Moral emotions and moral disengagement: Concurrent and longitudinal associations with aggressive behavior among early adolescents

*This is the **Final Draft** of an article published by SAGE available at*:
https://journals.sagepub.com/doi/abs/10.1177/0272431618791276

Please cite this article as: Mazzone, A., Yanagida, T., Caravita, SCS. & Strohmeier, D. (2018). Moral emotions and moral disengagement: Concurrent and longitudinal associations with aggressive behavior among early adolescents. *Journal of Early Adolescence, 39,* 839-863. doi: 10.1177/0272431618791276

Abstract

The complex temporal associations among moral disengagement, moral emotions and aggressive behavior were investigated within a short-term four-wave longitudinal study in a sample of early adolescents (at T1: $N = 245$; $M_{age} = 12.16$ years; $SD = 0.85$). Moral disengagement and aggressive behavior were investigated by validated self-report scales. Shame and guilt were assessed in response to six-story vignettes. A series of four-wave longitudinal mediation analyses were conducted to test several theoretically meaningful models. Mediation models revealed positive reciprocal longitudinal effects between aggressive behavior and moral disengagement. Aggressive behavior negatively predicted moral emotions, and moral disengagement was negatively associated with moral emotions over time. When testing competing models including all three variables in one model, no theoretical meaningful mediation process emerged: Instead, high moral disengagement predicted lower moral emotions but higher aggressive behavior over time. Results are discussed regarding their practical importance for prevention and intervention programs.

Keywords: moral emotions, moral disengagement, aggressive behavior, longitudinal mediation model, early adolescence

Moral Emotions and Moral Disengagement: Concurrent and Longitudinal Associations with Aggressive Behavior among Early Adolescents

Although nearly all children and adolescents are aware that aggressive behavior against peers is wrong, aggression is widespread and a cause of concern all over the world (Currie et al, 2012). Which cognitive and emotional processes are able to explain this obvious gap between moral evaluations and actual behaviors?

According to the Affect-Cognition Model (Malti & Keller, 2010), cognitive skills and moral emotions are progressively integrated throughout development. However, it is still unclear through which processes early adolescents justify their immoral actions and attenuate painful feelings like shame and guilt when committing a moral transgression. Moral emotions involve a great degree of cognitive processing, as they require both an understanding of why it is wrong to break a moral rule, and how the rule-breaking negatively affects the well-being of others (Malti, 2016). However, emotions of moral concern, such as guilt and shame can also be avoided when individuals justify their immoral actions (Bandura, Barbaranelli, Caprara & Pastorelli, 1996; Menesini & Camodeca, 2008; Thornberg, Pozzoli, Gini & Jungert, 2015).

According to the Social Cognitive Theory of the Moral Self (Bandura, 1999), moral disengagement minimizes cognitive dissonance and painful feelings when moral evaluations and actual behavior diverge. Although a few longitudinal pieces of evidence suggest that moral disengagement can both promote aggressive behavior and vice-versa (Gini, Pozzoli & Hymel, 2014), the reciprocal influence of cognitive and emotional dimensions of morality and their associations with aggressive behavior is less well understood. This four wave longitudinal study is the first to shed light on the complex temporal order of these constructs in a sample of early adolescents.

Moral Disengagement

Moral disengagement covers as a series of cognitive mechanisms aimed at reconstructing the situation, so that the acted behaviors appear congruent with the individual's internalized standards (Bandura, 1999). In this way, cognitive processes conduce to a selective disengagement from moral self-censure, as well as to the avoidance of possible negative moral feelings such as guilt and shame.

Research findings show that moral disengagement is predictive of a number of undesirable social behaviors among children and adolescents, such as aggression, bullying and delinquent behavior (Bandura, et al., 1996; Gini, et al., 2014; Menesini et al., 2003). However, the directionality of the association between aggressive behavior and moral disengagement is still unclear. As suggested in a recent meta-analysis by Gini and colleagues (2014), bi-directionality could be the rule. Indeed, moral disengagement may become a cognitive orientation, influencing aggressive actions (Paciello, Fida, Tramontano, Lupinetti & Caprara, 2008), but also repeated aggressive acts could make it easier for the individual to activate moral disengagement (Bandura, 1999).

The Moral Emotions of Guilt and Shame

According to the Affect-Cognition Model (Malti & Keller, 2010), cognitive skills and moral emotions are progressively integrated throughout development. Children progressively understand that moral transgressions have negative consequences for others' wellbeing, by integrating their own perspective and those of others. Through the course of development, a generalized third-person perspective makes older children and adolescents aware of standards of moral behavior needed to establish and maintain social relationships based on trust and fairness.

The moral emotions of guilt and shame serve as a motive to restrain from immoral behaviors, such as aggression (Menesini & Camodeca, 2008). Guilt results from the negative appraisal of a moral transgression (Bybee, 1998; Tangney, Stuewig & Mashek, 2007; Tracy &

Robins, 2006) and it is related to an urgent desire to make amends and repairing the harm done (Bybee, 1998). Shame could arise in situations not involving a moral connotation, such as a personal failure in front of an audience (i.e., non-moral shame; Tangney, 1999), but it also arises after a moral transgression (i.e., moral-shame). Moral shame is discharged through a range of responses, such as acceptance of personal responsibility, refraining from further wrongdoings, withdrawn behavior (Ahmed, 2006; Olthof, 2012) and making amends when a moral standard is violated (e.g., harming a peer; Menesini & Camodeca, 2008).

Thus, guilt and shame are both expressions of internal negative self-evaluations and are elicited in the same socio-moral contexts (Menesini & Camodeca, 2008; Olthof, et al., 2000). Previous literature documented that the outcomes of guilt and shame are comparable and that both have a positive role in social behavior regulation (Menesini & Camodeca, 2008). Indeed, both guilt and shame promote prosocial behavior and refrain early adolescents from further wrongdoings (Menesini & Camodeca, 2008). Furthermore, feelings of guilt and shame decrease aggressive behaviors, such as bullying (Ahmed, 2006) and shame, in particular, was found to inhibit antisocial behavior (Olthof, 2012). On the opposite, the tendency to being poorly troubled by shame and guilt was associated with maladaptive social outcomes, such as aggression, bullying and delinquent behavior (Ahmed, 2006; Bandura, et al., 1996; Menesini et al., 2003).

Although literature indicates that, there is an association between moral emotions and aggressive behavior, longitudinal evidence about their association is still scarce. Thus, there are important gaps in this area of developmental research and the intertwinement of cognitive and emotional dimensions of morality and their association with aggressive behavior still needs to be clarified using a multiple wave longitudinal research designs.

The Present Study

Integrating concepts of the Social Cognitive Theory of the Moral Self (Bandura, 1999)

and the Affect-Cognition Model (Malti, 2016), the aim of the present study is to better understand the complex associations among moral disengagement, moral emotions, and aggressive behavior. Such an integrated approach provides valuable insights into the development of emotional and cognitive moral processes related to aggression. To better understand the unfolding of these processes over time, data were collected through four longitudinal waves within short time intervals, spanning three to four months each. Because of the few existing longitudinal studies in this field, it was rather difficult to make a decision on the appropriate time span between measurements. However, we reasoned that a short time interval spanning three to four months would provide a higher temporal stability of moral emotions, which were shown to be only moderately stable over a six months' interval (Roos, et al., 2014).

We sampled early adolescents, as the majority of studies investigating moral emotions and their associations with (im)moral behaviors are based on cross-sectional studies conducted with children (Malti, 2016). However, the integration between moral emotions and moral cognition processes is not completed throughout childhood. Instead, a progressive integration between emotional and cognitive components of morality has been proposed to take place during early adolescence due to increasing opportunities to practice socio-emotional and behavioral skills with peers (Malti & Ongley, 2015). Therefore, it is reasonable and particularly interesting to investigate this age group.

Hypotheses I: Moral Disengagement and Aggressive Behavior

Our first set of hypotheses focused on the temporal associations between moral disengagement and aggressive behavior. Although the positive links between these constructs are well documented concurrently (Gini, et al., 2014), there is still a lack of evidence regarding their longitudinal associations (Obermann, 2013; Paciello et al., 2008). As pointed out by Bandura (1999), individuals may initially justify their milder levels of aggressive

behavior to cope with their emotional distress. However, in order to justify repeated and more serious aggressive actions, moral disengagement increases over time and self-sanctions become attenuated (Bandura, 1990; Paciello et al., 2008). Therefore, we hypothesize that a tendency to morally disengage would predict increasing levels of aggression over time (Ahmed, 2006; Obermann, 2013). The evidence that in early adolescence moral disengagement can be socialized and learnt from peers supports this hypothesis (Caravita, Sijtsema, Rambaran, & Gini, 2014).

Furthermore, we also hypothesize that sustained aggressive actions lead to increasing moral disengagement over time and that this pattern may allow individuals to engage in additional and more severe aggressive behavior over time (Bandura, 1999; Paciello et al., 2008). In sum, we aim at testing the hypotheses that the change in moral disengagement and aggressive behavior could be a reciprocal process. Therefore, we tested whether moral disengagement and aggressive behavior might reciprocally influence each other, i.e., we assumed that a vicious circle may exist.

Hypotheses II: Moral Emotions and Aggressive Behavior

Our second set of hypotheses focused on the associations between moral emotions and aggressive behavior. Previous studies found a concurrent negative association between these constructs (Roos, et al., 2014). To the best of our knowledge, only one study investigated this association in a two- wave short-term longitudinal study, spanning a six months' interval and failed to find any association (Roos, et al., 2014). Due to these few empirical evidences, it is difficult to formulate a conclusive hypothesis. However, given that moral emotions lead children and adolescents to behave in line with moral standards and being concerned for others' wellbeing, we is reasonable to assume that moral emotions would decrease aggression over time.

Hypotheses III: Moral Emotions and Moral Disengagement

Our third set of hypotheses concerned the longitudinal associations between moral emotions and moral disengagement. To the best of our knowledge, the associations between these constructs have not been investigated longitudinally, but concurrent findings show that low moral emotions are associated with the tendency to morally disengage, (Bandura et al., 1996; Mazzone, Camodeca & Salmivalli, 2016; Menesini et al., 2003; Thornberg, Pozzoli, Gini & Jungert, 2015). Based on these results and the theory, we assume that a longitudinal association between moral disengagement and moral emotions exists. More specifically, we expected that moral disengagement would decrease moral emotions over time (Bandura et al., 1996). We assume that early adolescents who reinterpret their misbehavior as serving a worthy purpose thereby denying their personal agency and responsibility would show low levels of moral emotions (Bandura et al., 1996).

Hypotheses IV: Dynamic Associations between Moral Emotions, Moral Disengagement and Aggressive Behavior

Our fourth set of hypotheses dealt with the longitudinal relations between all three constructs. We were interested in the conjoint contribution of moral emotions and moral disengagement on aggressive behavior. Therefore, two mediation models were tested (see Figure 1). We examined whether moral emotions decrease moral disengagement, whose decrease in turn would decrease aggressive behavior (Model 1). Alternatively, we also tested whether moral disengagement decreases moral emotions, whose decrease in turn would increase aggressive behavior (Model 2). Thus, we compared the longitudinal indirect effects of the two mediation models to find out the directionality of the effects.

Furthermore, although boys and girls differ in their mean levels of moral emotions, moral disengagement and aggressive behavior (Bandura, et al., 1996; Paciello, et al., 2008; Walter & Burnaford, 2006), the empirical evidence does not suggest that the associations between the

three constructs differ between boys and girls. However, by adopting an exploratory approach, we estimated multi-group models to test whether our findings were robust across gender.

- Insert Figure 1 about here –

Method

Procedure

This study was part of a larger longitudinal intervention study conducted in Austria (Gradinger, Yanagida, Strohmeier, & Spiel, 2016; Yanagida, Strohmeier, & Spiel, 2016). Three control schools agreed to take part in an additional study on moral development. Short-term longitudinal data were collected from grade 5 and 6 students at four waves (for details see Table 1). Due to time constraints for data collection during wave 2 in February (which is the mid-term exam period in Austrian schools), it was not possible to collect all variables (for details see Table 1). After the study was accepted by the local school council and the school principals, active parental consent was obtained. Because the participation in the longitudinal study was a requirement on school level to be chosen for the cluster-randomized trial the parental consent was > 90% in all schools. In total, > 70 percent of students were present at the days of data collection and had parental consent to participate in the study. Data were collected through internet-based questionnaires, which were completed during one regular school hour in the school's computer lab under the supervision of two trained research assistants. The students answered questions regarding aggressive behavior first, followed by moral emotions and moral disengagement. To avoid any systematic order effect within scales, items were counterbalanced across participants.

- Insert Table 1 about here -

Participants

A sample of 357 students from the control group of the longitudinal intervention study who participated in at least one occasion of measurement were included in the current study

(see Table 2). The difference between the number of subjects who participated at least once and at each wave (see Table 2) is explained by individual absences at the time of data collection. At wave 1, 35% of the students were non-immigrant Austrians, 24% were immigrants from countries of the former Yugoslavia, 22% were immigrants from Turkey, and 19% were immigrants from other countries. Regarding socioeconomic status (SES), 5% of students stated that their family would have less, 71% as much as, and 24 % more money compared with others.

- Insert Table 2 about here -

Missing Data

A series of two-sample Wilcoxon tests and Bonferroni-Holm correction for multiple comparisons were conducted for attrition analysis. It is important to understand that the wave 4 missing data was produced by design and therefore we assumed that missing data would not be related to the study variables. Indeed, results showed no differences between students from the drop-out school and students from schools who participated at all four waves in all study variables (effect sizes ranged between r = -.20 and r = .18).

Multiple imputation (Rubin, 1987) under the missing at random (MAR) assumption was used to deal with missing data. This assumption implies that the missing data systematically depends on observed data that is included in the multiple imputation process (Baraldi & Enders, 2013). Incomplete variables were imputed under fully conditional specification (van Buuren, Brand, Groothuis-Oudshoorn, & Rubin, 2006) resulting in a total of 100 imputed data sets. For more details of the imputation process, see Yanagida and colleagues (2016).

Measures

Aggressive behavior. Aggressive behavior was measured by three self-report scales, (1) bullying perpetration, (2) physical aggression, and (3) relational aggression.

Bullying Perpetration. The bullying scale consists of a global item, and three specific items covering different forms of bullying. In the global item, students were asked: "How often have you insulted or hurt other students during the last two months?" The three specific items were similar to the global ones, except that they described specific forms of bullying. Cronbach's α coefficients were .89/.90/.90 (wave1/wave3/wave4).

Physical Aggression. The peer nomination measure developed by Crick and Grotpeter (1995) was modified into a self-report questionnaire and comprised three items, e.g., "How often have you hit one or more classmates during the last two months?". Cronbach's α coefficients were .89/.93/.91 (wave1/wave3/wave4).

Relational Aggression. These five items were also adapted from the peer nomination measure originally developed by Crick and Grotpeter (1995), e.g., "Some kids leave other kids out on purpose when it's time to play or do an activity. How often have you done that during the last 2 months?" Cronbach's α coefficients were .91/.96/.96 (wave1/wave3/wave4).

Answers to all questions were given on a five-point response scale ranging 0 (*not at all*), 1 (*once or twice*), 2 (*two or three times a month*), 3 (*once a week*), and 4 (*nearly every day*).

Moral disengagement. The 32 items of the Moral Disengagement scale developed by Bandura and colleagues (1996, p.374) were translated into the German language. The questionnaire aims at assessing proneness to moral disengagement in relation to various forms of detrimental conduct, in different contexts and interpersonal relationships. The parceled items (i.e., the scale means) of the eight mechanisms proposed by Bandura (1999; Bandura et al., 1996) were used as manifest indicators to compute the longitudinal measurement model (see Figure S2). Respondents answered these items on a 5-point scale, ranging from 1 (totally false) to 5 (totally true).

Moral emotions. Moral emotions were assessed in response to six vignettes depicting three different contexts of morality (i.e., treating others unfairly, omitting a prosocial duty, and

aggressive behavior). Two vignettes represented each domain of moral transgression. The vignettes were extensively validated by previous research in the happy-victimizer paradigm (see Malti, Gummerum, Keller, Chapparro, & Buchmann, 2012; Malti & Ongley, 2015). In the six vignettes, the gender of the hypothetical character matched the actual gender of the respondents by using male or female names. The order of the six vignettes was counterbalanced.

Participants were asked *"How would you feel if you had done what (hypothetical victimizer's name) did?"* Therefore, they were asked to select one feeling from the following responses: good, sad, guilty, ashamed, normal, a bit bad, angry, and afraid. These categories were taken from previous research with similar age groups and vignettes (e.g., Malti, Colasante, Zuffianò & de Bruine, 2016). Because we were interested in moral emotions only, for each vignette responses to the questions were coded as 1 when preadolescents ticked one of the two moral emotions (guilty or ashamed) or 0 when preadolescents ticked one of the other six emotions (good, sad, normal, a bit bad, angry, and afraid). Next, the answers to the six vignettes were summarized ranging between 0 (no moral emotion present) to 6 (in each vignette moral emotion present). This coding procedure was adapted from the procedures of past research on moral emotions (Malti, Gummerum, Keller, & Buchmann, 2009). The moral emotions of guilt and shame were combined as a high degree of overlap has been found between them (Menesini et al., 2003).

Measurement Models and Measurement Invariance

Measurement models of aggressive behavior and moral disengagement were tested for measurement invariance across occasions of measurement. A series of confirmatory factor analyses (CFA) was conducted in Mplus version 7.4 (Muthén & Muthén, 1998-2015) to test hierarchical series of models to establish strong measurement invariance for the first and second-order model (Chen, Sousa, & West, 2005). Model specification and identification for

the measurement model of aggressive behavior was based on Millsap and Yun-Tein (2004) using theta parameterization and a robust weighted least squares estimator (WLSMV).

Aggressive behavior. A second-order measurement model which represents the hierarchical relations among the investigated constructs was established (see Figure S1).

Results showed no meaningful decrease in model fit between the hierarchically nested models for aggressive behavior (see Table S1). Thus, all first- and second-order factor loadings, the threshold of the measured variables and first-order factors were invariant across all three occasions of measurement.

Moral disengagement. A measurement model for moral disengagement using the eight parcels (i.e., scale means of the eight mechanisms) as indicators was established (see Figure S2).

Results showed no meaningful decrease in model fit between the hierarchically nested models for moral disengagement (see Table S2). Thus, all factor loadings and intercepts of the measured variables were invariant across all four occasions of measurement.

Factor scores for aggressive behavior and moral disengagement were extracted and subsequently used in the further analyses.

Analytic Strategy

A series of four-wave longitudinal mediation analyses (Roth & MacKinnon, 2012) were conducted to test the main hypotheses of the present study. Models were estimated in Mplus 7.4 (Muthen & Muthen, 1998-2015) using robust maximum likelihood estimator adjusting standard errors for the non-independence of observations due to a hierarchical data structure (students nested in classes).

In the first step, we compared autoregressive models for aggressive behavior, moral disengagement, and moral emotion to determine the autoregressive structure across the four occasion of measurements. In a four-wave panel model, second-order and third-order

autoregressive paths can be estimated. These paths represent delayed effects across two or three units of time over and above the effect of the first- or second order autoregressive path (Newsom, 2015).

Second, we compared competing models representing the mediation process between (a) aggressive behavior and moral disengagement, (b) aggressive behavior and moral emotion, and (c) moral disengagement and moral emotion to investigate the pairwise relation between these variables (see Figures 2-4).

Third, we compared competing models including all three variables, i.e., aggressive behavior, moral disengagement, and moral emotions (see Figure 5).

In order to compare competing models, the chi-square difference test and the Bayesian Information Criterion (BIC) was used (West, Taylor & Wu, 2012). A lower BIC indicates a better trade-off between model fit (i.e., -2*log likelihood value) and model complexity (i.e., number of parameters).

Results

Descriptive Statistics

Means, standard deviations, and zero-order correlations of all study variables are presented in Table 3.

- Insert Table 3 about here -

Autoregressive Structure

The autoregressive structure of the study variables was investigated by comparing (a) first-order, (b) second-order, and (c) third-order autoregressive models. Results of the chi-square difference test showed that the second-order autoregressive model had a significantly better fit than the first-order autoregressive model, $\Delta\chi^2$ (4) =51.51, $p < .001$. Likewise, the third-order autoregressive model showed a better fit than the second-order autoregressive model, $\Delta\chi^2$ (3) = 29.51, $p < .001$. BIC supported this conclusion by showing the lowest BIC

(i.e., BIC = 11205) for the third-order autoregressive model in comparison with the first-order (BIC = 11255), and the second-order autoregressive model (BIC = 11219). Thus, all mediation models investigated in the main analysis are based on a third-order autoregressive structure.

Hypotheses I: Aggressive Behavior and Moral Disengagement

Three competing longitudinal models were compared: Model 1 hypothesize the longitudinal effect *Aggressive behavior → Moral disengagement*, model 2 hypothesize the longitudinal effect *Moral disengagement → Aggressive behavior*, and model 3 hypothesize the longitudinal effect of both model 1 and model 2. Chi-square difference test showed that model 3 (i.e., *Aggressive behavior → Moral disengagement* and *Moral disengagement → Aggressive behavior*) showed a significantly better fit than model 1 (*Aggressive behavior → Moral disengagement,* $\Delta\chi^2$ (2) = 25.31, $p < .001$) and model 2 (*Moral disengagement → Aggressive behavior,* $\Delta\chi^2$ (2) = 21.72, $p < .001$). In addition, model 3 showed the lowest BIC (BIC = 6121) indicating the best trade-off between model fit and model complexity (see Table 4). Model 3 is depicted in Figure 2.

Hypotheses II: Aggressive Behavior and Moral Emotions

Three competing longitudinal models were compared: Model 1 hypothesize the longitudinal effect *Aggressive behavior → Moral emotions*, model 2 hypothesize the longitudinal effect *Moral emotions → Aggressive behavior*, and model 3 hypothesize the longitudinal effects of both model 1 and model 2. Chi-square difference test showed that model 3 (i.e., *Aggressive behavior → Moral emotions* and *Moral disengagement → Moral emotions*) showed a significantly better model fit than model 1 (*Aggressive behavior → Moral emotions,* $\Delta\chi^2$ (2) = 11.46, $p < .01$) and model 2 (*Moral emotions → Aggressive behavior,* $\Delta\chi^2$ (2) = 44.542, $p < .001$). However, BIC indicated that model 1 (*Aggressive behavior → Moral emotions*) has the best trade-off between model fit and model complexity

(see Table 4). Therefore, model 1 was the final model. Model 3 is depicted in Figure 3 as it covers all specified paths.

Hypotheses III: Moral Disengagement and Moral Emotions

Three competing longitudinal models were compared: Model 1 hypothesize the longitudinal effect *Moral disengagement → Moral emotions*, model 2 hypothesize the longitudinal effect *Moral emotions → Moral disengagement*, and model 3 hypothesize the longitudinal effect of both model 1 and model 2. Model 2 obtained the worst Chi-square and BIC indices. Chi-square difference test showed that model 1 (i.e., *Moral emotion → Moral disengagement*) and model 3 (i.e., *Moral emotion → Moral disengagement* and *Moral disengagement → Moral emotion*) do not differ in terms of model fit, $\Delta\chi^2$ (3) = 1.45, p = .694. However, BIC indicated that Model 1 (BIC = 8450) has the best trade-off between model fit and model complexity (see Table 4). Model 3 is depicted in Figure 4 as it covers all specified paths.

- Insert Table 4 about here -

Hypotheses IV: Dynamic Associations between Moral Emotions, Moral Disengagement and Aggressive Behavior

Three competing longitudinal mediation models were compared: Model 1 hypothesize the mediating effect *Moral disengagement → Moral emotion → Aggressive behavior,* model 2 hypothesize the mediation effect *Moral emotion → Moral disengagement → Aggressive behavior*, and model 3 combined the mediating effects of model 1 and model 2.The chi-square difference test showed that the combined model 3 had a better model fit than model 1 ($\Delta\chi^2$ (5) = 29.000, $p < .01$) and model 2 ($\Delta\chi^2$ (5) = 37.15, $p < .001$). In addition, model 3 had the lowest BIC (BIC = 11191) indicating the best model fit while accounting for model complexity (see Table 4). As shown in Figure 5, no meaningful longitudinal indirect effect emerged in Model 3. Instead, moral disengagement at T2 and T3 positively predicted

aggression T3 and T4. Moral disengagement and moral emotions were negatively associated concurrently at T1 and T2. Furthermore, moral disengagement at T3 predicted a decrease of the emotions at T4. The longitudinal associations between emotions and aggression were not significant, but the concurrent negative associations were at T3 and T4.

- Insert Figure 2 about here –

Multi-group analyses

In order to test differences in model parameters between girls and boys, a chi-square difference test between a fully restricted model (i.e., parameter restricted to be equal across gender) and a freely estimated model (i.e., parameter freely estimated in girls and boys) was applied. Results showed that the chi square difference test between the fully restricted and freely estimated model was statistically not significant, ΔChi^2 (35) = 46.59, p = .091. Moreover, information criteria AIC and BIC were also in favor of the fully restricted model ($AIC_{constrained}$ = 10978.192 vs. AIC_{freed} = 11014.063 and $BIC_{constrained}$ = 11284.533 and BIC_{freed} = 11456.125). In sum, there were no differences in model parameters between girls and boys. Nevertheless, each model parameter was tested separately for differences between girls and boys. None of the regression parameters were statistically significant indicating that all parameters are the same between girls and boys. However, there were differences between girls and boys in the intercepts for aggressive behavior at time 1, 3, and 4 and moral disengagement at time 1. That is, boys had higher aggressive behavior and higher moral disengagement than girls. These results are not surprising, but more importantly they are not of interest given the scope of the current paper.

Alternative Mediation Models

By adopting an exploratory approach, alternative mediation models were ran to test the association between moral disengagement, shame and guilt and the three distinct subtypes of aggressive behaviors separately. The findings of these additional analyses are highly

overlapping with the analyses carried out with the global constructs (i.e., composite scores of shame and guilt and the three aggressive behavior subtypes). Findings showed that some of the paths could not be predicted, due to high instability of shame and guilt. Results can be found in the online supplementary materials (Figures S3 to S8).

Discussion

To the best of our knowledge, this is the first longitudinal study integrating different theoretical perspectives about moral cognitions and moral emotions (Bandura, 1999; Malti & Keller, 2010; Malti, 2016), to better understand the complex temporal relations of moral disengagement, moral emotion, and aggressive behavior.

Moral Disengagement and Aggressive Behavior

In accordance with previous findings, we found concurrent (at T1 only) and longitudinal associations between moral disengagement and aggressive behavior (T2-T3 and T3-T4; ref. Gini et al., 2014; Menesini et al., 2003). Although there is little empirical evidence regarding the longitudinal association between moral disengagement and aggressive behavior, a few findings in the literature suggest that the tendency to put the blame on others for oneself personal wrongdoings predicts a rise in aggression (Ahmed, 2006). The present analyses add novel knowledge to the literature, showing not only that moral disengagement is a powerful mechanism able to fuel aggressive behavior, but also that the tendency to behave aggressively increases moral disengagement over time. These findings confirm the hypothesized vicious circle between aggression and moral disengagement

Hence, on one hand, we may argue that the tendency to steadily manifest moral disengagement may reflect an escalation process i.e., progressive higher tolerance and acceptance of moral disengaged thoughts, which may facilitate aggressive actions over time (Bandura, 1990; Obermann, 2011; Paciello, et al., 2008). On the other hand, early adolescents who steadily manifest aggressive actions might need to increase moral disengagement

tendencies, in order to justify repeated aggressive actions.

Moral Emotions and Aggressive Behavior

In line with previous findings, we found that moral emotions and aggressive behavior were negatively associated (T1-T2) and that aggressive behavior longitudinally predicted moral emotions (T1-T2; T3-T4, Menesini et al., 2003; Roos et al., 2014). Two explanations may explain these links. First - given the stability of aggressive behavior – it is plausible to assume that to sustain aggressive conduct over time it is necessary to attenuate painful feelings of shame and guilt. In other words, aggressive adolescents are progressively less prone to show painful self-evaluative moral emotions over wrongdoings. Hence, an inclination towards aggression could progressively decrease sensitiveness to the negative consequences of immoral actions. Second, aggressive conduct clearly expresses a poor ability to regulate one's own behavior. A behavioral dysregulation may, in turn, inhibit emotional self-regulatory processes; i.e., moral emotions. However, further personal and contextual variables not investigated in the present study may also help to explain the observed behavior-emotion link. For instance, the peer group might play a role in the development of early adolescent aggressive behavior, by constituting a powerful socialization context (Veenstra & Dijkstra, 2011). Thus, in a peer context in which aggression might be interpreted as a normative behavior, early adolescents could have little reason to being troubled by feelings of shame and guilt.

Moral Emotions and Moral Disengagement

We found a rather low stability for moral emotions across the four longitudinal waves. This is not surprising as we measured shame and guilt as situational variables, rather than as personal dispositions. Furthermore, the development of moral emotions is a lifelong process; therefore, developmental changes in guilt and shame proneness across different contexts may occur during early adolescence (Malti & Ongley, 2015).

We found negative associations between moral emotions and moral disengagement concurrently (T1-T2). These findings were also confirmed in a longitudinal perspective, even though only between two waves (i.e., T1 - T2 and T3 -T4). The longitudinal associations showed that moral disengagement decreases moral emotions over time. These findings might indicate that moral disengagement has a transformative power, meaning that it progressively becomes a cognitive orientation aimed at justifying immoral actions (Paciello et al., 2008). Hence, feelings of guilt and shame could be attenuated by the persistent attitude to consider immoral behavior as justified, or as a legitimate reaction to a provocation.

Dynamic Associations between Moral Emotions, Moral Disengagement and Aggressive Behavior

Contrary to our hypotheses, we did not find the theoretically postulated longitudinal pattern of associations among the three constructs. More precisely, findings of the present study indicate that aggression is not the outcome of the association between emotions and cognitions. Instead, high moral disengagement decreased moral emotions between T1 and T2 as well as between T3 and T4, while it predicted higher aggressive behavior between T2 and T3 as well as between T3 and T4. The present findings suggest that moral disengagement attenuates the feelings of shame and guilt and that it increases aggressive behavior. However, no longitudinal mediation effects between the three constructs were found. Hence, the present data do not support the theoretical idea that immoral cognitions and moral emotions operate conjointly in explaining early adolescents' aggressive behavior – at least not when looking at these variables longitudinally. Instead, the present study suggests that cognitive distortions adopted to interpret social interactions exert a strong influence on early adolescents' behavior. We might speculate that moral emotions may still be important, but only concurrently, while the moral wrongdoing is carried out.

Strengths and Limitations

The present study adds novel findings to the literature about cognitive and emotional moral dimensions and their relations with aggressive behavior during early adolescence. The four longitudinal waves and the rigorous statistical analyses constitute the main strengths of this study. Nonetheless, the present study is not exempt from limitations.

Due to time constraints in schools, it was not possible to measure aggressive behavior at T2. This missing data pattern prevents us from keeping track of the associations between aggression and moral emotions and moral disengagement through the second wave. A second limitation is related to the exclusive use of self-reports in the present study, which may have increased the strength of the observed associations. Future research should use a multi-method and multi-informant approach (e.g., combining self and peer-reports). Similarly to previous studies, we summed up scores of hypothetical situations involving both omission of prosocial duties and intentional harm (Arsenio, 2015). Future research may differentiate between prosocial situations and subtypes of aggressive behaviors (e.g., reactive and proactive). Furthermore, we suggest that future researches could use multiple instruments to investigate moral emotions, while detecting their strength (i.e., intensity). Finally, future studies may investigate the possible moderator role of gender and the interactions of moral disengagement and moral emotions in affecting social behaviors may be tested.

Conclusion and Implications for Prevention

The present data suggest the existence of complex and dynamic processes between moral disengagement, moral emotions, and aggressive behavior. In particular, our findings indicate that moral disengagement and aggressive behavior should be tackled conjointly in future intervention programs. Contrasting moral disengagement and aggressive behavior might encourage early adolescents' moral concern (i.e., moral emotions) over their wrongdoings. The strategy of inducing feelings of shame, guilt or other moral emotions (e.g., empathy) could encourage students to recognize the distress caused to others because of their

aggressive conduct (Thornberg et al., 2015). In conclusion, we suggest that whole school prevention approaches should include cognitive and emotional dimensions of morality within their components while tackling aggressive behavior among early adolescents.

References

Ahmed, E. (2006). Understanding bullying from a shame-management perspective: Findings from a three-year follow-up study. *Educational & Child Psychology, 23(2),* 25-39.

Arsenio, W. L. (2015). Moral Emotions Attributions and Aggression. In M. Killen and J. G. Smetana (Eds). *Handbook of Moral Development* (pp. 235-255). New York and London: Psychology Press, Taylor and Francis Group.

Bandura, A. (1999). Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review, 3(3),* 193-209. doi: 10.1207/s15327957pspr0303_3

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Mechanisms of moral disengagement in the exercise of moral agency. *Journal of Personality and Social Psychology, 71(2)* 364-374. doi: 10.1037/0022-3514.71.2.364

Baraldi, A. N., & Enders, C. K. (2013). Missing Data Methods. In T. Little (Ed.), Oxford *Handbook of Quantitative Methods: Vol. 2.* New York: Oxford University Press.

Bybee, J. (1998). *Guilt and Children*. San Diego, California: Academic Press. doi: 10.1016/B978-012148610-5/50005-9

Caravita, S. C. S., Gini, G., & Pozzoli, T. (2012). Main and moderated effects of moral cognition and status on bullying and defending. *Aggressive Behavior, 38(6),* 456-468. doi: 10.1002/ab.21447

Caravita, S. C. S., Sijtsema, J. J., Rambaran, J. A., & Gini, G. (2014). Peer influences on moral disengagement in late childhood and early adolescence. *Journal of Youth and Adolescence*, *43(2)*, 193-207. doi:10.1007/s10964-013-9953-1

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14(3)*, 464–504. doi: 10.1080/10705510701301834

Chen, F. F., Sousa, K. H., & West. S. G. (2005). Testing measurement invariance of second-order factor models. *Structural Equation Modeling*, *12(3)*, 471–492. doi: 10.1177/0734282911406661

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66(3)*, 710–722. doi: 10.1111/j.1467-8624.1995.tb00900.x

Gradinger, P., Yanagida, T., Strohmeier, D., & Spiel, C. (2016). Effectiveness and Sustainability of the ViSC Social Competence Program to Prevent Cyberbullying and Cyber-Victimization: Class and Individual Level Moderators. *Aggressive Behavior*, *42(2)*, 181-193.

Gini, G. Pozzoli, T. & Hymel, S. (2014). Moral disengagement among children and youth: A meta-analytic review of links to aggressive behavior. *Aggressive Behavior, 40(1),* 56-68. doi: 10.1002/ab.21502

Malti, T. (2016). Toward an integrated clinical-developmental model of guilt. *Developmental Review, 39(1),* 13-36. doi: 10.1016/j.dr..2015.11.001

Malti, T., Colasante, T., Zuffianò, A., & de Bruine, M. (2016). The physiological correlates of children's emotions in contexts of moral transgressions. *Journal of Experimental Child Psychology, 142(1),* 372-381. doi: 10.1016/j.jecp.2015.09.017

Malti, T., Gummerum, M., Keller, M., & Buchmann, M. (2009). Children's moral motivation, sympathy, and prosocial behavior. *Child Development, 80 (2),* 442-460. doi: 10.1111/j.1467-8624.2009.01271.x

Malti, T., Gummerum, M., Keller, M., Chaparro, M.P., & Buchmann, M. (2012). Early sympathy and social acceptance predict the development of sharing in children. *PLoS ONE, 7(12)*, e52017. doi:10.1371/journal.pone.0052017

Malti, T. & Keller, M. (2010). The relation of elementary school children's externalizing

behavior to emotion attributions, evaluation of consequences and moral reasoning. *European Journal of Developmental Psychology, 6(5),* 592-614. doi: 10.1080/17405620701497497

Malti, T., & Ongley, S. F. (2015). The Development of Moral Emotions and Moral Reasoning. *Handbook of Moral Development* (pp. 163-183). New York and London: Psychology Press, Taylor and Francis Group.

Mazzone, A. Camodeca, M. & Salmivalli, C. (2016). Interactive effects of guilt and moral disengagement on bullying, defending and outsider behavior. *The Journal of Moral Education, 45(4),* 419-432. doi: 10.1080/03057240.2016.1216399

McAlister, A. L., Ama, E., Barroso, C., Peters, R. J., & Kelder, S. (2000). Promoting tolerance and moral engagement through peer modeling. *Cultural Diversity and Ethnic Minority Psychology, 6(4),* 363-373. doi:10.1037/1099-9809.6.4.363

Menesini, E., & Camodeca, M. (2008). Shame and guilt as behavior regulators: Relationships with bullying, victimization and prosocial behavior. *British Journal of Developmental Psychology, 26(2),* 183-196. doi: 10.1348/026151007X205281

Menesini, E., Sanchez, V., Fonzi, A., Ortega, R., Rosario, O., Costabile A., & Lo Feudo, G. (2003). Moral emotions and bullying: A cross-national comparison of differences between bullies, victims and outsiders. *Aggressive Behavior, 29(6),* 515-530. doi: 10.1002/ab.10060

Millsap, R. E., & Yun-Tein, J. (2004). Assessing factorial invariance in ordered-categorical measures. *Multivariate Behavioral Research, 39(3)*, 479-515. doi: 10.1207/S15327906MBR3903_4

Muthén, L. K., & Muthén, B. O. (1998-2015). *Mplus user's guide*. Seventh edition. Los Angeles, CA: Muthén & Muthén.

Newsom, J. T. (2015). *Longitudinal structural equation modeling: A comprehensive*

introduction. New York: Routledge.

Obermann, M. L. (2011). Moral disengagement among bystanders to school bullying. *Journal of School Violence, 10(3),* 239-257. doi: 10.1080/15388220.2011.578276

Obermann, M. L. (2013). Temporal aspects of moral disengagement in school bullying: Crystallization, or Escalation? *Journal of School Violence, 12(2),* 193-210. doi:10.1080/15388220.2013.766133

Olthof, T., Schouten, A., Kuiper, H., Stegge, H., & Jennekens-Schinkel, A. (2000). Shame and guilt in children: Differential situational antecedents and experiential correlates. *British Journal of Developmental Psychology, 18(1),* 51–64. doi: 10.1348/026151000165562

Paciello, M., Fida, R., Tramontano, C., Lupinetti, C., & Caprara, G. V. (2008). Stability and change of moral disengagement and its impact on aggression and violence in late adolescence. *Child Development*, *79(5)*, 1288-1309. doi:10.1111/j.1467-8624.2008.01189.x.

Roos, S., Hodges, E. V. E., & Salmivalli, C. (2014). Do guilt- and shame-proneness differentially predict prosocial, aggressive, and withdrawn behaviors during early adolescence? *Developmental Psychology, 50(3)*, 941-946. doi: 10.1037/a0033904

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58(1),* 435-372. doi: 10-1146/annurev.psych.56.091103.070145

Tangney, J. P. (1999). The self-conscious emotions: Shame, guilt, embarrassment and pride. In Dalgleisj, T., Powers, M. J. (Eds). *Handbook of Cognition and Emotion* (541-568). New York: Wiley.

Thornberg, R., Pozzoli, T., Gini, G., & Jungert, T. (2015). Unique and interactive effects of moral emotions and moral disengagement on bullying and defending among school

children. *Journal of Elementary School, 116(2),* 322-337. doi:10.1086/683985.

Tracy, J. L., & Robins, R. W. (2006). Appraisal antecedents of shame and guilt: Support for a theoretical model. *Journal of Personality and Social Psychology, 32(10),* 1339-1351. doi: 10.1177/ 0146167206290212.

van Buuren, S., Brand, J. P. L., Groothuis-Oudshoorn C. G. M., & Rubin, D. B. (2006) Fully conditional specification in multivariate imputation. *Journal of Statistical Computation and Simulation*, *76(12)*, 1049–1064. doi: 10.1080/10629360600810434

Veenstra, R., & Dijkstra, J. K. (2011). Transformations in adolescent peer networks. In B. Laursen & W. A. Collins (Eds.), *Relationship pathways: From adolescence to young adulthood* (pp. 135–154). Los Angeles, CA: Sage.

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle, D. Kaplan, G. Marcoulides, & S. West (Eds.), *Handbook of structural equation modeling* (pp. 209–231). New York, NY: Guilford Press.

Yanagida, T., Strohmeier, D. & Spiel, C. (2016). Dynamic Change of Aggressive Behavior and Victimization among Adolescents: Effectiveness of the ViSC Program. *Journal of Clinical Child and Adolescent Psychology*, *45(6),* 1-15. doi: 10.1080/15374416.2016.1233498

Table 1

Study Design

	Wave 1 October 2009	*Wave 2* *February 2010*	*Wave 3* May/June 2010	*Wave 4* *October/November 2010*
Measures collected	Moral Emotions Moral Disengagement Aggressive Behavior	Moral Emotions Moral Disengagement	Moral Emotions Moral Disengagement Aggressive Behavior	Moral Emotions Moral Disengagement Aggressive Behavior

Table 2

Demographic Characteristics of the Sample by Occasion of Measurement

Statistic	Wave 1	Wave 2	Wave 3	Wave 4
N	245	240	246	116
N school / N class	3 / 20	3 / 20	3 / 20	2 / 13
%girls	43.03%	41.42%	41.87%	57.76%
M age (SD)	12.16 (0.85)	12.43 (0.82)	12.70 (0.89)	13.34 (0.93)

Note. Because in wave 4 one school comprising seven classes dropped out, the gender distribution of the sample changed

Table 3

Means, Standard Deviations, and Zero-Order Correlations for all Study Variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Moral Disengagement Wave 1	1.000										
(2) Moral Disengagement Wave 2	**.578**	1.000									
(3) Moral Disengagement Wave 3	**.476**	**.516**	1.000								
(4) Moral Disengagement Wave 4	**.455**	**.306**	**.415**	1.000							
(5) Moral Emotion Wave 1	**-.173**	**-.144**	-.112	**-.133**	1.000						
(6) Moral Emotion Wave 2	**-.228**	**-.259**	**-.126**	**-.185**	**.175**	1.000					
(7) Moral Emotion Wave 3	**-.188**	-.108	**-.125**	**-.183**	**.271**	**.231**	1.000				
(8) Moral Emotion Wave 4	**-.437**	**-.381**	**-.271**	**-.363**	**.227**	**.242**	**.287**	1.000			
(9) Aggressive Behavior Time 1	**.354**	**.240**	**.282**	**.358**	-.094	-130	-.129	**-.267**	1.000		
(10) Aggressive Behavior Time 3	**.386**	**.290**	**.245**	**.339**	-.121	-.155	**-.205**	**-.337**	.581	1.000	
(11) Aggressive Behavior Time 4	**.446**	**.308**	**.283**	**.377**	-.154	-.133	**-.219**	**-.429**	.499	.785	1.000
M	-0.06	0.00	0.06	0.00	2.28	2.46	2.26	1.92	-0.03	0.03	-0.04
SD	0.81	0.89	0.83	1.02	1.34	1.47	1.54	1.46	1.92	2.13	2.13

Note. Statistically significant results at $\alpha = .05$ are boldface.

Table 4

Model Comparison

Model	χ^2	*df*	BIC
Aggressive Behavior (AB) and Moral Disengagement (MD)			
(1) AB → MD	73.47	7	6137.828
(2) MD → AB	69.88	7	6128.150
(3) AB → MD / MD → AB	47.16	5	**6121.226**
Aggressive Behavior (AB) and Moral Emotion (ME)			
(1) AB → ME	27.02	7	**7837.574**
(2) ME → AB	60.10	7	7866.440
(3) AB → ME / ME → AB	15.56	5	7839.107
Moral Disengagement (MD) and Moral Emotion (ME)			
(1) MD → ME	65.71	9	**8450.089**
(2) ME → MD	86.69	9	8479.069
(3) MD → ME / ME → MD	64.26	6	8460.473
Aggressive Behavior (AB), Moral Disengagement (MD) and Moral Emotion (ME)			
(1) MD → ME → AB	166.90	25	11197.102
(2) ME → MD → AB	175.05	25	11206.488
(3) MD → ME → AB / ME → MD → AB	137.90	20	**11191.310**

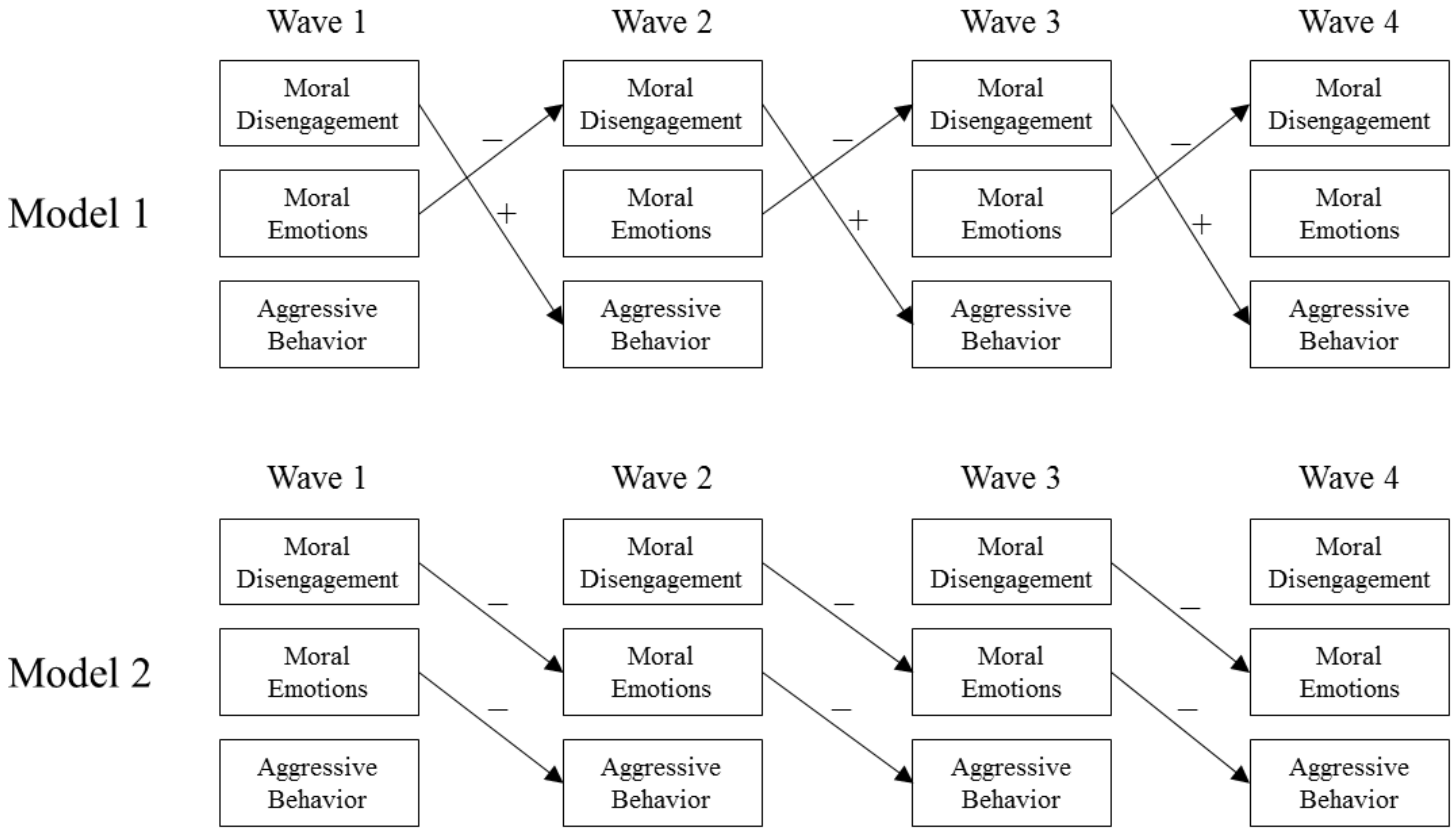

Figure 1. Hypothesized mediational models for the dynamic association between moral disengagement, moral emotions, and aggressive behavior.

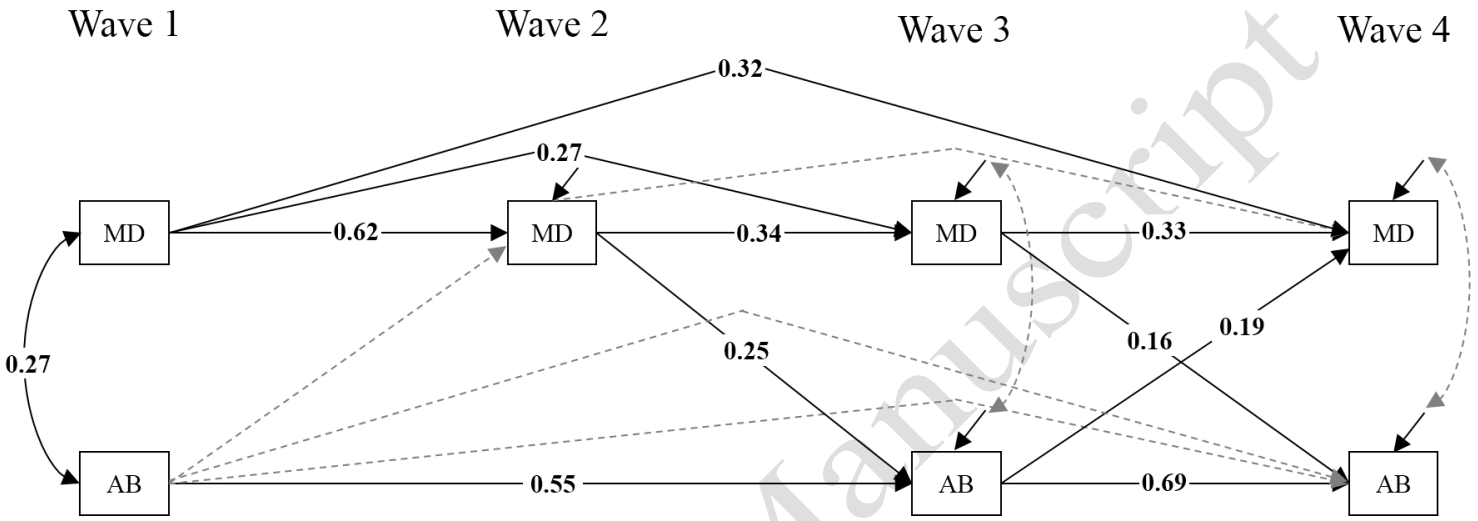

Figure 2. Results of the longitudinal mediation model (Model 3): Unstandardized solution. *Note.* MD = Moral Disengagement; AB = Aggressive behavior; Statistically non-significant paths and covariances are shown in gray dashed lines; Parameter estimates reported only for statistically significant paths and covariances.

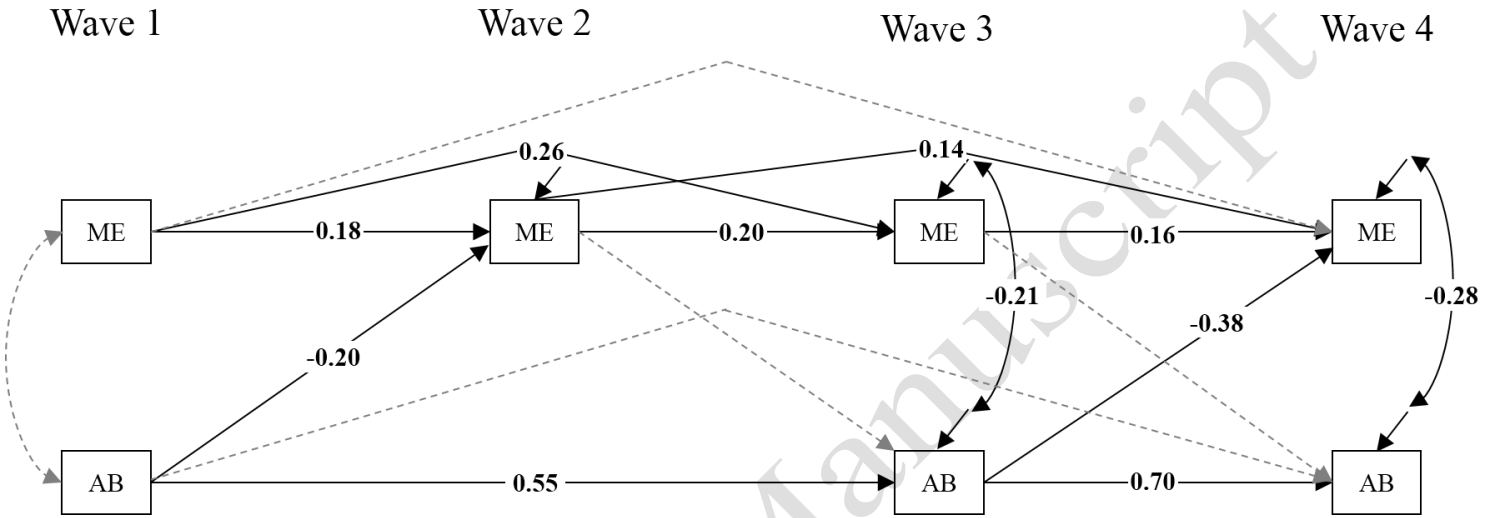

Figure 3. Results of the longitudinal mediation model (Model 3): Unstandardized solution. *Note.* ME = Moral Emotion; AB = Aggressive behavior; Statistically non-significant paths and covariances are shown in gray dashed lines; Parameter estimates reported only for statistically significant paths and covariances.

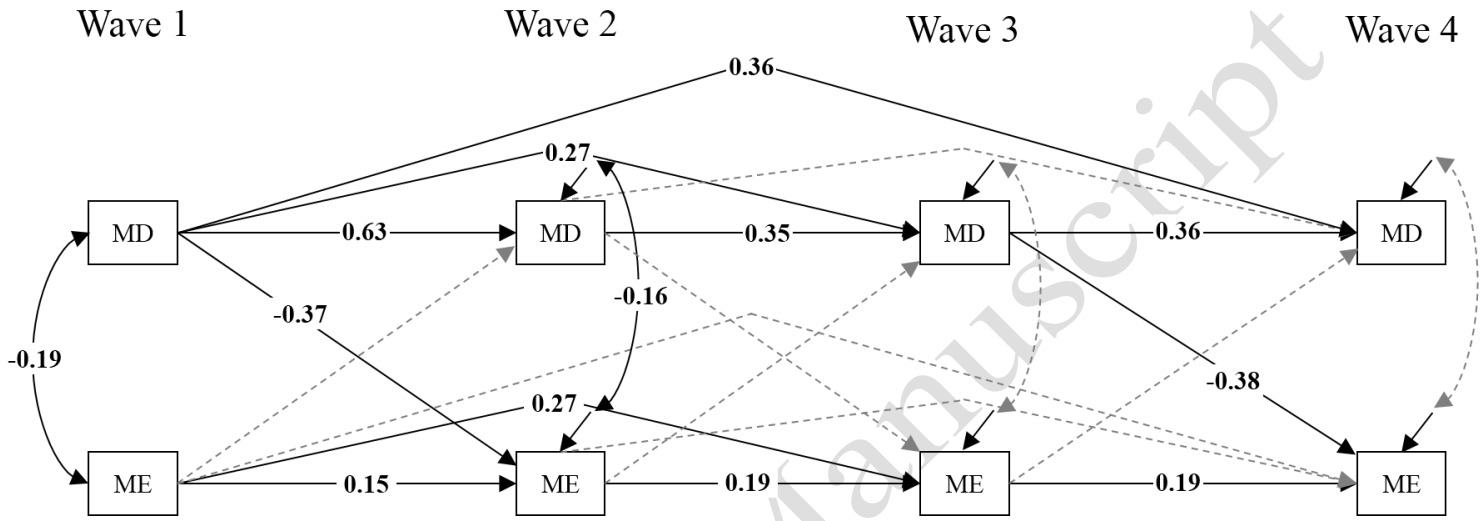

Figure 4. Results of the longitudinal mediation model (Model 3): Unstandardized solution. *Note.* MD = Moral Disengagement; ME = Moral Emotion; Statistically non-significant paths and covariances are shown in gray dashed lines; Parameter estimates reported only for statistically significant paths and covariances.

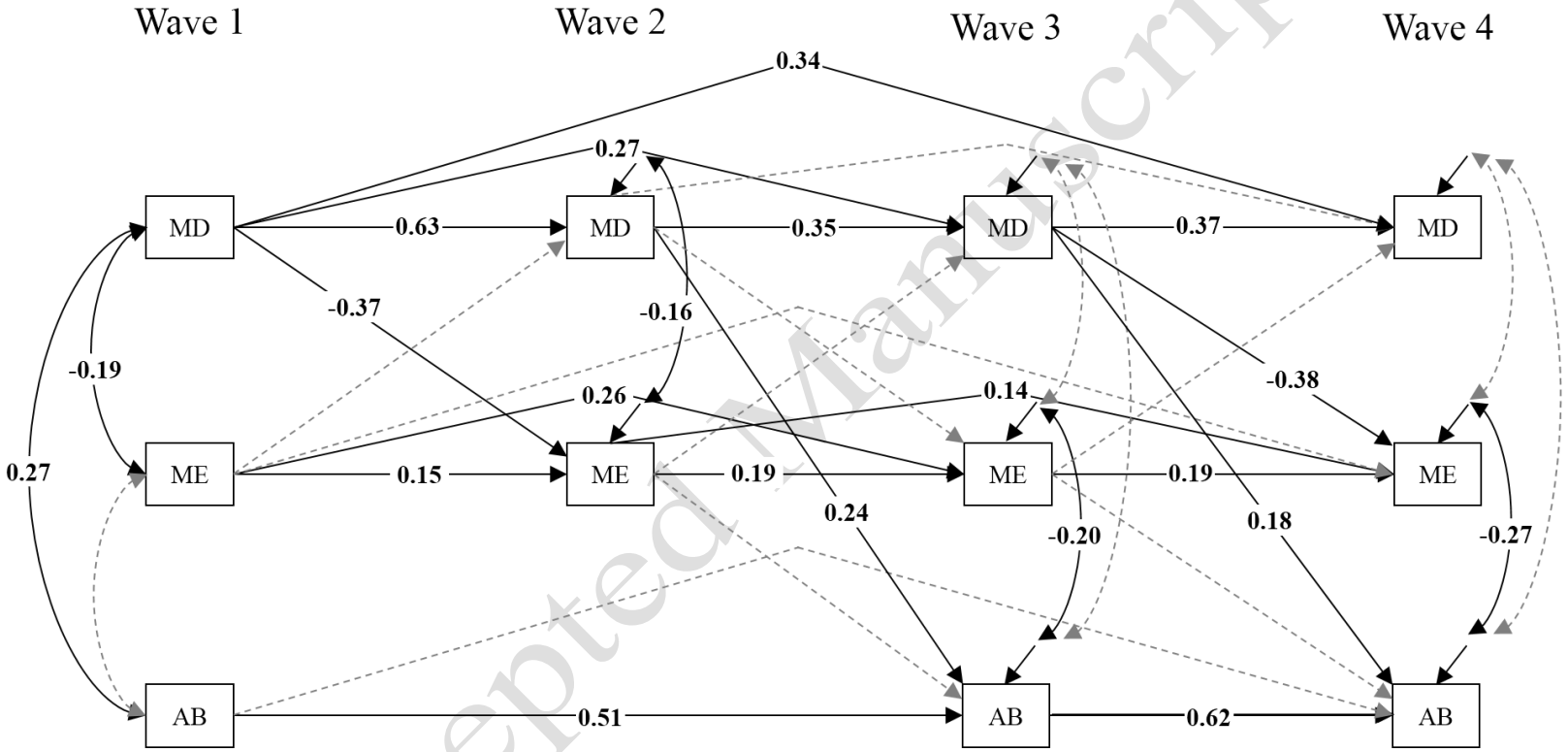

Figure 5. Results of the longitudinal mediation model (Model 3): Unstandardized solution. *Note.* MD = Moral Disengagement; ME = Moral Emotion; AB = Aggressive behavior; Statistically non-significant paths and covariances are shown in gray dashed lines; Parameter estimates reported only for statistically significant paths and covariances.