hankin, B. L. (2008). Cognitive vulnerability to depression in children and adolescents: a developmental psychopathology perspective. In J. R. Z. Abela & B. L.

- Hankin (Eds.), *Handbook of depression in children and adolescents* (pp. 35-78). Guilford.
- Alba, J., & Calvete, E. (2019). Bidirectional relationships between stress, depressive symptoms, and cognitive vulnerabilities in adolescents. *Journal of Social and Clinical Psychology, 38*(2), 87-112. <https://doi.org/10.1521/jscp.2019.38.2.87>
- Baer, R. A., Smith, G.T., Hopkins, J. Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore mindfulness. *Assessment, 13*(1), 27-45. <https://doi.org/10.1177/1073191105283504>
- Barnes, S. M., & Lynn, S. J. (2010). Mindfulness skills and depressive symptoms: A longitudinal study. *Imagination, Cognition and Personality, 30*(1), 77-91. <https://doi.org/10.2190/ic.30.1.e>
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International Universities Press.
- Borsboom, D., & Cramer, A. O. (2013). Network analysis: An integrative approach to the structure of psychopathology. *Annual Review of Clinical Psychology, 9*, 91-121. <https://doi.org/10.1146/annurev-clinpsy-050212-185608>
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822-848. <https://doi.org/10.1037/0022-3514.84.4.822>
- Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: Validation of an Adapted Mindful Attention Awareness Scale in adolescent normative and psychiatric populations. *Psychological assessment, 23*(4), 1023. <https://doi.org/10.1037/a0021338>
- Calvete, E., & Cardeñoso, O. (1999). Creencias y síntomas depresivos: Resultados preliminares en el desarrollo de una Escala de Creencias Irracionales abreviada [Beliefs

- and depressive symptoms: Preliminary results in the development of a brief irrational beliefs scale]. *Anales de Psicología*, *15*(2), 179-190.
<https://revistas.um.es/analesps/issue/view/2201>
- Calvete, E., las Hayas, C., & del Barrio, A. G. (2018). Longitudinal associations between resilience and quality of life in eating disorders. *Psychiatry Research*, *259*, 470-475.
<https://doi.org/10.1016/j.psychres.2017.11.031>
- Calvete, E., Morea, A., & Orue, I. (2019). The role of dispositional mindfulness in the longitudinal associations between stressors, maladaptive schemas, and depressive symptoms in adolescents. *Mindfulness*, *10*(3), 547-558. <https://doi.org/10.1007/s12671-018-1000-6>
- Calvete, E., Orue, I., & González-Díez, Z. (2013). An examination of the structure and stability of early maladaptive schemas by means of the Young Schema Questionnaire-3. *European Journal of Psychological Assessment*, *29*(4), 283–290.
<https://doi.org/10.1027/1015-5759/a000158>
- Calvete, E., Orue, I., & Hankin, B. L. (2013). Transactional relationships among cognitive vulnerabilities, stressors, and depressive symptoms in adolescence. *Journal of Abnormal Child Psychology*, *41*(3), 399–410. <https://doi.org/10.1007/s10802-012-9691-y>
- Calvete, E., Orue, I., & Hankin, B. L. (2015). A longitudinal test of the vulnerability stress model with early maladaptive schemas for depressive and social anxiety symptoms in adolescents. *Journal of Psychopathology and Behavioral Assessment*, *37*(1), 85–99.
<https://doi.org/10.1007/s10862-014-9438-x>
- Cámara, M., & Calvete, E. (2012). Early maladaptive schemas as moderators of the impact of stressful events on anxiety and depression in university students. *Journal of*

Psychopathology and Behavioral Assessment, 34(1), 58-68.

<https://doi.org/10.1007/s10862-011-9261-6>

Cash, M., & Whittingham, K. (2010). What facets of mindfulness contribute to psychological well-being and depressive, anxious, and stress-related symptomatology? *Mindfulness*, 1(3), 177-182. <https://doi.org/10.1007/s12671-010-0023-4>

Ciesla, J. A., Reilly, L. C., Dickson, K. S., Emanuel, A. S., & Updegraff, J. A. (2012).

Dispositional mindfulness moderates the effects of stress among adolescents:

Rumination as a mediator. *Journal of Clinical Child & Adolescent Psychology*, 41(6), 760-770. <https://doi.org/10.1080/15374416.2012.698724>

Cortazar, N., Calvete, E., Fernández-González, L., & Orue, I. (2019). Development of a Short Form of the Five Facet Mindfulness Questionnaire—Adolescents for children and adolescents. *Journal of Personality Assessment*, 1-12.

<https://doi.org/10.1080/00223891.2019.1616206>

Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, 60(8), 837-844. <https://doi.org/10.1001/archpsyc.60.8.837>

Desrosiers, A., Klemanski, D. H., & Nolen-Hoeksema, S. (2013). Mapping mindfulness facets onto dimensions of anxiety and depression. *Behavior Therapy*, 44(3), 373-384.

<https://doi.org/10.1016/j.beth.2013.02.001>

Dixon, H. C., & Overall, N. C. (2016). Dispositional mindfulness attenuates the link between daily stress and depressed mood. *Journal of Social and Clinical Psychology*, 35(3), 255–268. <https://doi.org/10.1521/jscp.2016.35.3.255>.

Dozois, D. J., Martin, R. A., & Bieling, P. J. (2009). Early maladaptive schemas and adaptive/maladaptive styles of humor. *Cognitive Therapy and Research*, 33(6), 585–596. <https://doi.org/10.1007/s10608-008-9223-9>.

- Dozois, D. J. A., & Rnic, K. (2015). Core beliefs and self-schematic structure in depression. *Current Opinion in Psychology, 4*, 98-103.
<https://doi.org/10.1016/j.copsyc.2014.12.008>
- Eberhart, N. K., Auerbach, R. P., Bigda-Peyton, J., & Abela, J. R. Z. (2011). Maladaptive schemas and depression: Tests of stress generation and diathesis-stress models. *Journal of Social and Clinical Psychology, 30*(1), 75–104.
<https://doi.org/10.1521/jscp.2011.30.1.75>
- Elhai, J. D., Levine, J. C., O'Brien, K. D., & Armour, C. (2018). Distress tolerance and mindfulness mediate relations between depression and anxiety sensitivity with problematic smartphone use. *Computers in Human Behavior, 84*, 477-484.
<https://doi.org/10.1016/j.chb.2018.03.026>
- Fischer, T. D., Smout, M. F., & Delfabbro, P. H. (2016). The relationship between psychological flexibility, early maladaptive schemas, perceived parenting and psychopathology. *Journal of Contextual Behavioral Science, 5*(3), 169-177.
<https://doi.org/10.1016/j.jcbs.2016.06.002>
- Hankin, B. L., & Abramson, L. Y. (2001). Development of gender differences in depression: An elaborated cognitive vulnerability–Transactional stress theory. *Psychological Bulletin, 127*(6), 773. <https://doi.org/10.1037/0033-2909.127.6.773>
- Hankin, B. L., Snyder, H. R., & Gulley, L. D. (2016). Cognitive risks in developmental psychopathology. In D. Cicchetti (Ed.), *Developmental Psychopathology: Maladaptation and Psychopathology* (3rd ed., Vol. 3, pp. 312-385). Hoboken, NJ: Wiley. <https://doi.org/10.1002/9781119125556.devpsy308>
- Hankin, B. L., Young, J. F., Abela, J. R., Smolen, A., Jenness, J. L., Gulley, L. D., Technow, J. R., Gottlieb, A. B., Cohen, J. R., & Oppenheimer, C. W. (2015). Depression from childhood into late adolescence: Influence of gender, development, genetic

- susceptibility, and peer stress. *Journal of Abnormal Psychology*, *124*(4), 803-816.
<https://doi.org/10.1037/abn0000089>
- Halvorsen, M., Wang, C. E., Eisemann, M., & Waterloo, K. (2010). Dysfunctional attitudes and early maladaptive schemas as predictors of depression: A 9-year follow-up study. *Cognitive Therapy and Research*, *34*(4), 368–379. <https://doi.org/10.1007/s10608-009-9259-5>
- Jury, T. K., & Jose, P. E. (2019). Does rumination function as a longitudinal mediator between mindfulness and depression? *Mindfulness*, *10*(6), 1091-1104.
<https://doi.org/10.1007/s12671-018-1031-z>
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice*, *10*(2), 144–156.
<https://doi.org/10.1093/clipsy/bpg016>
- Leve, L. D., & Cicchetti, D. (2016). Longitudinal transactional models of development and psychopathology [Special issue]. *Development and Psychopathology*, *28*(3)
<http://doi.org/10.1017/S0954579416000201>
- Lewinsohn, P. M., Steinmetz, J. L., Larson, D. W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? *Journal of Abnormal Psychology*, *90*(3), 213.
<https://doi.org/10.1037/0021-843X.90.3.213>
- Little, T. D. (2013). *Longitudinal structural equation modeling*. Guilford Press.
- Mairet, K., Boag, S., & Warburton, W. (2014). How important is temperament? The relationship between coping styles, early maladaptive schemas and social anxiety. *International Journal of Psychology and Psychological Therapy*, *14*(2), 171-190.
<https://www.ijpsy.com/volumen14/num2/>
- Martin, K. P., Blair, S. M., Clark, G. I., Rock, A. J., & Hunter, K. R. (2018). Trait mindfulness moderates the relationship between early maladaptive schemas and

- depressive symptoms. *Mindfulness*, 9(1), 140-150. <https://doi.org/10.1007/s12671-017-0753-7>
- Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, 22(3), 491-495. <https://doi.org/10.1017/s0954579410000222>
- Orchard, F., Pass, L., & Reynolds, S. (2016). ‘It was all my fault’; Negative interpretation bias in depressed adolescents. *Journal of Abnormal Child Psychology*, 44(5), 991-998. <http://doi.org/10.1007/s10802-015-0092-x>
- Orue, I., Calvete, E., & Padilla, P. (2014). Brooding rumination as a mediator in the relation between early maladaptive schemas and symptoms of depression and social anxiety in adolescents. *Journal of Adolescence*, 37(8), 1281–1291. <https://doi.org/10.1016/j.adolescence.2014.09.004>
- Pagnini, F., Cavalera, C., Rovaris, M., Mendozzi, L., Molinari, E., Philips, D., & Langer, E. (2019). Longitudinal associations between mindfulness and well-being in people with multiple sclerosis. *International Journal of Clinical and Health Psychology*, 19(1), 22-30. <https://doi.org/10.1016/j.ijchp.2018.11.003>
- Petrocchi, N., & Ottaviani, C. (2016). Mindfulness facets distinctively predict depressive symptoms after two years: The mediating role of rumination. *Personality and Individual Differences*, 93, 92-96. <https://doi.org/10.1016/j.paid.2015.08.017>
- Radford, S., Eames, C., Brennan, K., Lambert, G., Crane, C., Williams, J. M. G., Duggan, D. S., & Barnhofer, T. (2014). Trait mindfulness as a limiting factor for residual depressive symptoms: An explorative study using quantile regression. *PloS One*, 9(7), 31–41. <https://doi.org/10.1371/journal.pone.0100022>
- Radloff, L. S. (1977). The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401. <https://doi.org/10.1177/014662167700100306>

- Raphiphatthana, B., Jose, P. E., & Kielikowski, M. (2016). How do the facets of mindfulness predict the constructs of depression and anxiety as seen through the lens of the tripartite theory? *Personality and Individual Differences*, 93, 104-111.
<https://doi.org/10.1016/j.paid.2015.08.005>
- Rohde, P., Lewinsohn, P. M., & Seeley, J. R. (1994). Are adolescents changed by an episode of major depression? *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(9), 1289-1298. <https://doi.org/10.1097/00004583-199411000-00010>
- Royuela-Colomer, E., & Calvete, E. (2016). Mindfulness facets and depression in adolescents: Rumination as a mediator. *Mindfulness*, 7(5), 1092-1102.
<https://doi.org/10.1007/s12671-016-0547-3>
- Rushton, J. L., Forcier, M., & Schectman, R. M. (2002). Epidemiology of depressive symptoms in the National Longitudinal Study of Adolescent Health. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(2), 199-205.
<http://doi.org/10.1097/00004583-200202000-00014>
- Rutter, M., Kim-Cohen, J., & Maughan, B. (2006). Continuities and discontinuities in psychopathology between childhood and adult life. *Journal of Child Psychology and Psychiatry*, 47(3-4), 276-295. <https://doi.org/10.1111/j.1469-7610.2006.01614.x>
- Shorey, R. C., Anderson, S., & Stuart, G. L. (2015). Trait mindfulness and early maladaptive schemas in women seeking residential substance use treatment: A preliminary investigation. *Addiction Research & Theory*, 23(4), 280-286.
<https://doi.org/10.3109/16066359.2014.981810>
- Shorey, R. C., Brasfield, H., Anderson, S., & Stuart, G. L. (2015). The relation between trait mindfulness and early maladaptive schemas in men seeking substance use treatment. *Mindfulness*, 6(2), 348-355. <https://doi.org/10.1007/s12671-013-0268-9>

- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*(4), 422. <http://doi.org/10.1037/1082-989X.7.4.422>
- Spanish Society of Epidemiology and the Spanish Society of Family and Community Medicine. (2000). Una propuesta de medida de la clase social [A proposed measure of social class]. *Atencion Primaria, 25*(5), 350–363. [https://doi.org/10.1016/S0212-6567\(00\)78518-0](https://doi.org/10.1016/S0212-6567(00)78518-0)
- Tan, L. B., & Martin, G. (2016). Mind full or mindful: A report on mindfulness and psychological health in healthy adolescents. *International Journal of Adolescence and Youth, 21*(1), 64-74. <https://doi.org/10.1080/02673843.2012.709174>
- Thimm, J. C. (2017). Relationships between early maladaptive schemas, mindfulness, self-compassion, and psychological distress. *International Journal of Psychology and Psychological Therapy, 17*(1), 3-17.
- van Vreeswijk, M., Broersen, J., & Nadort, M. (eds.) (2012). *The Wiley-Blackwell handbook of Schema Therapy: Theory, research and practice*. John Wiley & Sons.
- van Vreeswijk, M., Broersen, J., & Schurink, G. (2014). *Mindfulness and Schema Therapy: A practical guide*. John Wiley & Sons.
- Wang, C. E., Halvorsen, M., Eisemann, M., & Waterloo, K. (2010). Stability of dysfunctional attitudes and early maladaptive schemas: A 9-year follow-up study of clinically depressed subjects. *Journal of Behavior Therapy and Experimental Psychiatry, 41*(4), 389-396. <https://doi.org/10.1016/j.jbtep.2010.04.002>
- World Health Organization (WHO). (2020, January 30). Depression. *World Health Organization*. <http://www.who.int/mediacentre/factsheets/fs369/en/>
- Yalçın, S. B., Kavaklı, M., Kesici, S., & Ak, M. (2017). University students' early maladaptive schemas' prediction of their mindfulness levels. *Journal of Education and*

Practice, 8(20), 174-181.

<https://www.iiste.org/Journals/index.php/JEP/article/view/37922>

Young, J. E. (2006). *Young Schema Questionnaire-3*. Cognitive Therapy Center.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide* (3rd ed.). Guilford.

Table 1*Sociodemographic Characteristics of Participants at Baseline*

Sociodemographic characteristics	Frequency (n)	Percentage (%)
Gender		
Female	417	48.77
Male	438	51.23
Grade		
8th	274	32.05
9th	362	42.34
10th	187	21.87
11th	32	3.74
SES		
High	125	14.62
High-medium	151	17.66
Medium	219	25.61
Low-medium	109	12.75
Low	137	16.02

Note. SES = Socioeconomic Status.

Table 2*Psychometric Properties for FFMQ-A-SF, CES-D and YSQ-3 Scales and Subscales*

Scales	W1				W2				W3			
	<i>M</i>	<i>SD</i>	<i>N</i>	Cronbach's α	<i>M</i>	<i>SD</i>	<i>N</i>	Cronbach's α	<i>M</i>	<i>SD</i>	<i>N</i>	Cronbach's α
Mindfulness												
Observe	2.98	0.92	794	.69 ^a	2.71	0.81	814	.76 ^a	2.69	0.80	765	.64 ^a
Describe	3.24	0.70	791	.78 ^a	3.33	0.72	813	.87 ^a	3.32	0.69	765	.85 ^a
Act. Awa.	3.31	0.87	839	.86 ^a	3.24	0.81	813	.87 ^a	3.24	0.81	764	.84 ^a
Non-Judging	3.72	0.87	839	.84 ^a	3.57	0.86	813	.87 ^a	3.58	0.83	764	.88 ^a
Non-Reacting	2.82	0.71	789	.65 ^a	2.78	0.65	812	.63 ^a	13.61	3.46	763	.62 ^a
Depression	16.35	9.36	847	.87	15.68	9.80	810	.88	15.91	9.67	756	.88
Disc./Rejec.	44.32	16.92	847	.90	42.16	17.63	802	.93	41.81	17.42	758	.93

Note. W1 = Baseline; W2 = 6-month follow-up; W3 = 12-month follow-up, FFMQ-A-SF = Short Form of the Five Facet Mindfulness Questionnaire–Adolescents, CES-D = Center for Epidemiologic Studies Depression Scale, YSQ-3 = Young Schema Questionnaire-3. Disc./Rejec.= Disconnection/Rejection domain of schemas, Act. Awa. = Acting with Awareness.

^a Ordinal alpha was estimated in concordance with the analyses conducted on the validation of the FFMQ-A-SF by Cortazar et al. (2019).

Table 3*Correlations among Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1 W1 Observe		.05	-.22***	-.24***	.38***	.13***	.21***	.42***	-.01	-.12**	-.08*	.13***	.05	.15***	.40***	-.04	-.11**	-.09*	.11**	.07	.09*	
2 W1 Describe			.19***	.14***	.09*	-.28***	-.22***	-.03	.45***	.18***	.13***	.07*	-.20***	-.23***	-.06	.39***	.18***	.11**	.08*	-.21***	-.23***	
3 W1 Act. Awa.				.39***	-.04	-.31***	-.28***	-.15***	.22***	.57***	.25***	.04	-.23***	-.21***	-.18***	.19***	.50***	.19***	.02	-.24***	-.16***	
4 W1 Non-Judging					-.09*	-.51***	-.48***	-.17***	.21***	.30***	.51***	.03	-.38***	-.37***	-.18***	.14***	.23***	.45***	.04	-.31***	-.30***	
5 W1 Non-Reacting						-.12**	.00	.16***	.09*	-.03	.02	.28***	-.05	-.06	.07	.04	.11**	.07	.18***	-.10*	-.02	
6 W1 Depression							.62***	.14***	-.28***	-.30***	-.40***	-.08*	.64***	.50***	.22***	-.17***	-.27***	-.34***	-.03	.54***	.43***	
7 W1 Disc./Rejec.								.17***	-.26***	-.31***	-.37***	.00	.45***	.57***	.22***	-.16***	-.24***	-.33***	-.01	.40***	.51***	
8 W2 Observe									-.09*	-.23***	-.25***	.36***	.11**	.16***	.58***	-.04	-.14***	-.19***	.19***	.12**	.12**	
9 W2 Describe										.33***	.32***	.10***	-.34***	-.31***	-.11**	.51***	.24***	.23***	.09*	-.25***	-.29***	
10 W2 Act. Awa.											.45***	-.08*	-.34***	-.31***	-.22***	.31***	.57***	.27***	.01	-.31***	-.23***	
11 W2 Non-Judging												-.10**	-.47***	-.39***	-.22***	.18***	.25***	.56***	-.02	-.36***	-.32***	
12 W2 Non-React													-.11**	-.04	.16***	.13**	.03	.06	.31***	-.09*	-.02	
13 W2 Depression														.56***	.14***	-.22***	-.22***	-.37***	-.08*	.62***	.43***	
14 W2 Disc./Rejec.															.21***	-.19***	-.26***	-.33***	.02	.41***	.56***	
15 W3 Observe																-.14***	-.33***	-.36***	.32***	.24***	.22***	
16 W3 Describe																	.35***	.29***	.08*	-.29***	-.25***	
17 W3 Act. Awa.																		.44***	-.14***	-.35***	-.29***	
18 W3 Non-Judging																			-.13***	-.50***	-.43***	
19 W3 Non-Reacting																				-.02	.05	
20 W3 Depression																						.57***
21 W3 Disc./Rejec.																						

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

Note. W1 = Baseline; W2 = 6-month follow-up; W3 = 12-month follow-up, Disc./rejec.= Disconnection/Rejection domain of schemas, Act. Awa. = Acting with Awareness.

Table 4

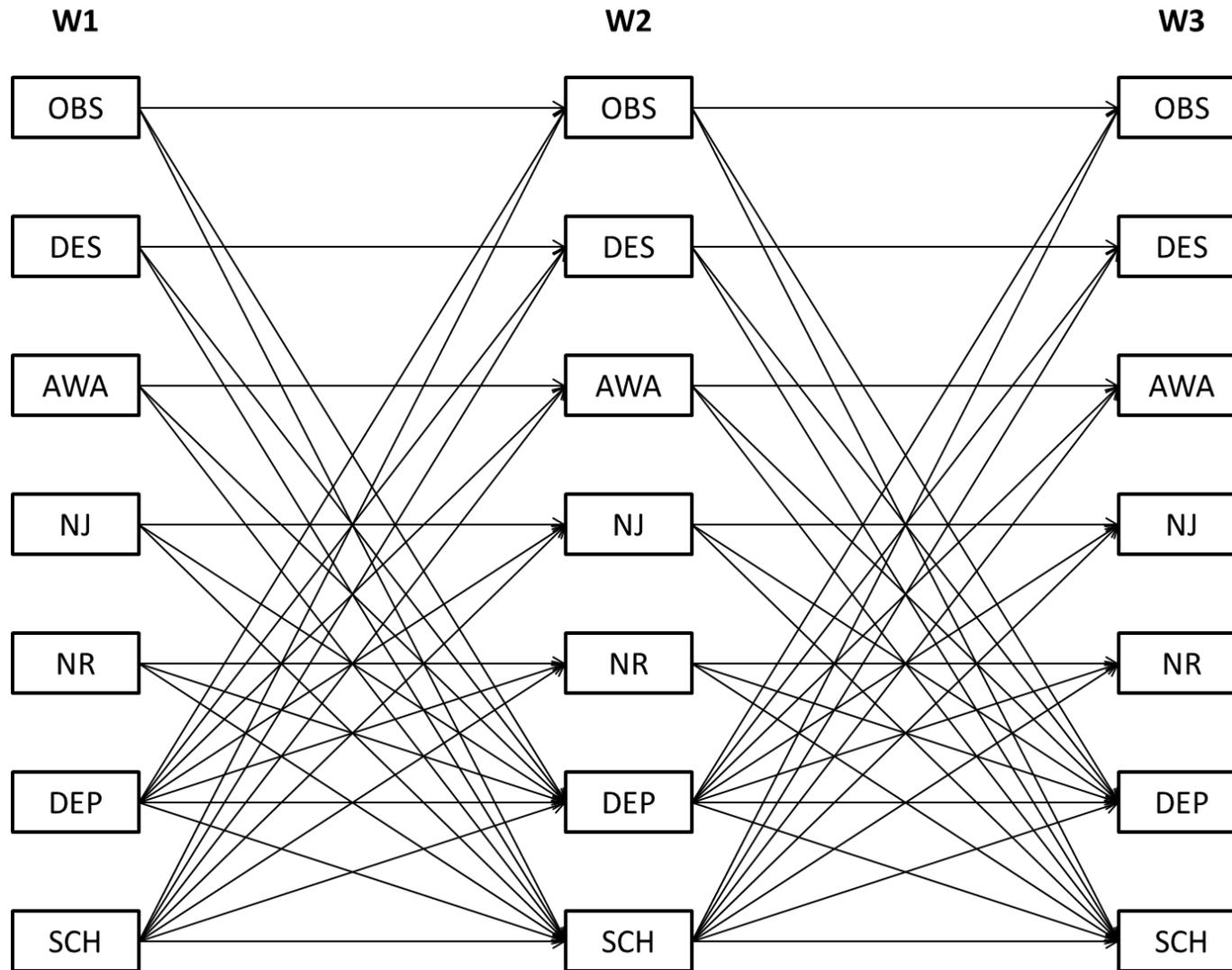
Bootstrapping Indirect Effects by Multiplying Pairs of Path Coefficients for Possible Mediations and 95% Confidence Interval (CI) for the Final Model (5000 Bootstrap Samples)

	Mean Indirect Effect	95% CI	
		Lower	Upper
Describe → Disc./Rejec. → Act. Awa.	0.00831	0.00820	0.00842
Describe → Disc./Rejec. → Non-Judging	0.00682	0.00671	0.00692
Describe → Disc./Rejec. → Observe	-0.00970	-0.00982	-0.00957
Describe → Disc./Rejec. → Non-Reacting	-0.03244	-0.03292	-0.03195
Depression → Disc./Rejec. → Act. Awa	-0.00195	-0.00197	-0.00193
Depression → Disc./Rejec. → Non-Judging	-0.00161	-0.00163	-0.00159
Depression → Disc./Rejec. → Observe	0.00228	0.00226	0.00230
Depression → Disc./Rejec. → Non-Reacting	0.00771	0.00762	0.00780
Depression → Describe → Disc./Rejec.	0.01218	0.01200	0.01237
Disc./Rejec. → Depression → Disc./Rejec.	0.01040	0.01024	0.01057
Disc./Rejec. → Depression → Non-Judging	-0.00048	-0.00049	-0.00048
Disc./Rejec. → Depression → Non-Reacting	-0.00186	-0.00189	-0.00183
Disc./Rejec. → Describe → Disc./Rejec.	0.01004	0.00992	0.01017
Disc./Rejec. → Act. Awa. → Depression	0.00901	0.00893	0.00908

Note. Significant mediation effects were supported if confidence intervals for the estimates of the indirect effect excluded zero. All the indirect pathways were statistically significant. Disc./Rejec. = Disconnection/Rejection domain of schemas, Act. Awa. = Acting with Awareness.

Figure 1

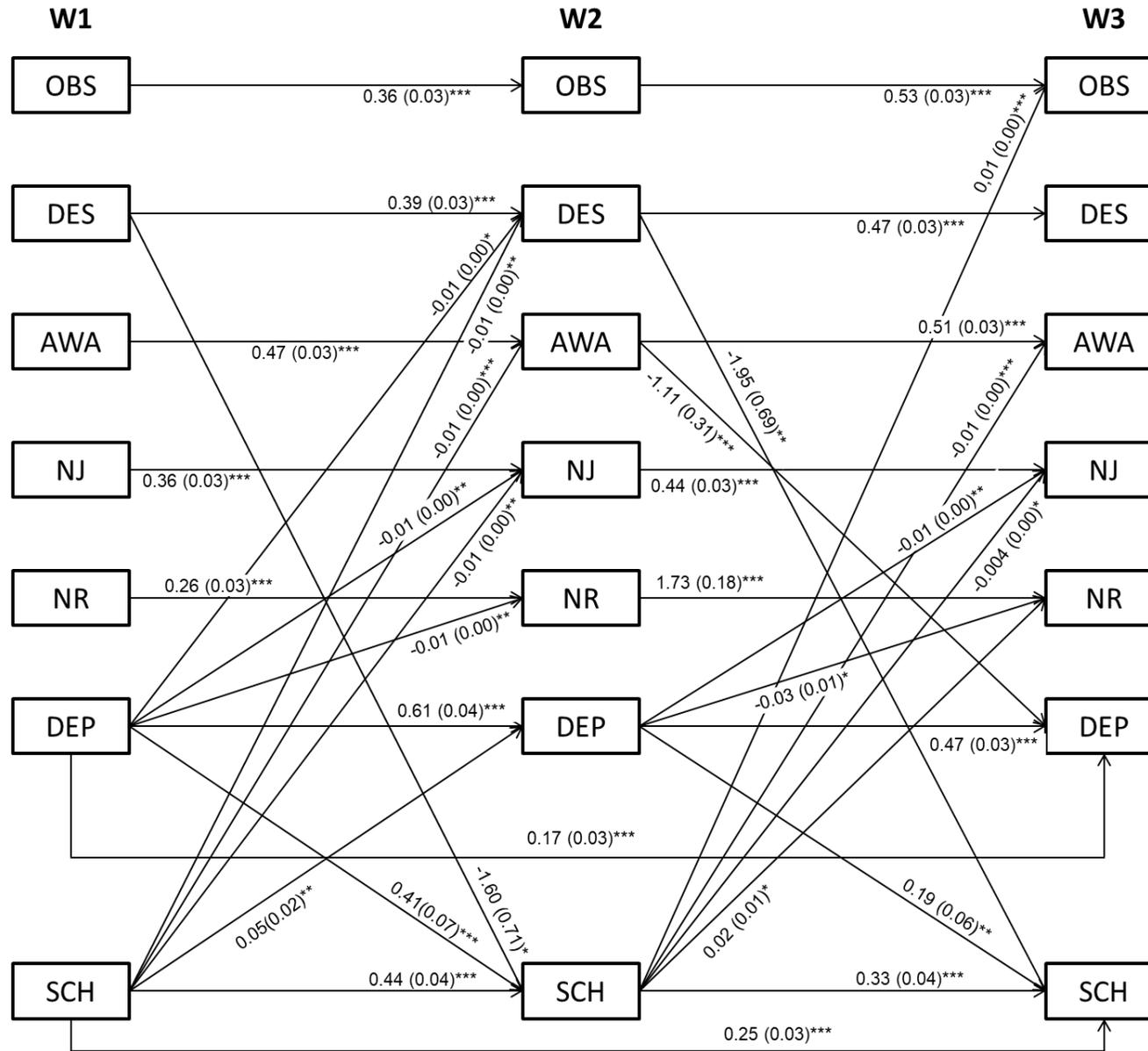
Conceptual Model of Transactional Relationships Between Mindfulness Facets, Depressive Symptoms, and Disconnection/Rejection Schemas, From Baseline to 6-Month Follow-Up and From 6-Month Follow-Up to 12-Month Follow-Up



Note. OBS = Observe; DES = Describe; AWA = Acting with Awareness; NJ = Non-Judging; NR = Non-Reacting; DEP = Depressive symptoms; SCH = Disconnection/Rejection schemas; W1 = Baseline; W2 = 6-month follow-up; W3 = 12-month follow-up.

Figure 2

Cross-Lagged Longitudinal Paths of the Parsimonious Model



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

Note. Only significant paths are shown. Unstandardized coefficients are shown. Standard errors are in parentheses. OBS = Observe; DES = Describe; AWA = Acting with Awareness; NJ = Non-Judging; NR = Non-Reacting; DEP = Depressive symptoms; SCH = Disconnection/Rejection schemas; W1 = Baseline; W2 = 6-month follow-up; W3 = 12-month follow-up.