Learning and Instruction 50 (2017) 14–20

Contents lists available at ScienceDirect

Learning and Instruction

journal homepage: www.elsevier.com/locate/learninstruc

Integrative emotion regulation predicts adolescents' prosocial behavior through the mediation of empathy

Moti Benita [a, *], Tal Levkovitz [b], Guy Roth [b]

[a] Department of Counseling and Human Development, University of Haifa, Haifa, Israel
[b] Department of Education, Ben-Gurion University of the Negev, Beer-Sheva, Israel

ARTICLE INFO

Article history:
Received 22 November 2015
Received in revised form
13 September 2016
Accepted 9 November 2016
Available online 23 November 2016

Keywords:
Integrative emotion regulation
Prosocial behavior
Empathy
Indirect effect

ABSTRACT

The ability to regulate emotion plays a key role in the development of prosocial behavior. This study uses the self-determination theory conceptualization of emotion regulation to explore whether children's emotion regulation styles differentially predict their prosocial behavior in class. For the study, 240 sixth and seventh grade Israeli students and their teachers responded to self-report measures. The results of structural equation modeling showed integrative emotion regulation predicts student prosocial behavior, both directly and through the mediation of empathy towards classmates. These findings suggest integrative emotion regulation can play an important role in promoting children's psychosocial adjustment in class.

1. Introduction

Adaptive emotion regulation has long been acknowledged as important for social functioning and psychological well-being, especially in children and adolescents (Eisenberg, 2000; Eisenberg, Fabes, & Spinrad, 2006; Roth & Assor, 2012). Specifically, emotion regulatory capacities affect moral emotions, empathy, and prosocial behavior (e.g., Eisenberg et al., 1997, 2004). This study uses self-determination theory's (SDT; Ryan & Deci, 2000) conception of emotion regulation (Roth, Assor, Niemiec, Ryan, & Deci, 2009; Ryan, Deci, Grolnick, & La Guardia, 2006) to explore the relationship between types of emotion regulation and children's prosocial behavior.

1.1. Emotion regulation and children's social adjustment

Emotion regulation refers to the processes by which individuals influence what emotions they have, when they have them, how they experience them, and how they express them (Gross, 1998). Many researchers are interested in the development of emotion regulation in children. Some argue *effortful control* (EC; Eisenberg, Hofer, Sulik, & Spinrad, 2014) plays a key role in the development of emotional regulatory capacities. Effortful control includes the ability to inhibit a dominant response, activate a subdominant response, plan, and detect errors (Rothbart & Bates, 2006).

Researchers view EC as an important building block of emotion regulation and a crucial indicator of children's psychosocial adjustment. A large body of evidence has indicated that EC is important for children's psychosocial adjustment and for the prevention of antisocial behaviors and childhood aggression (Eisenberg et al., 2006). Specifically, several studies have found positive relationships between EC and adaptive indicators of social adjustment among children, such as empathy and prosocial behavior. For instance, children's EC has been positively related to self -reported or other-reported measures of dispositional empathy (Eisenberg, Wentzel, & Harris, 1998; Panfile & Laible, 2012; Rothbart, Ahadi, & Hershey, 1994). Similarly, adults' ratings of elementary school children's effortful attentional control and/or behavioral measure of persistence have been correlated with both peers' (e.g. Eisenberg et al., 1997) and teachers' ratings (Diener & Kim, 2004) of prosocial behavior. In other words, this line of research has shown that children who are skilled at regulating their attention and behavioral responses are not only more likely to feel concern for others but are also relatively more likely to help others.

Recently, however, researchers have been applying another important framework to the development of emotional regulatory capacities among children, the self-determination theory of

* Corresponding author. Department of Counseling and Human Development, University of Haifa, 199 Aba Khoushy Ave. Mount Carmel, Haifa 3498838, Israel.
E-mail address: benitamoti@edu.haifa.ac.il (M. Benita).

http://dx.doi.org/10.1016/j.learninstruc.2016.11.004
0959-4752/

emotion regulation (Roth & Assor, 2012; Roth et al., 2009; Ryan & Deci, 2000).

1.2. Self-determination theory and emotion regulation

SDT's framework for emotion regulation is based on the idea that emotion regulation can be both autonomous and controlled (Ryan, Deci, Grolnick, & Guardia, 2006). Autonomous emotion regulation refers to the experience of choice and volition with regard to emotional experiences; emotional integration is one form of this type of regulation. In contrast, controlled emotion regulation is characterized by feelings of internal compulsion to feel (or not to feel) in certain ways; controlled regulation forms include dysregulation and suppressive emotion regulation.

Emotion dysregulation is defined as one's inability to regulate emotions while one is experiencing them (Ryan et al., 2006). The behavioral tendencies inherent in the emotions will be expressed without one's intention or volition. Suppressive regulation involves rigid and consistent avoidance or minimization of negative emotions, accompanied by a sense of internal compulsion to suppress the emotion (Roth et al., 2009). Finally, emotional integration is marked by a differentiated awareness of one's emotional states and the capacity to use this sensitivity to regulate one's behavior volitionally (Roth et al., 2014; Ryan et al., 2006). In practice, integrative regulation of emotion is evidenced in the adoption of an interested and explorative stance towards one's own emotions (especially unpleasant emotions); taking such a stance allows one to align specific emotional experiences with broader goals and aims in a given situation. According to SDT, the sense of autonomy that characterizes integrative regulation of emotions is crucial for positive well-being (Ryan & Deci, 2000); therefore, it is considered an adaptive form of emotion regulation.

Roth et al. (2009) explored the antecedents of the various emotion regulation styles. They found integrative emotion regulation was predicted by autonomy-supportive parenting practices through the mediation of choice with regard to the regulation of negative emotions. Alternatively, suppressive emotion regulation was predicted by controlling parenting practices through the mediation of compulsion to suppress negative emotions. These results suggest that parenting practices giving rise to a sense of autonomy in the need to regulate emotions also predict integrative emotion regulation, as reflected in the children's active exploration of emotional experiences when they arose, and their regulation according to the situational and long-term demands. On the other hand, parenting practices giving rise to a sense of control in the regulation of emotion predicted suppressive emotion regulation, reflected in a general tendency to take a restricted and disinterested stance towards negative emotions and to minimize their experience and expression when they arose.

There are a number of noteworthy similarities between emotional integration and EC (Eisenberg et al., 2014). For example, neither considers dysregulation to represent optimal self-regulation of emotions. In SDT, however, emotional integration is not viewed in terms of the development of processes that enable children to exert the right amount of control. Rather, it is defined by the development of processes and structures that allow emotion regulation through choice, without pressures or demands.

EC is often considered a dual concept, comprised of two complementary aspects: attentional shifting and inhibitory control (e.g., Hofer, Eisenberg, & Reiser, 2010). In this line of thought, adaptive emotional regulatory processes are defined in terms of the *amount* of control one exerts in one's efforts to regulate emotions. Notably, in this conceptualization, there is no differentiation between different *qualities* of control.

Meanwhile, the SDT conceptualization of emotion regulation suggests one can sometimes exert a considerable *amount* of control over one's emotions; however, if the exertion is controlled, it represents a maladaptive *quality* of emotion regulation. On the one hand, people who use emotional suppression as their main emotional regulatory strategy can put much effort in trying to suppress and hide their emotional experience. This type of control may have a negative outcome (Roth et al., 2009, 2014). On the other hand, those who use integrative emotion regulation sometimes accept negative emotional experiences and, therefore, do not necessarily make efforts to control their emotions. Instead, the emotional experience is regarded as informative, an important guide in goal-directed behavior.

1.3. Types of emotion regulation and the prediction of socioemotional outcomes

Of the three types of emotion regulation defined by SDT, emotion dysregulation has been studied most extensively in children's psychosocial adjustment, but mostly using frameworks other than SDT. Emotion dysregulation has been associated with various negative outcomes, including child psychopathology and poor social adjustment (Cole & Hall, 2008; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Roth & Assor, 2012).

Recently, researchers have begun to explore the consequences of the other two types of emotion regulation defined by SDT, namely, integrative and suppressive regulation. Studies have demonstrated that, unlike suppression, integrative emotion regulation is consistently linked to adaptive outcomes (e.g. Roth & Assor, 2012; Roth et al., 2014). Specifically, in the domain of interpersonal relationships, Roth and Assor (2012) have found integrative emotion regulation to be positively related to the ability to support a partner who expresses emotional and instrumental difficulties, whereas suppressive emotion regulation is negatively related. These results indicate a possible link between integrative emotion regulation and empathy, which, in turn, could predict prosocial behavior (Eisenberg & Miller, 1987).

1.4. Empathy as an outcome of emotion regulation

The ability to empathize with another individual has long been considered to have positive consequences for social interactions and relationships (see Davis, 1996). Empathy, or an affective concern for an individual in distress Young, Fox, & Zahn-Waxler, 1999), is known to be a precursor of prosocial and moral behavior (e.g., Davis, 1996; Eisenberg & Miller, 1987; Hoffman, 1990). Given this understanding, many researchers are interested in the factors predicting individual differences in empathic responding.

Of note, Eisenberg and her colleagues first demonstrated, and have continued to demonstrate, that emotional regulatory capacities play an important role in promoting children's empathy (Eisenberg et al., 1998; Eisenberg et al., 2007, 1996; Valiente et al., 2004). These researchers have suggested that well-regulated individuals' abilities to modulate their negative emotions and to maintain an optimal level of emotional arousal enable them to enhance their attention towards the other's situation. Thus, adaptive emotion regulation is evidenced in EC abilities, especially the capacity to control the focus of or shifts in attention.

The present study suggests that, beyond the ability to focus or shift attention, empathy is predicted by one's capacity to cognitively and volitionally engage in the exploration of one's own emotional experiences and acknowledge them, more specifically, those capacities characterizing integrative emotion regulation. As the relations between integrative emotion regulation and empathy have not yet been explored, the topic is of considerable interest.

1.5. The current investigation

This study relies on the assumption that the differentiated awareness of one's own emotional experiences typical of integrative regulation contributes to an awareness of others' emotional experiences. We suggest such awareness may result in both a greater empathy toward others and an inclination to initiate prosocial behaviors. More specifically, following previous research (for a review, see Eisenberg et al., 2006), we suggest empathy will mediate the relationship between adaptive emotion regulation and prosocial behavior among children and young adolescents, because it enables them to recognize others' emotional and instrumental difficulties. This awareness of one's own and others' emotional experiences is expected to be exclusive to integrative emotion regulation and relies on the ability to recognize and accept one's own feelings. Therefore, we hypothesize that unlike suppression and dysregulation, integrative regulation will predict prosocial behavior among elementary and junior high students through the mediation of empathy towards other children.

2. Method

2.1. Participants and procedure

The sample consisted of 241 Israeli elementary and junior high school students (52% females) and their homeroom teachers in sixth (elementary level) and seventh (junior high level) grades from 20 classes in three schools serving students from lower-middle to middle class socioeconomic backgrounds. Mean age was 12.5 years ($SD = 0.58$). Students completed the questionnaires, administered by trained research assistants, in class during one session lasting about 30 min. The teacher was not present in the classroom. Parental consent was obtained according to Ministry of Education guidelines. Research assistants administered the teachers' questionnaires and collected them in sealed envelopes one week later. All 20 teachers returned the questionnaires. Research assistants reported 17 students (7% of the total sample) who did not fill the questionnaires seriously; these students were removed from the analyses, leaving the study with a sample of 224 students.

2.2. Measures

All items were scored on 5-point Likert-type scales, ranging from 1 (strongly disagree) to 5 (strongly agree), except where indicated.

2.2.1. Dysregulation, suppressive regulation, and integrative regulation

Three scales from Roth et al. (2009) measured participants' dominant emotion regulation types in relation to anxiety and tension. Each scale originally consisted of six items. Principal component exploratory factor analysis with varimax rotation yielded three factors with eigenvalues of 6.66, 2.63 and 1.20. The first factor consisted of six items tapping dysregulation, with factor loadings ranging from 0.70 to 0.83; a sample item is “When I am anxious or stressed, I usually feel I can't control my behavior.” More than 37% of the variance was accounted for by this factor. The second factor consisted of six items tapping integrative, with factor loadings ranging from 0.76 to 0.79; a sample item is “When I am anxious or stressed it's important for me to understand why I feel that way”. More than 14% of the variance was accounted for by this factor. The third factor comprised six items tapping suppressive regulation, with factor loadings ranging from 0.54 to 0.84; a sample item is “Usually, I ignore feelings of anxiety and stress ”. More than 11% of the variance was accounted for by this factor. Cronbach's alphas for the sample were 0.87, 0.85 and 0.89 for dysregulation, suppression, and integration, respectively.

2.2.2. Empathy

The dispositional empathy-sympathy scales (Eisenberg et al., 1996) were used to measure participants' tendency to feel empathy towards children in need. Sample items include: “When I see someone being picked on, I feel kind of sorry for them” (sympathy), and “I get upset when I see a girl being hurt” (empathy). Each scale consisted of three items. Principal component exploratory factor analysis with varimax rotation yielded one factor with an eigenvalue of 4.3. Factor loadings ranged from 0.71 to 0.91. More than 70% of the variance was accounted for by this factor. Thus, all items in this scale tapped the same theoretical construct of concern and empathy. Cronbach alpha for this scale was 0.92.

2.2.3. Prosocial behavior

A three-item measure of prosocial behavior was taken from Assor, Roth, and Deci (2004). Participants were asked to indicate the frequency with which they had behaved prosocially toward classmates in the past month on a 5-point Likert-type scale ranging from 1 (never) to 5 (every day). Principal component exploratory factor analysis with varimax rotation yielded one factor with an eigenvalue of 2.06. More than 68% of the variance was accounted for by this factor. A sample item is: “I was considerate toward others”. Cronbach alpha for this scale was 0.77.

2.2.4. Teachers' reports of children's prosocial behavior

Homeroom teachers rated each student's prosocial behavior on the corresponding subscale of the child behavior scale (CBS; Ladd & Profilet, 1996). All items were rated on a 5-point scale ranging from 1 (doesn't apply) to 5 (certainly applies). This subscale was originally composed of seven items. Principal component exploratory factor analysis with varimax rotation yielded two factors, with eigenvalues of 3.57 and 1.46. The first factor consisted of four items tapping sociability, with factor loadings ranging from 0.78 to 0.87; sample items include “This child is friendly with classmates” and “This child is kind toward classmates”. More than 50% of the variance was accounted for by this factor. The second factor consisted of three items tapping behaviors indicating behavioral concern; sample items include “Seems concerned when classmates are distressed” and “Offers help or comfort when classmates are upset”. Factor loading ranged from 0.81 to 0.87. More than 20% of the variance was accounted for by this factor. Cronbach's alphas were 0.85 and 0.84 for sociability and behavioral concern, respectively. Of these two factors, only behavioral concern included an emotional component; thus, we suspected that only this factor would be related to emotion regulation and empathy.

2.2.5. Social desirability

We used the shortened Children Social Desirability Scale (CSD-S; Miller et al., 2014) to control for students' tendency to not report honestly. This scale originally consisted of 12 items. A sample item is “Have you ever felt like saying unkind things to a person?” Responses on this scale were dichotomous (“yes” or “no”). For nine items, a social desirable response was indicated by a “no” answer, and for three items it was indicated by a “yes” answer. After reversing the “yes” answers, each socially desirable response was coded as “1” and non-desirable responses were coded as “0”. The reversed items impaired the scale's reliability and therefore were removed. We then summed up the answers, so that the scale scores ranged from 0 to 9, with higher scores indicating a greater tendency to answer in a socially desirable manner. The reliability for this measure was 0.65.

3. Results

3.1. Preliminary analyses

Table 1 presents descriptive statistics and correlations of all study variables. As expected, integrative regulation had significant positive correlations with students' reports of prosocial behavior and teachers' reports of behavioral concern. Suppressive regulation was positively correlated with students' reports of prosocial behavior but uncorrelated with teachers' reports of behavioral concern and sociability. However, when students' reports of prosocial behavior and both suppressive regulation and integrative regulation were regressed simultaneously, only integrative regulation significantly predicted the outcome variable ($\beta = 0.29$, $p < 0.01$; $\beta = 0.06$, $p < 0.43$, for integration and suppression, respectively). In addition, Table 1 shows dysregulation to have had no correlation with students' and teachers' reports of prosocial behavior. Moreover, while all three regulation styles were significantly positively correlated with empathy, empathy was more strongly correlated with integrative regulation than with dysregulation or suppression. When empathy was regressed on the three types of regulation, only integrative regulation emerged as a significant predictor of empathy ($\beta = 0.39$, $p < 0.01$; $\beta = 0.07$, $p < 0.66$; $\beta = 0.07$, $p < 0.36$, for integration, dysregulation and suppression, respectively). Therefore, in the final SEM model, we included integrative regulation as a single predictor.

Empathy had a significant positive correlation with students' reports of prosocial behavior, and to a lesser extent, with teachers' reports of behavioral concerns, but not with teachers' reports of sociability. Furthermore, adolescents' reports of prosocial behavior had a low positive correlation with teachers' reports of both behavioral concerns and sociability; these two last scales were moderately and positively correlated.

Interestingly, social desirability had a moderate negative correlation with students' dysregulation and a low positive correlation with students' reports of prosocial behavior and teachers' reports of behavioral concern. However, because the discussion of social desirability is beyond the scope of this paper, these correlations will not be discussed further.

Because the correlations coincided with the hypotheses, we conducted the more rigorous SEM analysis to test the hypothesized relations between integrative regulation and the outcome variables, as well as the hypothesized role of empathy as a mediator of the relations between integrative regulation and prosocial behavior in class.

3.2. Primary analyses

Our main analyses were conducted with structural equation modeling (SEM) using Mplus version 7.11 (Muthén & Muthén, 2012). Our estimation method was maximum likelihood with robustness to non-normality (MLR; Muthén & Muthén, 2012). Based on the data structure, wherein students were nested in 20 classes, we calculated the interclass correlations (ICC); this allowed us to estimate the within-class homogeneity and reliability of aggregated group-level constructs. We calculated two interclass coefficients: ICC(1) and ICC(2). The former represents the homogeneity of between-group (between-class) variance, and the latter represents the reliability of the aggregated group means (Bliese, 2000). Values of 5% or above for ICC(1) (e.g., Gavin & Hofmann, 2002) and at least 0.70 for ICC(2) (e.g., Lüdtke & Trautwein, 2007) indicate reasonable homogeneity and reliability, justifying aggregation. Our results indicated that in self-reported prosocial behavior, ICC(1) was less than 4%, and ICC(2) was 0.26; thus, multilevel analyses (HLM; Raudenbush & Bryk, 2002) were not required. Therefore, we adjusted for the hierarchical nature of the data (students nested within schools) by using class as the "cluster" variable in the "Type = Complex" method in Mplus. We assessed model fit using the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). RMSEA values of less than or equal to 0.05 were considered evidence of good fit (Schumacker & Lomax, 2010). CFI values of greater than or equal to 0.95 were considered further evidence of good fit (McDonald & Marsh, 1990). Missing data were marginal for the study (0.4%). Therefore, we ignored missing values, and all the available data were used to estimate the model using full information maximum likelihood.

In the primary analysis of the SEM model, social desirability served as a covariate alongside the main variables of interest, integrative regulation, empathy and prosocial behavior. In addition to the primary analyses, we conducted two subsidiary analyses. The first explored indirect effects of integrative emotion regulation on teachers' and students' reports of prosocial behavior via empathy. Indirect effects should be based on bootstrapped standard errors (with 1000 draws) (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). However, MLR is not appropriate for indirect bootstrapping models, so we implemented maximum likelihood (ML) as the method of estimation (Shrout & Bolger, 2002). The second subsidiary analysis was a test of alternative models comparing the relative fit of partial- and full-mediation models.

Fig. 1 presents the results of the SEM analysis. As shown, the results generally supported the hypotheses, as all path coefficients were significant and in the predicted directions. The fit indices indicated good model fit, $\chi^2_{(266)} = 271.78$, $p < 0.31$; RMSEA = 0.01; CFI = 0.97. The mediation analysis revealed significant indirect path from integrative regulation to both students' and teachers' reports of prosocial behavior through empathy (Estimate = 0.14, $p < 0.01$; Estimate = 0.10, $p < 0.03$, for students' and teachers' reports respectively).

To compare the goodness-of-fit of full and partial mediation

Table 1
Descriptive statistics for the study variables.

		M	*SD*	Pearson *r*							
				1	2	3	4	5	6	7	8
1	Integrative reg.	3.10	1.18	–							
2	Suppressive reg.	2.96	1.21	0.45**	–						
3	Dysregulation	2.13	1.04	0.42**	0.33**	–					
4	Empathy	3.81	1.15	0.44**	0.25**	0.22**	–				
5	Prosocial behavior (Adolescents report)	3.99	1.04	0.31**	0.19**	0.04	0.33**	–			
6	Prosocial – behavioral concern (Teachers' report)	3.11	1.14	0.12*	−0.07	−0.04	0.13*	0.15**	–		
7	Prosocial – sociability (Teachers' report)	3.88	0.87	−0.01	−0.09	−0.07	0.03	0.13*	0.42**	–	
8	Social desirability	4.96	2.23	0.09	0.00	−0.21**	0.11	0.15*	0.19**	0.06	–

**$p < 0.01$, *$p < 0.05$.

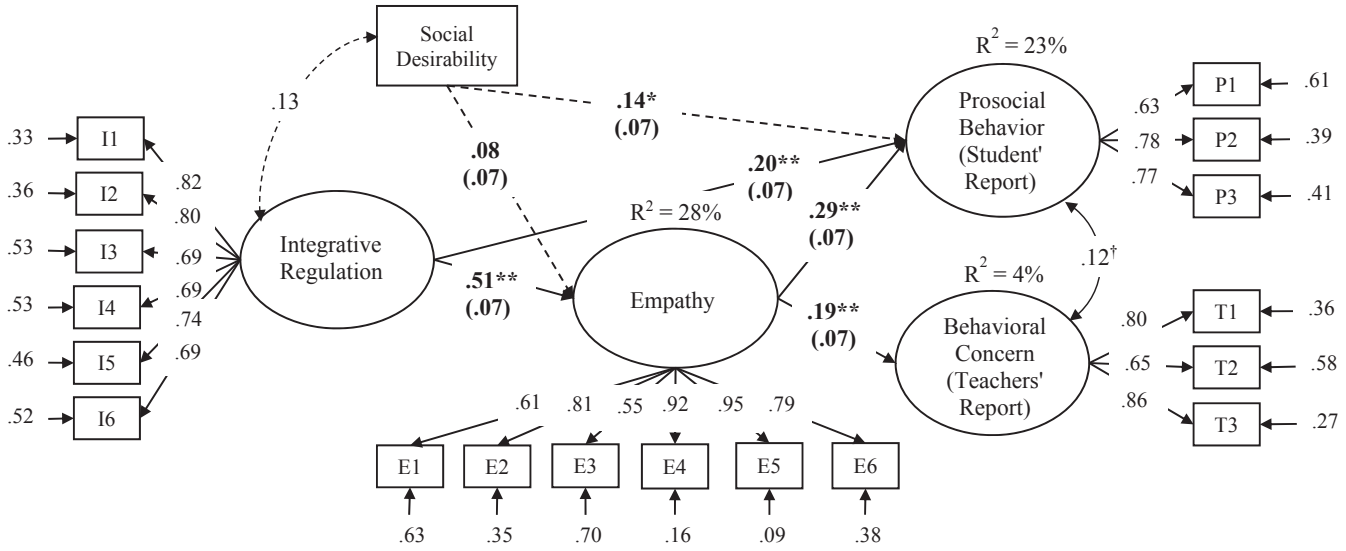

Fig. 1. Empathy as Mediator of the Relation between Integrative Regulation and Adolescents' Prosocial Behavior, controlling for social desirability. Regression standardized coefficients and their standard errors (in parentheses) are bolded. Dashed lines denote non-significant paths. N = 224. $^{**}p < 01$, $^{*}p < 05$, $^{\dagger}p < 10$.

model, we compared the model fit with and without the direct path from integrative emotion regulation to students' reports of prosocial behavior. This direct path was significant ($\beta = 0.23$, $p < 0.01$), and the results suggested it significantly improved the model fit: $\Delta\chi^2_{(1)} = 3.85$, $p < 0.05$. Thus, a partial mediation model was preferable. Next we tested the added fit by modeling the direct path between integrative regulation and teachers' reports of behavioral concern. This additional path was not significant ($\beta = 0.06$, $p < 0.36$); therefore, only a full mediation model fit the data for this variable.

In general, the results supported our hypotheses. Empathy partially mediated the relation between integrative emotion regulation and students' report of frequency of prosocial behavior, and it fully mediated the relation between integrative regulation and teachers' reports of behavioral concerns.

4. Discussion

Our results suggest integrative emotion regulation predicts prosocial behavior in class, both directly and through the mediation of empathy. Previous explorations of the relation between emotion regulation and social capacity have focused on a definition of emotional regulation that emphasizes EC (Eisenberg et al., 2014). Our results are the first to use the SDT's concept of emotion regulation to demonstrate the link between emotion regulation and psychosocial adjustment in class. This conceptualization of emotion regulation is of special merit because, unlike other conceptualizations, it highlights the role of autonomy and choice in emotional experience and expression. SDT considers a sense of autonomy to be a crucial prerequisite of well-being (Ryan et al., 2006).

The present study adds to accumulating evidence of the benefits of integrative emotion regulation among adolescents by considering the class or peer-relation context. These are also the first results to demonstrate a direct link between integrative emotion regulation and prosocial behavior. Although Roth and Assor (2012) found that integrative regulation predicts intimacy capacity in close relationships, defined as the ability to support a partner in need, they did not explicitly measure empathy or prosocial behavior. Moreover, their study relied solely on students' self-reports. In contrast, we rely on both students' and teachers' reports.

Interestingly, we found dysregulation and suppression mildly and positively related to empathy. However, and more importantly, these correlations disappeared when integrative regulation was controlled. Our findings suggest integrative regulation is a much more salient predictor of both empathy and prosocial behavior than dysregulation and suppression. Given the positive correlation of dysregulation and empathy and the null relation to prosocial behavior, we suggest that individuals employing dysregulation may have some capacity to recognize others' feelings and identify with them. However, because this recognition is often accompanied by heightened levels of emotional arousal among dysregulated individuals, it may give rise to personal distress (Eisenberg et al., 1996), identified by researchers as an empathy-related emotional response not conducive to prosocial behavior (for a review, see Eisenberg et al., 2006).

The mechanisms explaining the relationship between integrative regulation and empathy certainly merit further exploration. Following Roth and Assor (2012), people who are routinely engaged in exploring their emotional experiences, specifically unpleasant emotions, may be more aware of the possibility that others may experience these same emotions; this may heighten their ability to sympathize with others. To date, however, this assumption has not been empirically tested.

The current study, although preliminary, could lay the basis for future SDT-based intervention programs to promote adolescents' pro-social behavior and empathy. By focusing on practices that support students' orientation towards a volitional exploration of their emotional experience, the tolerance of negative emotions, and the adaptive and flexible use of emotions in goal-directed behavior, socialization agents may be able to promote empathy and adaptive social interactions. Interestingly, both Roth et al. (2009) and Roth and Assor (2012) have showed that autonomy-supportive parenting throughout children's negative emotional experiences could predict children's integrative regulation. Thus, a future SDT-based intervention program focusing on prosocial behavior could focus on promoting integrative emotion regulation by increasing the socializing agents' capacity to provide support for autonomy; this could involve legitimizing (and validating) children's

emotional experiences, providing choice and ensuring parental expectations are relevant (Roth & Assor, 2012).

Strengths of the present study include its use of multiple reporters and its rigorous approach to data analysis. Although relatively weak, the significant correlations between teachers' and students' reports suggest the relations between variables are not products of students' self-report bias. Of course, these relatively week correlations may be explained by the fact that the teachers' and students' reports measured prosocial behavior differently. That is, the students filled in questionnaires on their behavior over the last month, whereas the teachers considered the more global and trait-like tendencies of children to engage in prosocial behavior. We may have found stronger correlations if both reports had similar contexts.

There is a relatively small proportion of explained variance in the teachers' reports on behavioral concerns, but given the hierarchical structure of the data, other variables, such as the classes' motivational and emotional climate or teachers' individual characteristics, may explain a larger proportion of the variance, particularly between classes. Such types of variance cannot be explained by emotion regulatory styles, as these are individual in nature and are not expected to vary systematically between classrooms. Although it would have been interesting to control for the teachers' individual characteristics and demographics, we did not collect data relating specifically to teachers. Nor does the use of cross-sectional design allow causal interpretations. It is necessary to test the hypotheses longitudinally to draw causal inferences. The use of rigorous experimental designs to explore the causal relationships between emotion regulation types and prosocial behavior may also be warranted.

In sum, the study's findings add to the large body of evidence on the important role of emotional regulatory capacities in children's social adjustment. The findings go beyond those of previous studies by emphasizing that a sense of autonomy in one's emotional experiences is vital for adaptive psychosocial adjustment. Overall, the study highlights the benefits of integrative emotion regulation and suggests that the advantages span various domains, including children's psychosocial adjustment.

References

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self determination theory analysis. *Journal of Personality, 72*(1), 47–88. http://dx.doi.org/10.1111/j.0022-3506.2004.00256.x.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein, & S. W. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 349–381). San Francisco: Jossey-Bass. Retrieved from https://www.kellogg.northwestern.edu/rc/workshops/mlm/Bliese_2000.pdf.

Cole, P. M., & Hall, S. E. (2008). Emotion dysregulation as a risk factor for psychopathology. In T. Beauchaine, & S. P. Hinshaw (Eds.), *Child and adolescent psychopathology* (pp. 265–298). New Jersey: Wiley.

Davis, M. H. (1996). *Empathy: A social psychological approach*. Boulder, CO: Westview Press.

Diener, M. L., & Kim, D.-Y. (2004). Maternal and child predictors of preschool children's social competence. *Journal of Applied Developmental Psychology, 25*(1), 3–24. http://dx.doi.org/10.1016/j.appdev.2003.11.006.

Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology, 51*(1), 665–697. http://dx.doi.org/10.1146/annurev.psych.51.1.665.

Eisenberg, N., Fabes, R. A., Murphy, B., Karbon, M., Smith, M., & Maszk, P. (1996). The relations of children's dispositional empathy-related responding to their emotionality, regulation, and social functioning. *Developmental Psychology, 32*(2), 195–209. http://dx.doi.org/10.1037/0012-1649.32.2.195.

Eisenberg, N., Fabes, R. A., Shepard, S. A., Murphy, B. C., Guthrie, I. K., Jones, S., … Maszk, P. (1997). Contemporaneous and longitudinal prediction of Children's social functioning from regulation and emotionality. *Child Development, 68*(4), 642–664. http://dx.doi.org/10.1111/j.1467-8624.1997.tb04227.x.

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.) (6th ed.,*Social, emotional, and personality development: Vol. 3. Handbook of child psychology* (pp. 646–718). Hoboken, NJ: US: John Wiley & Sons Inc.

Eisenberg, N., Hofer, C., Sulik, M. J., & Spinrad, T. L. (2014). Self–regulation, effortful control, and their socioemotional correlates. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 157–172).

Eisenberg, N., Michalik, N., Spinrad, T. L., Hofer, C., Kupfer, A., Valiente, C., … Reiser, M. (2007). The relations of effortful control and impulsivity to children's sympathy: A longitudinal study. *Cognitive Development, 22*(4), 544–567. http://dx.doi.org/10.1016/j.cogdev.2007.08.003.

Eisenberg, N., & Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 101*(1), 91–119. http://dx.doi.org/10.1037/0033-2909.101.1.91.

Eisenberg, N., Spinrad, T. L., Fabes, R. A., Reiser, M., Cumberland, A., Shepard, S. A., … Thompson, M. (2004). The relations of effortful control and impulsivity to Children's resiliency and adjustment. *Child Development, 75*(1), 25–46. http://dx.doi.org/10.1111/j.1467-8624.2004.00652.x.

Eisenberg, N., Wentzel, M., & Harris, J. D. (1998). The role of emotionality and regulation in empathy-related responding. *School Psychology Review, 27*(4), 506.

Gavin, M. B., & Hofmann, D. A. (2002). Using hierarchical linear modeling to investigate the moderating influence of leadership climate. *The Leadership Quarterly, 13*(1), 15–33. http://dx.doi.org/10.1016/S1048-9843(01)00102-3.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271–299. http://dx.doi.org/10.1037/1089-2680.2.3.271.

Hofer, C., Eisenberg, N., & Reiser, M. (2010). The role of socialization, effortful control, and ego resiliency in French adolescents' social functioning. *Journal of Research on Adolescence: The Official Journal of the Society for Research on Adolescence, 20*(3), 555–582. https://doi.org/10.1111/j.1532-7795.2010.00650.x.

Hoffman, M. L. (1990). Empathy and justice motivation. *Motivation and Emotion, 14*(2), 151–172. http://dx.doi.org/10.1007/BF00991641.

Ladd, G. W., & Profilet, S. M. (1996). The child behavior scale: A teacher-report measure of young children's aggressive, withdrawn, and prosocial behaviors. *Developmental Psychology, 32*(6), 1008–1024. http://dx.doi.org/10.1037/0012-1649.32.6.1008.

Lüdtke, O., & Trautwein, U. (2007). Aggregating to the between-person level in idiographic research designs: Personal goal research as an example of the need to distinguish between reliability and homogeneity. *Journal of Research in Personality, 41*(1), 230–238. http://dx.doi.org/10.1016/j.jrp.2006.03.005.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83. http://dx.doi.org/10.1037/1082-989X.7.1.83.

McDonald, R. P., & Marsh, H. W. (1990). Choosing a multivariate model: Noncentrality and goodness of fit. *Psychological Bulletin, 107*(2), 247. http://dx.doi.org/10.1037/0033-2909.107.2.247.

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy, 49*(9), 544–554. http://dx.doi.org/10.1016/j.brat.2011.06.003.

Miller, P. H., Baxter, S. D., Hitchcock, D. B., Royer, J. A., Smith, A. F., & Guinn, C. H. (2014). Test-retest reliability of a short form of the children's social desirability scale for nutrition and health-related research. *Journal of Nutrition Education and Behavior, 46*(5), 423–428. http://dx.doi.org/10.1016/j.jneb.2013.11.002.

Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Panfile, T. M., & Laible, D. J. (2012). Attachment Security and Child's Empathy: The Mediating Role of Emotion Regulation. *Merrill-Palmer Quarterly, 58*(1), 1–21. http://dx.doi.org/10.1353/mpq.2012.0003.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (Vol. 1). London: Sage.

Roth, G., & Assor, A. (2012). The costs of parental pressure to express emotions: Conditional regard and autonomy support as predictors of emotion regulation and intimacy. *Journal of Adolescence, 35*(4), 799–808. http://dx.doi.org/10.1016/j.adolescence.2011.11.005.

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology, 45*(4), 1119–1142. http://dx.doi.org/10.1037/a0015272.

Rothbart, M. K., Ahadi, S. A., & Hershey, K. L. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly, 40*(1), 21–39.

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon, & R. M. Lerner (Eds.) (6th ed.,*Social, emotional, and personality development: Vol. 3. Handbook of child psychology* (pp. 99–166). Hoboken, NJ: Wiley. http://dx.doi.org/10.1002/9780470147658.chpsy0303/abstract.

Roth, G., Benita, M., Amrani, C., Shachar, B.-H., Asoulin, H., Moed, A., … Kanat-Maymon, Y. (2014). Integration of negative emotional experience versus suppression: Addressing the question of adaptive functioning. *Emotion, 14*(5), 908–919. http://dx.doi.org/10.1037/a0037051.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. http://dx.doi.org/10.1037/0003-066X.55.1.68.

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti, & D. J. Cohne (Eds.) (2nd ed.), *Vols. 1–3. Developmental psychopathology (*. Hoboken, N.J: Wiley.

Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling: Third edition* (3rd ed.). New York: Routledge.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental

studies: New procedures and recommendations. *Psychological Methods, 7*(4), 422. http://dx.doi.org/10.1037/1082-989X.7.4.422.

Valiente, C., Eisenberg, N., Fabes, R. A., Shepard, S. A., Cumberland, A., & Losoya, S. H. (2004). Prediction of Children's empathy-related responding from their effortful control and parents' expressivity. *Developmental Psychology, 40*(6), 911–926. http://dx.doi.org/10.1037/0012-1649.40.6.911.

Young, S. K., Fox, N. A., & Zahn-Waxler, C. (1999). The relations between temperament and empathy in 2-year-olds. *Developmental Psychology, 35*(5), 1189–1197. http://dx.doi.org/10.1037/0012-1649.35.5.1189.