

## The Development of Moral Emotions and Decision-Making

From Adolescence to Early Adulthood: A 6-year Longitudinal Study

Tobias Krettenauer<sup>1</sup>, Tyler Colasante<sup>2</sup>, Marlis Buchmann<sup>3</sup>, and Tina Malti<sup>2,3</sup><sup>1</sup> Wilfrid Laurier University<sup>2</sup> University of Toronto<sup>3</sup> University of Zurich

## Author Note

Tobias Krettenauer, Department of Psychology, Wilfrid Laurier University, Tyler Colasante, Department of Psychology, University of Toronto, Marlis Buchmann, Jacobs Center for Productive Youth Development, University of Zurich, Tina Malti, Department of Psychology, University of Toronto.

This research was funded by the Swiss National Science Foundation. The authors would like to express their sincere thanks to the adolescents for participating in the study. Moreover, the authors are grateful to all the interviewers and undergraduate students for their help in data collection and coding.

Correspondence concerning this article should be addressed to Tobias Krettenauer, Department of Psychology, Wilfrid Laurier University, 75 University Ave W, Waterloo, N2L 3C5, Canada. Electronic mail may be sent to tkrettenauer@wlu.ca

This is the peer-reviewed version of the following article: Krettenauer, T., Colasante, T., Buchmann, M., & Malti, T. (2014). The development of moral emotions and decision-making from adolescence to early adulthood: A 6-year longitudinal study. *Journal of Youth and Adolescence*, 43(4), 583-596. doi: 10.1007/s10964-013-9994-5, which has been published by Springer. The final publication is available at Springer via <http://dx.doi.org/10.1007/s10964-013-9994-5>. Please refer to Springer Terms and Conditions of Archiving for more information: <http://www.springer.com/gp/open-access/authors-rights/self-archiving-policy/2124>

## Abstract

Adolescents' emotions in the context of moral decision-making have been repeatedly shown to predict actual behaviour. However, little systematic information on developmental change regarding these emotion expectancies has been available thus far. This longitudinal study investigated anticipated moral emotions and decision-making between the ages of 15 and 21 in a representative sample of 15-year-old Swiss adolescents ( $N = 1,258$ ; 54% females;  $M = 15.30$  years). Anticipated moral emotions and decision-making were assessed through a semi-structured interview procedure. Using Bernoulli HLM models, it was found that positive feelings after a moral transgression (i.e., "happy victimizer" responses) decreased over time, whereas positive feelings after a moral decision (i.e., "happy moralist" responses) increased. However, this pattern was contingent upon the moral scenario presented. Systematic relations between anticipated moral emotions and moral personality characteristics of sympathy, conscientiousness, and agreeableness were found, even when controlling for socio-demographic characteristics and cognitive ability. Overall, this study demonstrates that the development of anticipated moral emotions is not limited to childhood. Furthermore, our findings suggest that moral emotions serve as an important link between moral personality development and decision-making processes that are more proximal to everyday moral behavior.

*Keywords:* moral emotions, moral decision-making, moral personality, longitudinal study, adolescence

**The Development of Moral Emotions and Decision-Making**  
**From Adolescence to Early Adulthood: A 6-year Longitudinal Study**

In addition to influencing the way we think about morality, societal forces shape the structure of our moral motivation. More than 130 years ago, Durkheim noted how changes in the division of labor necessitated new forms of moral regulation. What he referred to as "organic solidarity", Piaget would later describe as "moral autonomy". There is general consensus that today's societies rely less on the customs and traditions of previous generations, and more so on flexible, internalized forms of moral self-regulation that are well-adjusted to the complexities of modern social life. While these social changes bear the dangers of moral decline (Jeynes, 2010), they also set the stage for interesting research questions. For instance, how do children and adolescents develop internalized forms of moral motivation consistent with an autonomous understanding of morality (e.g., Nunner-Winkler, 2007)? This question provides the backdrop for the present paper. The majority of previous research in this area has focused on the development of moral emotions in children (for overviews, see, Arsenio, in press; Krettenauer, Malti, & Sokol, 2008; Malti & Ongley, in press). The present study expands this research to later development by investigating anticipated moral emotions in adolescence. We assume that adolescents' anticipated emotions influence their actual behavior and, at the same time, reflect important aspects of their moral identity. In the paragraphs to follow, we flesh out these assumptions before turning to the limitations of previous research on adolescents' moral emotion expectancies. Finally, building from these limitations, we describe the leading research questions and hypotheses of the current study.

Self-evaluative moral emotions, such as guilt and shame, arise *ex-ante* or *ex-post*. In other words, they are experienced in *anticipation* of a moral norm violation or *after* the

occurrence of a moral transgression (Malti & Ongley, in press; Tangney, Stuewig, & Mashek, 2007). Anticipated moral emotions provide critical information about the desirability of a future action and can thus be seen as important predictors of moral decision-making and associated behavior (Baumeister, Vohs, DeWall, & Zhang, 2007). In support of this claim, a recent meta-analysis of over 40 experimental and correlational studies, with more than 8000 participants ranging from 4 to 20 years of age, found significant associations between children's and adolescents' anticipated moral emotions and both prosocial and antisocial behavioral outcomes (Malti & Krettenauer, 2013). These findings resonate well with social information processing perspectives, which emphasize the importance of outcome expectancies in determining socio-moral behavior (cf. Arsenio & Lemerise, 2004).

Anticipated moral emotions (also labeled moral emotion expectancies) have been studied predominantly in children between the ages of 4 and 8 years (for overviews, see Arsenio, in press; Krettenauer et al., 2008). The bulk of this research suggests that young children are far from amoral. For instance, it is well documented that young children spontaneously engage in prosocial behavior as early as 2 years of age (Svetlova, Nichols, & Brownell, 2010; Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Warneken & Tomasello, 2009) and express moral emotions of shame and guilt around 4 to 5 years of age, albeit non-verbally (for an overview see Eisenberg, 2000). Still, relative to older children, 4- to 5-year-olds experience marked difficulties anticipating moral emotions of shame or guilt in the context of moral wrongdoing. At this age, children typically expect a moral wrongdoer to experience positive emotions when transgressing a moral rule (e.g., happiness for having achieved a desired object). This finding has been dubbed the "happy victimizer phenomenon" (Arsenio, in press). Typically, it is not before the age of 7-8 years that children begin to anticipate negative or mixed feelings after moral wrongdoing.

Interestingly, research indicates that systematic probing for emotions other than happiness facilitates the anticipation of negative emotions in 6- to 8-year olds, but leaves the frequency of happy victimizer responses in 4-year olds largely unaffected (Arsenio & Kramer, 1992; Lourenço, 1997). It has been proposed that decreases in self-focused emotions (i.e., happiness, pride) and corresponding increases in anticipated moral emotions (i.e., guilt, shame, sadness) are linked to initial limitations in young children's cognitive ability to process opposing emotional states (Harris, 1989; Wintre & Vallance, 1994). As a consequence, younger children focus on initial, positive emotions following a moral transgression, whereas older children are more likely to consider both the gains and losses associated with the transgression.

Nonetheless, anticipated moral emotions are not a mere epiphenomenon of cognitive development. If this were the case, the consistent relationship between moral emotions and social behavior that has been documented repeatedly across childhood and adolescence would be difficult to explain (Malti & Krettenauer, 2013). As noted by numerous authors, moral emotions are intimately tied to an individual's sense of self (cf. Blasi, 1999). As such, they reflect the self-importance or self-relevance of moral rules and values (Tracy & Robins, 2007). In line with this view, Krettenauer, Campbell, and Hertz (2013) found a significant correlation between children's moral self-concept and anticipated moral emotions following antisocial behavior or a lack of prosocial behavior. Krettenauer and Johnston (2011) reported a substantial association between adolescents' moral identity and anticipated moral emotions following moral transgressions. In a sample of young adults, Stets and Carter (2012) found that discrepancies between individuals' moral identities and behaviors were associated with negative, self-evaluative emotions of guilt and shame. From this perspective, the development of anticipated moral emotions in adolescence may reflect changes in adolescents' moral self and/or moral identity.

Despite adolescence being considered a crucial period for moral identity development (Hardy & Carlo, 2011), systematic, empirical information on age-related change in the moral domain throughout the adolescent years is scarce. Krettenauer (2011) reported a small, but statistically significant decrease in external moral motivation throughout adolescence, suggesting that older adolescents tend to rely on internal, self-relevant moral standards more than younger adolescents. This trend is consistent with research on adolescents' prosocial, moral reasoning, which suggests that adolescents' reasoning behind acting morally becomes increasingly internalized with age (Eisenberg, Carlo, Murphy, & Van Court, 1995; Eisenberg, Zhou, & Koller, 2001; Gibbs, Basinger, Grime, & Snarey, 2007). It also resonates well with research documenting a normative decrease in moral disengagement over the adolescent years (Paciello, Fida, Tramontano, Lupinetti, & Carprara, 2008), as moral disengagement has been negatively associated with anticipated feelings of guilt and remorse (Bandura, Barbaranelli, Carprara, & Pastorelli, 1996). One of the few longitudinal studies capturing the development of moral emotion expectancies in adolescence is the Munich Longitudinal Study on the Genesis of Individual Competencies (LOGIC, see Schneider & Bullock, 2009), in which moral emotions were investigated over an extended period of time (i.e., from 4 to 23 years). In this study, moral emotion expectancies increased throughout adolescence and early adulthood, although effects of age were less marked in later developmental periods (Nunner-Winkler, 2007, 2009).

Whereas most research on children's moral emotion expectancies has focused on *set* moral transgressions and the negatively charged moral emotions that follow, Nunner-Winkler (2007, 2009) asked teenagers to *choose* their preferred way of action in a socio-moral situation and recorded the emotions they anticipated as a result of their decision. Many adolescents preferred positive moral choices over immoral behavior. This finding is consistent with

longitudinal data reported by Malti and Keller (2010) in which the majority of adolescents chose moral over immoral paths of action and reported feeling happy as a result. The investigation of positive moral choices considerably extends the range of moral emotions under study to include feelings of pride and self-satisfaction over doing what is considered right. Thus, research on the development of moral emotions should not be limited to the decline of "happy-victimizer" response patterns. Once individuals decide to act morally, the distinction between "happy-" and "unhappy-moralists" becomes relevant (Malti & Keller, 2010). The longitudinal findings reported by Nunner-Winkler, as well as Malti and Keller, suggest that the anticipation of moral emotions following positive moral choices may be a normative developmental trend through adolescence. However, in these studies, adolescents' and young adults' moral emotion expectancies were combined with their emotion justifications. Thus, it is unclear whether longitudinal increases in these composite scores reflect change in anticipated moral emotions *per se*.

Aside from normative change in anticipated moral emotions, past research suggests that moral emotion expectancies mark an important dimension of individual differences throughout development. As a dimension of individual differences, anticipated moral emotions have been shown to consistently predict high levels of prosocial behavior and low levels of antisocial behavior from 4 to 20 years of age (Malti & Krettenauer, 2013). In support of these dimensional findings, Krettenauer, Asendorpf and Nunner-Winkler (2013) found that moral emotion expectancies were systematically correlated with morally-relevant personality traits, as defined by the Five-Factor Model. This model distinguishes five broad factors of personality (extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience) that define major dimensions of individual differences (e.g. McCrae & Costa, 2004). In particular, the

two factors of agreeableness and conscientiousness have been repeatedly associated with morality (cf. Lapsley & Hill, 2009). Specifically, higher conscientiousness (i.e. being efficient/organized as opposed to easy-going/careless) on the one hand, and higher agreeableness (i.e., being friendly/compassionate as opposed to cold/unkind) on the other, have been associated with especially strong moral emotion expectancies in adolescence (Krettenauer et al., 2013; Malti & Buchmann, 2010). Taken together, these findings suggest that changes in adolescents' anticipated moral emotions might depend on individual differences in moral personality characteristics established earlier in life.

### **The current study**

The present study investigated adolescents' anticipated moral emotions in the context of moral decision-making by integrating three different analytical perspectives on moral emotion expectancies into a single, comprehensive approach. It simultaneously examined normative age-graded change, non-normative change related to pre-existing individual differences, and task-related effects. While previous research has established the viability of these differing perspectives, it has dealt with them mostly in separation. Moreover, existing research on anticipated moral emotions in adolescence has primarily utilized cross-sectional data and/or small, non-representative samples. By contrast, the present study employed a representative, longitudinal sample of 15- to 21-year-old adolescents residing in German and French speaking areas of Switzerland. Data were collected at the ages of 15, 18 and 21 years. Our multi-faceted approach and robust sample allowed us to investigate the development of moral emotions and decision-making from adolescence to early adulthood in a truly comprehensive fashion.

**Normative age-graded change.** As described above, normative change in the development of moral emotion expectancies in adolescence is likely contingent upon



adolescents' moral decision-making. As happy victimizer responses (i.e., making immoral decisions and feeling positive for self-oriented reasons) are generally less frequent in adolescence, and negatively-charged moral emotions are more salient (e.g. Krettenauer & Eichler, 2006), adolescents can be expected to choose moral over immoral ways of action more often. The anticipated emotions for moral decisions can range from pride and self-satisfaction over doing what is considered to be right, or regret for not achieving a desired object. Miller, Chakravarthy, and Rekha (2008) demonstrated that self-satisfaction over doing what is considered right reflects internalized moral motivation. This motivation tends to increase in adolescence and early adulthood as external moral motivation decreases (Krettenauer, 2011). In a similar vein, prosocial, moral reasoning has been shown to become increasingly internalized as adolescents grow older (Eisenberg, Carlo, Murphy, & Van Court, 1995; Eisenberg, Zhou, & Koller, 2001; Gibbs, Basinger, Grime, & Snarey, 2007). We therefore expected an age-related increase in positive moral emotions following decisions to act morally.

**Non-normative changes in relation to prior individual differences.** As noted above, moral emotion expectancies reflect important individual differences in morally relevant behavioral dispositions. Accordingly, systematic relationships between personality traits of conscientiousness and agreeableness and anticipated moral emotions have been found (Krettenauer et al., 2013; Malti & Buchmann, 2010). However, it is unclear whether these relationships are established early in the course of development or whether personality traits continue to predict changes in moral emotions through late adolescence and early adulthood. Although Krettenauer and colleagues (2013) offer preliminary evidence in support of the continuing effects of personality traits, their study was restricted to two personality dimensions of the Five Factor Model and did not consider individual differences in other personality

characteristics that are known to impact moral development, such as sympathy (Hoffman, 2000; Eisenberg, et al., 2002; Eisenberg, et al., 1999). Dispositional sympathy (i.e., feelings of concern or sorrow for another person's misfortune) represents a core aspect of the "prosocial personality" (Eisenberg et al., 1999, 2002), and has been positively correlated with prosocial behavior and negatively correlated with antisocial behavior (Eisenberg, Fabes, & Spinrad, 2006). While individual differences in sympathy overlap to some extent with agreeableness, the two constructs are far from identical (cf. Graziano & Tobin, 2009). Thus, individual differences in sympathy may contribute to the development of moral emotions independently of agreeableness and conscientiousness. Based on related previous research, we hypothesized that patterns of high moral sensitivity (i.e., happy moralist/unhappy victimizer responses) would increase over time for individuals who scored high on conscientiousness, agreeableness, and sympathy at the onset of the study, whereas happy victimizer responses were expected to decrease for these individuals. The opposite findings were expected for individuals with lower scores on these personality dimensions.

**Task related effects.** In previous research, the development of moral emotion expectancies has been contingent upon the scenarios presented to adolescents (Saelen & Markovitz, 2008). For instance, Krettenauer and Eichler (2006) found age-related increases in moral emotion expectancies for scenarios describing severe moral offenses (e.g., hit-and-run driving) but not for scenarios describing minor transgressions (e.g., not returning a found wallet). In the present study, we investigated the extent to which normative and non-normative changes in anticipated moral emotions are consistent across scenarios. Situations that are more tempting, as indicated by more frequent happy victimizer responses at study onset, may be more challenging for younger adolescents. Consequently, effects of age may be stronger for these

scenarios as compared to scenarios that are less challenging for adolescents' moral sense of right and wrong (e.g., not returning a found wallet to the rightful owner).

### **Method**

Data were acquired from the first three waves of the Swiss Survey of Children and Youth. This longitudinal survey investigates the life course and development of three age cohorts (6, 15, and 21 years) using a multi-informant approach. The present analysis is based on the 15-year-old cohort, whose members were re-assessed at 18 and 21 years.

### **Participants**

A representative, random sample from German- and French-speaking parts of Switzerland was drawn in a two-stage process in which 131 communities (broken down by community type and community size) were selected. The residents of each community were then randomly sampled on the basis of information provided by the community's official register. The final response rate was 63% (i.e., based on a number of 1997 initially selected addresses). For statistical analyses, the sample was weighted to correct for nonresponse, overrepresentation of some community types, and a moderate underrepresentation of lower educational strata, nationalities, and community types. At Time 1, the sample consisted of 1,258 adolescents with an average age of 15.30 years ( $SD = 0.21$ ; 54% females). Furthermore, 1,056 primary caregivers, predominantly mothers (89%), were linked to the adolescent sample.

Among the 15-year-old adolescents, 80% were Swiss, 18% were of other European nationalities, and 2% were non-European. Of the parents, 32% had secondary education or less, 44% had vocational training or college, 15% had a higher vocational diploma, and 9% had a university degree. These numbers are fairly representative of Swiss demographics (Swiss Federal

Office of Statistics, 2012). As for family composition, 82% of the adolescents were living with both parents, and the average number of siblings was 1.70 ( $SD = 1.12$ ).

At the second assessment, 952 adolescents (76%) participated in an interview ( $M = 18.49$  years,  $SD = 0.22$ ). At Time 3 (T3), 794 young adults (63%) participated in an interview ( $M = 21.39$  years,  $SD = 0.22$ ).

We analyzed sample attrition for socio-demographic variables (gender, socio-economic background, educational level) and study variables (pattern of moral emotions and decision-making in two story contexts, self and other-reported sympathy, agreeableness, conscientiousness, cognitive ability; for a detailed description of these variables, see below). We contrasted adolescents of the T1 sample who participated in the interview at T3 ( $n = 794$ ) with the participants who did not participate ( $n = 464$ ). For socio-demographic variables, no differences between the two groups were found. The T3 non-responders evidenced a higher frequency of happy-victimizer response patterns for the purse story (9.4% of non-responders vs. 5.3% of responders),  $\chi^2(3) = 11.31, p < .05$ , whereas no differences were found for the bike story. Moreover, non-responders evidenced lower scores in conscientiousness,  $t(1002) = 3.89, p < .01$ , Cohen's  $d = 0.29$ , agreeableness,  $t(1004) = 2.45, p < .05, d = 0.15$ , parent-reported sympathy,  $t(1047) = 2.47, p < .05, d = 0.14$  and cognitive ability,  $t(1252) = 3.11, p < .01, d = 0.17$ . Overall, these effects of selective attrition were small to moderate in magnitude and concerned less socially desirable individual characteristics.

## **Procedure**

At the first assessment (Spring 2006), adolescents and primary caregivers were individually interviewed at home via a computer-assisted personal interview (CAPI). Written

informed consent for testing was obtained from the participant. In addition, primary caregivers provided written informed consent to allow their children to participate in the study.

All participants were given a CAPI in a quiet room at their home. Both interviews lasted about 45 minutes and contained questions on the participant's social development, as well as on the most important socialization conditions. During the interview of the adolescent, the primary caregivers were given a questionnaire on adolescent social development, which they filled out and mailed back to the research institute. At the second and third assessments (Spring 2009 and Spring 2012, respectively), a CAPI was conducted with the adolescents. Forty-two interviewers conducted the interviews of the 15-year-olds. When the participants were 18 and 21-years-old, there were forty-one and thirty-seven interviewers, respectively. The interviewers were recruited from a professional research institute specializing in social-science interviews and had been trained by the research team on interview techniques.

### **Measures**

As the sample contained both German- and French-speaking participants, all measures were translated from German to French by native speakers and then back-translated to correct for ambiguous meanings. Participants were interviewed in their primary language. A pilot study with 236 15-year-old adolescents was conducted to test the validity of the vignettes on moral development and other measures concerning adolescent development. Findings indicated that two out of three vignettes on decision-making and anticipated emotions showed sufficient inter-individual variability and theoretically expected relations with other dimensions of adolescents' social development, such as sympathy. The final two vignettes on moral decision-making and anticipated emotions were selected on the basis of these results.

**Moral decision-making and anticipated emotions.** Moral decision-making and anticipated emotions were assessed by a previously validated measure consisting of hypothetical moral dilemmas (Malti & Buchmann, 2010). Two dilemmas involving the temptation to transgress well-known moral rules for personal benefit were chosen based on the following four criteria. First, the structure and nature of the conflict had to be a familiar, everyday-life occurrence for the participants. Second, the story had to involve clear moral issues. Third, the immoral action decision had to be easily justified, and the participant must have been able to refer to the transgression's normality. Fourth and finally, the characters and events in the stories had to be free of gender stereotypes and identifiable by both sexes. For example, neither story involved the conflict between a prosocial moral duty and the accumulation of power. The sex of the characters in the story was matched to the participant, and the order of the stories was counterbalanced to avoid order effects.

In the first story, participants were read the following text: "Imagine you offered your bike for sale. You want to sell it for 500 Swiss Francs. A young man is interested. He bargains with you and you agree on 420 Swiss Francs. Then he says: 'Sorry, I don't have the money on me; I'll quickly run home to get it. I'll be back in half an hour.' You say: 'Agreed, I'll wait for you.' Shortly after he is gone, another customer shows up who is willing to pay the full price." In the second story, the participants were read the following text: "Imagine that you have found a purse with 150 Swiss Francs in it and an identity card of the owner" (Krettenauer & Eichler, 2006).

After reading each story, the participants were asked (a) what they would do (action decision), (b) how they would feel about doing it (anticipation of emotion), and (c) why they

would do it and why they would feel that way (justification). All responses were probed, and the results of the probing were figured into coding.

***Coding of action decision and anticipated emotion.*** The action decision was coded as 1 (moral; i.e., wait for the first customer, bring the purse to lost and found) or 0 (selfish; i.e., sell the bike to the second customer, take the purse). The question about anticipation of emotions was open-ended. Participants were asked to report the emotions they would anticipate after their decision. Anticipated emotions were coded as (1) negative or mixed (e.g., guilt, shame, sadness, sadness and happiness) and (2) positive only (e.g., happiness, pride).

At Time 1, 129 of the 1258 interviews (10%) were coded by two independent coders, yielding an inter-rater reliability of  $\kappa = .97$ . To ensure high-quality coding, 50 randomly chosen transcripts (i.e., 39% of the reliability data) from each coder at T1 were independently coded by the second author. At Time 2, 50 of the 952 interviews (5%) were coded by two independent coders, yielding an inter-rater reliability of  $\kappa = .95$ . At Time 3, 80 of the 723 interviews (11%) were coded by two independent coders, yielding an interrater reliability of  $\kappa = .94$ .

Disagreements were discussed and the consensus solution was coded.

***Patterns of decision-making and anticipated emotion.*** Next, composite scores were derived to create patterns of decision-making and anticipated emotions (see Malti & Keller, 2010, Malti, Keller, & Buchmann, 2013): The *happy victimizer* pattern applied to participants who made a selfish decision (0) and anticipated positive emotions to the self (2). The *unhappy victimizer* pattern applied to participants who made a selfish decision (0), but anticipated negative or mixed emotions to the self (1). The *happy moralist* pattern applied to participants who made a moral decision (1) and anticipated positive emotions to the self (2). The *unhappy*

*moralist* pattern applied to participants who made a moral decision (1), but felt negative or mixed about it (i.e., regret).

For the final data analyses, we created four dummy variables for each of the four patterns of decision-making and anticipated emotion (i.e., happy victimizer pattern vs. all others, unhappy victimizer pattern vs. all others, happy moralist pattern vs. all others, and unhappy moralist pattern vs. all others). However, please note that the contrast between the unhappy moralist pattern vs. all others was dropped from the analyses because of its low frequency.

**Sympathy.** Adolescents' sympathy was assessed at T1 by (a) adolescents' self-reports and (b) primary caregivers' ratings. The scale for the adolescents consisted of five items from Zhou, Valiente, and Eisenberg (2003); for example, "When I see another person who is hurt or upset, I feel sorry for him or her." Cronbach's  $\alpha$  for the sympathy scale was .72. Mean scale scores were computed ( $M = 4.82$ ,  $SD = 0.77$ ).

The items were recorded on a 6-point scale with higher scores indicating higher levels of sympathy. The primary caregivers responded to three items from Zhou et al. (2003) to rate the adolescents' sympathy; for example, "My child usually feels sorry for other children who are hurt or upset." The reliability of the scale was  $\alpha = .77$ . Mean scale scores were computed ( $M = 4.93$ ,  $SD = 0.94$ ). Higher scores were indicative of higher levels of sympathy.

**Personality characteristics.** A validated bipolar adjective checklist using three pairs of contrasting adjectives for each of the five personality dimensions (e.g., "agreeable versus irritable") was chosen to assess the Big Five personality dimensions (i.e., agreeableness, conscientiousness; Malti & Buchmann, 2010). The items were answered on a 6-point scale with higher scores indicating greater presence of the personality characteristic. In accordance with the



study's research design, primary-caregiver reports were used to assess the personality characteristics of 15-year-olds. Reliabilities of the scales were  $\alpha = .82$  for conscientiousness and  $\alpha = .71$  for agreeableness. Mean scale scores for agreeableness was  $M = 4.50$ ,  $SD = 0.87$ , and  $M = 4.35$ ,  $SD = 1.07$  for conscientiousness.

### **Control variables.**

**Cognitive skills.** Respondents' cognitive competences were assessed using the half subscale 2.4 of the Culture Fair Intelligence Test (CFT-20; Weiß, 1998). The Culture Fair Intelligence Test contains less verbal instructions than traditional measures and thus has the advantage of reducing cultural and educational biases. Given Switzerland's high immigration rates and the representative, large-scale character of our design, the selection of this test seemed more appropriate than a more traditional intelligence scale. Each test item was scored as 0 (incorrect) or 1 (correct), and a scale score for cognitive skills was created (ranging from 0-6). Higher scores indicate higher cognitive competences ( $M = 3.31$ ,  $SD = 1.47$ ).

**Level of education at the age of 15 years.** Level of education was defined in terms of participants' attained grade level in school at the age of 15 years (ranging from 1 = special needs education to 5 = pre-academic high school; Gymnasium/Fachmittelschule). The grand mean of the sample was  $M = 3.34$ ,  $SD = 0.99$ .

**Family socioeconomic background.** The socioeconomic background of primary caregivers was assessed: Socioeconomic status (SES) was based on coding the caregiver's current profession at T1; codes were transformed into an International Socio-Economic Index of occupational status (ISEI) score (Ganzeboom, DeGraaf, Treiman, & Deleeuw, 1992). The ISEI scale is a standardized and widely used scale to measure SES. It is derived from the International Standard Classification of Occupations and was constructed using comparably coded data on

education, occupation, and income for over 70,000 full-time employed individuals from 16 countries (Ganzeboom et al., 1992, p. 2). The final SES score was based on the caregiver with the highest ISEI score ( $M = 51.55$ ,  $SD = 16.03$ ). The possible range of scores on the ISEI scale is 16 to 90. Higher scores indicate higher SES.

### **Treatment of missing data and plan of analysis**

Preliminary analyses indicated that, overall, 19% of the data points were missing and they were not randomly distributed in the database. Little's MCAR test was significant,  $\chi^2(65) = 182.37$   $p < .001$  (Little, 1988). Therefore, multiple imputation was carried out to estimate the values for missing data points of the binary and continuous variables using fully conditional specification in SPSS. This is an iterative Markov chain Monte Carlo (MCMC) method. It predicts the missing values for a variable using all other available variables included in the model, and for each variable, the suitable model was selected (i.e., for binary variables, logistic regression was specified). The number of iterations used was 100, and the imputed values in this iteration round were used for imputation. The number of imputations was 10.

Hierarchical linear modeling (HLM Version 7) was used to test our hypotheses on the impacts of story context, sympathy and personality characteristics on the development of moral emotions in the context of adolescents' moral decision-making. Hierarchical linear models allow for the analysis of cross-level, hierarchical data. Because data waves were nested in story contexts, which were nested within participants, we had a hierarchical design and used three-level hierarchical linear models (HLM Version 7; Raudenbush, Bryk, Cheong, Congdon, & Du Toit, 2011) to evaluate patterns of decision-making and moral emotions over time, as well as the impact of story context, sympathy, and personality characteristics on these patterns. Data waves comprised the unit of observation for the first level, story context comprised the unit of

observation for the second level, and participants comprised the unit of observation for the third level. Since the outcome variables were binomial (i.e., the respective pattern of decision-making and anticipated emotion versus the combined rest of the sample), Bernoulli HLM models were run (see Hox & Roberts, 2011). Bernoulli models are typically used in hierarchical linear modeling when the outcome variable is binomial (i.e., coded as 0 and 1). We exported the 10 imputed data sets to HLM, which can handle multiply imputed datasets.

We ran a series of HLM Bernoulli models for each pattern (except for the unhappy moralist pattern as this was found to be rather infrequent, see Table 1). In line with our research questions, the independent variables were time, story context, self-reported sympathy, other-reported sympathy, agreeableness, conscientiousness, and the control variables (i.e., cognitive ability, ISEI score, educational level, and sex). In addition, we computed two-way interactions between time and story context, time and sympathy (self report, other report), as well as time and personality characteristics (agreeableness, conscientiousness). The basis for interpreting the interactions in our analyses rested on the significance tests for the model coefficients and the plot of the values for specific combinations of the independent variables. Thus, following the procedures outlined by Preacher, Curran, and Bauer (2006) and Curran, Bauer, & Willoughby (2006), the simple intercepts and simple slopes for the two-way interactions were probed to examine which effects were statistically significant.

## **Results**

### **Descriptive analyses**

Frequencies (%) of moral decision-making patterns and anticipated emotions by assessment point and story context are displayed in Table 1. The happy moralist response pattern was by far most common across stories and assessment points, whereas the unhappy moralist

pattern occurred infrequently. Because of its low frequency, the unhappy moralist pattern was not considered in further data analyses.

Next, we looked at how many people transitioned from one pattern to another over time. For this purpose, response patterns were combined in a HLM Bernoulli model for the two scenarios. Table 2 shows the patterns of decision-making and anticipated emotions for T1 and T2, and Table 3 presents the patterns of decision-making and anticipated emotions for T2 and T3. As can be seen, many participants transitioned from the happy victimizer and unhappy victimizer patterns to the happy moralist patterns from T1-T2, and from T2-T3.

Table 4 displays correlations between the three patterns of moral decision-making and moral emotions (dummy coded) for each story context at T1-T3, and self-reported and other-reported sympathy at T1, agreeableness at T1, and conscientiousness at T1. As can be seen, the happy victimizer pattern at T1-T3 was predominantly negatively associated with both self-reported and other-reported sympathy at T1. Furthermore, the happy victimizer pattern at T2 and T3 tended to be negatively associated with agreeableness and conscientiousness at T1. The unhappy victimizer pattern at T1-T3 tended to be negatively related to both self and other-reported sympathy at T1. However, there was a positive correlation between the unhappy victimizer pattern at T3 and sympathy at T1. In addition, the unhappy victimizer pattern in both story contexts at T1 was negatively associated with agreeableness and conscientiousness at T1. At T2 and T3, the unhappy victimizer pattern in the purse context was negatively associated with agreeableness and conscientiousness. The happy moralist pattern at T1-T3 was predominantly positively associated with both self and other-reported sympathy at T1. This pattern (happy moralist) was also predominantly positively related to agreeableness and conscientiousness at T1.

### **The happy victimizer pattern by time, story context, sympathy, and personality characteristics**

In order to examine the role of story context, sympathy and personality characteristics for the happy victimizer pattern, a series of HLM Bernoulli models were run. The findings of the HLM Bernoulli analyses are shown in Table 5. The happy victimizer pattern was more frequent in the bike story than in the purse story,  $OR = 1.90, p < .001$ . In addition, the happy victimizer pattern was negatively associated with both self-reported sympathy,  $OR = 0.70, p < .001$ , and other-reported sympathy,  $OR = 0.81, p < .001$ . There was a significant interaction effect between time and story context on the happy victimizer pattern,  $OR = 0.67, p < .001$ , indicating that this pattern occurred more frequently in the bike story than in the purse story at T1 and T2 ( $ps < .001$ ). There was no story effect on this pattern at T3. A significant interaction effect was also found between other-reported sympathy and time on the happy victimizer pattern,  $OR = 0.92, p < .05$ , indicating that participants with low levels of sympathy at T1 (i.e., one point lower than the grand mean on sympathy) showed a slight increase in the happy victimizer pattern from T1 to T3, whereas the happy victimizer pattern remained low from T1 to T3 in participants with high levels of sympathy at T1 (i.e., one point higher than the grand mean on sympathy; Figure 1). Furthermore, the happy victimizer pattern was less frequent among females than males,  $OR = 0.40, p < .001$ , and was negatively associated with cognitive skills,  $OR = 0.93, p < .01$ , and educational level,  $OR = 0.80, p < .001$ .

### **The unhappy victimizer pattern by time, story context, sympathy, and personality characteristics**

The unhappy victimizer pattern decreased from T1 to T3,  $OR = 0.77, p < .001$  (see Table 5). In addition, this pattern occurred more frequently in the bike story than in the purse story,  $OR$

= 1.46,  $p < .001$ . These main effects, however, were qualified by a significant two-way interaction between story context and time,  $OR = 0.64$ ,  $p < .001$ , indicating that the pattern occurred more frequently in the bike story than in the purse story at T1 ( $p < .001$ ). There was no story effect on this pattern at T2 and T3. The unhappy victimizer pattern was negatively predicted by agreeableness,  $OR = 0.82$ ,  $p < .001$ , and conscientiousness,  $OR = 0.84$ ,  $p < .001$ . There was a significant interaction effect between self-reported sympathy and time on the unhappy victimizer pattern,  $OR = 1.34$ ,  $p < .001$ , indicating that participants with high levels of sympathy at T1 (i.e., one point higher than the grand mean on sympathy) showed a decrease in the unhappy victimizer pattern from T1 to T3, whereas participants with low sympathy at T1 (i.e., one point lower than the grand mean on sympathy at T1) showed an increase in this pattern from T1 to T3.

### **The happy moralist pattern by time, story context, sympathy, and personality characteristics**

Central to the expectations of this study, the happy moralist pattern increased from T1 to T3,  $OR = 1.17$ ,  $p < .001$  (see Table 5). The pattern occurred more frequently in the bike story than in the purse story,  $OR = 0.38$ ,  $p < .001$ . These main effects, however, were qualified by a significant two-way interaction between story context and time,  $OR = 1.56$ ,  $p < .001$ , indicating that the pattern occurred more frequently in the bike story than in the purse story at T1 and T2 ( $p < .001$ ). There was no story effect on this pattern at T3. Both self-reported sympathy,  $OR = 1.24$ ,  $p < .001$ , and other-reported sympathy,  $OR = 1.13$ ,  $p < .01$ , were associated the happy moralist pattern. In addition, agreeableness,  $OR = 1.12$ ,  $p < .05$ , and conscientiousness,  $OR = 1.14$ ,  $p < .001$ , predicted the happy moralist pattern significantly. There was a significant interaction between self-reported sympathy and time on the happy moralist pattern,  $OR = 0.89$ ,  $p < .05$ ,

revealing that participants with high levels of sympathy (i.e., one point higher than the grand mean on sympathy) were consistently high in the happy moralist pattern from T1 to T3. In contrast, participants with low levels of sympathy (i.e., one point lower than the grand mean on sympathy) showed an increase in the happy moralist pattern from T1 to T3. As a result, the difference between the two groups at T1 had disappeared at T3 (see Figure 2). Differences in the happy moralist pattern that were related to self-reported sympathy at the age of 15 years thus diminished over time. Furthermore, the happy moralist pattern occurred more frequently in females than males,  $OR = 1.56, p < .001$ , and was positively associated with educational level,  $OR = 1.08, p < .05$ .

### Discussion

Adolescents' emotions in the context of moral decision-making have been repeatedly associated with actual behavior. However, little systematic information on developmental change regarding these emotion expectancies has been available so far. The present study investigated adolescents' anticipated moral emotions in the context of moral decision-making by integrating three different analytical perspectives on moral emotion expectancies: We examined normative age-graded change and non-normative change related to preexisting individual differences in dispositional sympathy, agreeableness and conscientiousness. Finally, we analyzed task-related effects. Whereas previous research on anticipated moral emotions in adolescence and early adulthood has been cross-sectional or based on rather small and selective samples, the current study utilized data from a 6-year, representative longitudinal study of Swiss adolescents. The results of this study boast greater generalizability than most previous findings on the development of moral emotions in adolescence and beyond.

Normative developmental change in anticipated moral emotions was contingent upon story content. Two scenarios were used. One story described a situation in which a decision had to be reached between keeping a promise versus making a higher profit from selling a bike to a new customer. The second story depicted a situation where the protagonist needed to decide whether or not to return a lost purse to its rightful owner. While the bike situation evidenced a decrease in the happy-victimizer pattern over time, a similar age trend was not found for the purse scenario. For the bike scenario, the frequency of happy victimizer responses was significantly higher at the onset of the study (i.e., at age 15 years) and thus reflected a more tempting situation for teenagers at this age.

The decreasing happy victimizer response pattern in the bike story was paralleled by a decrease of unhappy feelings following the decision to break a promise. Taken together, both trends suggest an age-related change in adolescents' decision-making as opposed to a change in moral emotions alone. This finding underscores the importance of studying moral emotions in combination with decision-making. It should be noted that self-conflicting decisions resulting in negative feelings within the person (either unhappy victimizer or unhappy moralist) tended to decrease over time. Thus, the moral decisions adolescents make and the emotions they expect following these decisions tend to converge over time. This might explain why regret after a moral decision ('unhappy moralist') was found to be relatively rare in late adolescence and early adulthood.

While previous research on anticipated moral emotions has adequately addressed negative emotions following a moral transgression, it has rarely investigated positive emotions for acting morally (for exceptions, see Malti & Keller, 2010; Krettenauer & Johnston, 2011). In the present study, longitudinal change in positive emotions following a moral decision mirrored the happy



victimizer response pattern. Hence, development in the anticipation of positive emotions was situation-specific. The anticipation of positive emotions increased for the bike story over time whereas the purse scenario evidenced a higher frequency of positive emotions at the onset of the study that did not change over time. Miller, Rekha, and Chakravarthy (2011) have argued that satisfaction following a moral decision is an important moral emotion that stems from a higher level of internalization or integration of moral responsibilities. Thus, the increase in positive anticipated emotions following a prosocial decision found in the present study might be reflective of adolescents' and young adults' moral identity development and corresponding higher levels of internal moral motivation (Krettenauer, 2011).

Systematic associations between moral emotions and personality characteristics were also found. Measures of agreeableness and conscientiousness at the age of 15 years were inversely associated with unhappy victimizer responses over the 6-year time interval and positively associated with positive anticipated emotions following a moral decision. This finding is consistent with results reported by Krettenauer, Asendorpf and Nunner-Winkler (2013), who found that personality traits were associated with the development of moral emotion anticipations. The present study goes beyond these findings as it demonstrates that the predictive effect of personality traits is independent of socio-demographic characteristics (SES, level of education and gender) and independent of dispositional sympathy.

Research has demonstrated that sympathy is related to multiple aspects of moral functioning (Eisenberg, et al., 2010). The present study adds another piece of evidence to this growing literature as it shows that sympathy (self- and other-reported) is systematically related to the development of moral emotion expectancies in adolescence and early adulthood. Lack of sympathy at the age of 15 years (self- and parent-report) was associated with more frequent

happy-victimizer responses over the 6-year time interval. Moreover, adolescents who scored lower on self-reported sympathy at the age of 15 years evidenced a slight increase in happy victimizer responses, whereas the opposite was found for adolescents who were high on sympathy. Conversely, positive emotions following a moral decision were associated with higher levels of sympathy over the 6-year time interval for both self- and parent-reports. For self-reported sympathy, this effect diminished in early adulthood (i.e., at 21 years). The significant interactions between time and sympathy as predictors of moral emotions suggest that the influence of empathy related responding on moral development is not limited to childhood. Research indicates that the personality traits of agreeableness and conscientiousness, together with individual differences in empathy related responding, comprise important dimensions of moral and prosocial personality development (cf. Eisenberg, et al., 2002; Lapsley & Hill, 2009). The present study shows that these dimensions are systematically related to anticipated moral emotions. If increases in the happy moralist response pattern over adolescence reflect increases in internal moral motivation as part of adolescents' moral identity development, the current findings suggest that moral identity development and personality are not antagonistic. Instead, they systematically intersect in adolescents' and young adults' moral development (cf. Hill & Roberts, 2010). It is important to note, however, that the present study did not directly include a measure of adolescents' moral identity development. As a consequence, the developmental mechanisms that lead to changes in adolescents' emotions and decision-making remain speculative.

Besides limitations that apply to longitudinal studies in general (e.g., sample attrition, potential effects of repeated testing), several limitations of the current study need to be noted. First, due to the sheer vastness of the present study, the interview measure of moral emotions and

decision-making was restricted to two scenarios. Even though these two scenarios have been validated in previous studies (e.g., Krettenauer & Eichler, 2006; Nunner-Winkler, Meyer-Nikele, & Wohlrab, 2007), and piloted prior to the main study, the situational variability of anticipated moral emotions was rather limited and factors that account for this variability were not systematically investigated in the present study. As a consequence, it remains unclear which story characteristics produced the differences in response patterns between scenarios. Second, the study included multiple informants at the age of 15 years only. As data on personality characteristics were not available for the later points in time, it was impossible to study reciprocal developmental relationships between personality measures and moral emotions. Third, although parents were involved in data collection, parenting data in relation to prosocial or antisocial behavior was not available. Consequently, the extent to which findings from the present study reflect moral socialization is unknown. For instance, the base rate of positive moral choices in the purse story at the onset of the study turned out to be higher than in other countries (cf. Saelen & Markovitz, 2008). This might reflect a particular emphasis that Swiss parents attach to respecting others' property. In a similar vein, it is important to keep in mind that the present study is confined to one particular cohort from an individualistic society. Evidence from Krettenauer and Jia (2013) and Malti and Keller (2010) highlights cultural differences in moral development and, in doing so, underscores the importance of extending the current study to different cultural contexts.

### **Conclusions**

The current study offers valuable insight into the development of moral emotions in adolescence and early adulthood. It demonstrates that research on anticipated moral emotions can be meaningfully extended into adolescence and beyond. Although happy victimizer

responses in early adulthood are rare, they are by no means the exception. More importantly, the most frequent emotional outcomes that young adults anticipate from moral decisions are positive. Positive emotions generally serve the function of maintaining and broadening established action tendencies whereas negative emotions press for behavioral change (Fredrickson, 1998; Baumeister, Vohs, DeWall, & Zhang, 2007). Thus, the present findings suggest that the influence of moral emotions on one's moral life may shift across the lifespan from primarily corrective, to sustentative. This life span view of moral emotions and their effect on individual morality clearly warrants further research.

### References

- Arsenio, W. (in press). Moral emotion attributions and aggression. In M. Killen & J. Smetana (Eds.), *Handbook of moral development (2<sup>nd</sup> Ed.)*. Mahwah, NJ: Lawrence Erlbaum.
- Arsenio, W. F., & Kramer, R. (1992). Victimizers and their victims: Children's conceptions of the mixed emotional consequences of moral transgressions. *Child Development, 63*, 915-927.
- Arsenio, W. F., & Lemerise, E. A. (2004). Aggression and moral development: Integrating social information processing and moral domain models. *Child Development, 75*, 987-1002.
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Mechanisms of moral disengagement and the exercise of moral agency. *Journal of Personality and Social Psychology, 71*, 364-374.
- Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Bulletin, 11*, 167-203.
- Blasi, A. (1999). Emotions and moral motivation. *Journal for the Theory of Social Behavior, 29*, 1-19.
- Curran, P.J., Bauer, D.J., & Willoughby, M.T. (2006). Testing and probing interactions in hierarchical linear growth models. In C.S. Bergeman & S.M. Boker (Eds.), *The Notre Dame Series on Quantitative Methodology, Volume 1: Methodological Issues in Aging Research* (pp. 99-129). Mahwah, NJ: Lawrence Erlbaum Associates.
- Durkheim, Emile (1893/1997). *The division of labor in society*. New York: Free Press.
- Dunfield, K., Kuhlmeier, V. A., O'Connell, L., & Kelley, E. (2011). Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy, 16*, 227-247.

- Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology, 51*, 665-697.
- Eisenberg, N., Carlo, G., Murphy, B., & Van Court, P. (1995). Prosocial development in late adolescence: A longitudinal study. *Child Development, 66*, 1179-1197.
- Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial behavior. In N. Eisenberg (Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development (6th ed.)* (Vol. 646-718). New York: Wiley.
- Eisenberg, N., Guthrie, I. K., Cumberland, A., Murphy, B. C., Shepard, S. A., Zhou, Q., & Carlo, G. (2002). Prosocial development in early adulthood: A longitudinal study. *Journal of Personality and Social Psychology, 82*, 993-1006.
- Eisenberg, N., Guthrie, I. K., Murphy, B. C., Shepard, S. A., Cumberland, A., & Carlo, G. (1999). Consistency and development of prosocial dispositions: A longitudinal study. *Child Development, 70*, 1360-1372.
- Eisenberg, N., Zhou, Q., & Koller, S. (2001). Brazilian adolescents' prosocial moral judgment and behavior: Relations to sympathy, perspective taking, gender-role orientation, and demographic characteristics. *Child Development, 72*, 518-534.
- Fredrickson, B. (1998). What good are positive emotions? , *Review of General Psychology, 2*, 300-319.
- Ganzeboom, H. B. G., Degraaf, P. M., Treiman, D. J., & Deleeuw, J. (1992). A standard international socio-economic index of occupational status. *Social Science Research, 21*, 1-56. doi: 10.1016/0049-089X(92)90017-B

- Gibbs, J. C., Basinger, K. S., Grime, R. L., & Snarey, J. R. (2007). Moral judgment development across cultures: Revisiting Kohlberg's universality claims. *Developmental Review, 27*, 443-500.
- Graziano, W. G., & Tobin, R. (2009). Agreeableness. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 46-61). New York: Guilford.
- Hardy, S. A., & Carlo, G. (2011). Moral identity: What is it, how does it develop, and is it linked to moral action? , *Child Development Perspectives, 5*, 212-218.
- Harris, P. L. (1989). *Children and emotion: The development of psychological understanding*. Cambridge, MA: Blackwell.
- Hill, P. L., & Roberts, B. W. (2010). Propositions for the study of moral personality development. *Current Directions in Psychological Science, 19*, 380-383.
- Hoffman, M. L. (2000). *Empathy and moral development*. Cambridge: Cambridge University Press.
- Hox, J.J., & Roberts, J.K. (2011). *Handbook of advanced multilevel analysis*. New York: Taylor and Francis.
- Jeynes, W. (2010). *A call for character education and prayer in the schools*. Westport, CT: Praeger.
- Krettenauer, T. (2011). The dual moral self: Moral centrality and intrinsic moral motivation. *The Journal of Genetic Psychology, 172*, 309-328. doi: 10.1080/00221325.2010.538451
- Krettenauer, T., Asendorpf, B., & Nunner-Winkler, G. (2013). Moral emotion attributions and personality traits as long-term predictors of antisocial conduct in early adulthood: Findings from a 20 year longitudinal study. *International Journal of Behavioral Development. 27*, 192-201. doi: 10.1177/0165025412472409.

- Krettenauer, T., Campbell, S., & Hertz, S. (2013). Moral emotions and the development of the moral self in childhood. *European Journal of Developmental Psychology, 10*, 159-173. doi: 10.1080/17405629.2012.762750
- Krettenauer, T., & Eichler, D. (2006). Adolescents' self-attributed moral emotions following a moral transgression: relations with delinquency, confidence in moral judgment, and age. *British Journal of Developmental Psychology, 24*, 489-506.
- Krettenauer, T., & Jia, F. (2013). Investigating the *actor effect* in moral emotion expectancies: A comparison of Canadian and Chinese adolescents. *British Journal of Developmental Psychology*. Advance online publication. doi:10.1111/bjdp.12012
- Krettenauer, T., & Johnston, M. (2011). Positively versus negatively charged moral emotion expectancies in adolescence: The role of situational context and the developing moral self. *British Journal of Developmental Psychology, 29*, 475-488. doi: 10.1348/026151010X508083
- Krettenauer, T., Malti, T., & Sokol, B. (2008). The development of moral emotion expectancies and the happy victimizer phenomenon: A critical review of theory and application. *European Journal of Developmental Science, 2*, 221-235.
- Lapsley, D. K., & Hill, P. L. (2009). The development of moral personality. In D. Narvaez & D. K. Lapsley (Eds.), *Personality, identity, and character* (pp. 185-213). Cambridge: Cambridge University Press.
- Little, R.J.A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association 83*(404), 1198-1202.
- Lourenço, O. (1997). Children's attributions of moral emotions to victimizers: Some data, doubts and suggestions. *British Journal of Developmental Psychology, 15*, 425-438.



- Malti, T., & Buchmann, M. (2010). Socialization and individual antecedents of adolescents' and young adults' moral motivation. *Journal of Youth and Adolescence*, *39*, 138-149.
- Malti, T., & Keller, M. (2010). The development of moral emotions in a cultural context. In W. F. Arsenio & E. A. Lemerise (Eds.), *Emotions, aggression, and morality in children: Bridging development and psychopathology* (pp. 177-198). Washington: American Psychological Association.
- Malti, T., Keller, M., & Buchmann, M. (2012). Do moral choices make us feel good? The development of adolescent's emotions following moral decision-making. *Journal of Research on Adolescence*, *23*, 389-397. doi: 10.1111/jora.12005
- Malti, T., & Krettenauer, T. (2013). The relation of moral emotion attributions to pro- and antisocial behavior: A meta-analysis. *Child Development*, *84*, 397-412. doi: 10.1111/j.1467-8624.2012.01851.x
- Malti, T., & Ongley, S. (in press). The development of moral emotions and moral reasoning. In M. Killen & J. Smetana (Eds.), *Handbook of moral development*. New York: Taylor & Francis.
- McCrae, R. R., & Costa, P. T. (2004). A contemplated revision of the NEO Five-Factor Inventory. *Personality and Individual Differences*, *36*, 587-596.
- Miller, J. G., Chakravarthy, S., & Rekha, D. (2008). The moral emotions of guilt and satisfaction: A cross-cultural perspective. *European Journal of Developmental Science*, *2*, 236-250.
- Miller, J. G., Rekha, D., & Chakravarthy, S. (2011). Culture and the role of choice in agency. *Journal of Personality and Social Psychology*, *101*, 46-61. doi: 10.1037/a0023330

- Nunner-Winkler, G. (2007). Development of moral motivation from childhood to early adulthood. *Journal of Moral Education, 36*, 399-414.
- Nunner-Winkler, G. (2009). Moral motivation from childhood to early adulthood. In W. Schneider & M. Bullock (Eds.), *Human development from early childhood to early adulthood* (pp. 91-118). New York: Psychology Press.
- Nunner-Winkler, G., Meyer-Nikele, M., & Wohlrab, D. (2007). Gender differences in moral motivation. *Merrill-Palmer Quarterly, 53*, 26-52.
- Paciello, M., Fida, R., Tramontano, C., Lupinetti, C., & Carprara, G. V. (2008). Stability and change of moral disengagement and its impact on aggression and violence in late adolescence. *Child Development, 79*, 1288-1309.
- Piaget, J. (1932/1965). *The moral judgment of the child*. New York: Free Press.
- Preacher, K.J., Curran, P.J., & Bauer, D.J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437-448.
- Raudenbush, S. W., Bryk, A. S., Cheong, Y. F., Congdon, R., & Du Toit, M. (2011). *HLM 7: Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.
- Saelen, C., & Markovits, H. (2008). Adolescents' emotion attributions and expectations of behavior in situations involving moral conflict. *Journal of Experimental Child Psychology, 100*, 53-76.
- Schneider, W., & Bullock, M. (Eds.). (2009). *Human development from early childhood to early adulthood*. New York: Psychology Press.

- Stets, J. E., & Carter, M. J. (2012). A theory of the self for the sociology of morality. *American Sociological Review*, *77*, 120-140.
- Svetlova, M., Nichols, S. R., & Brownell, C. A. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development*, *81*, 1814-1827.
- Swiss Federal Office of Statistics (2012). *Bildungsstatistik 2011* [Education statistics 2011]. Neuchâtel, Switzerland: Swiss Federal Office of Statistics.
- Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). What's moral about self-conscious emotions? In J. Tracy, R. W. Robins & J. P. Tangney (Eds.), *The self-conscious emotions: theory and research* (pp. 21-37). New York: Guilford.
- Tracy, J., & Robins, R. W. (2007). The self in self-conscious emotions. In J. Tracy, R. W. Robins & J. P. Tangney (Eds.), *The self-conscious emotions: theory and research* (pp. 3-20). New York: Guilford.
- Warneken, F., & Tomasello, M. (2009). The roots of human altruism. *British Journal of Psychology*, *100*, 455-471. doi: 10.1348/000712608X379061
- Weiß, R. (1998). CFT-20. *Grundintelligenztest* [culture fair intelligence test]. Goettingen, Germany: Hogrefe.
- Wintre, M., & Vallance, D. D. (1994). A developmental sequence in the comprehension of emotions: Intensity, multiple emotions, and valence. *Developmental Psychology*, *30*, 509-514.
- Zhou, Q., Valiente, C., & Eisenberg, N. (2003). Empathy and its measurement. In S.J. Lopez & C.R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 269-284). Washington: American Psychological Association.

Table 1

*Frequencies (%) of Patterns of Moral Decision-making and Emotions by Assessment Point and Story Context*

	Assessment Point					
	Time 1: 15 years		Time 2: 18 years		Time 3: 21 years	
	B	P	B	P	B	P
Happy victimizer	14	6	16	7	10	9
Unhappy victimizer	15	6	7	7	6	6
Happy moralist	61	85	70	85	76	84
Unhappy moralist	10	3	7	1	8	1

*Note.* B = Bike story. P = Purse story.

Table 2

*Crosstabulation of Patterns of Moral Decision-making and Emotions at Time 1 and Time 2 (% of responses)*

	HV T2	UV T2	HM T2	UM T2	Total (% within T1)
HV T1	37	7	54	2	100
UV T1	16	18	62	4	100
HM T1	7	5	84	4	100
UM T1	8	10	67	15	100

*Note.* HV = Happy victimizer. UV = Unhappy victimizer. HM = Happy moralist. UM = Unhappy moralist. T1 = Time 1. T2 = Time 2.

Table 3

*Crosstabulation of Patterns of Moral Decision-making and Emotions at Time 2 and Time 3 (% of responses)*

	HV T3	UV T3	HM T3	UM T3	Total (% within T2)
HV T2	42	12	43	3	100
UV T2	21	23	52	4	100
HM T2	10	6	80	4	100
UM T2	5	5	88	4	100

*Note.* HV = Happy victimizer. UV = Unhappy victimizer. HM = Happy moralist. UM = Unhappy moralist. T2 = Time 2. T3 = Time 3.

Table 4. *Correlations Between the Moral Decision-Making and Emotion Patterns for Each Story Context at T1-T3 with Sympathy and Personality Characteristics at Time 1*

Independent variables T1	Time 1		Time 2		Time 3	
	B	P	B	P	B	P
Happy Victimizer (1) vs. Rest (0)						
Sympathy (SR)	-0.17***	-0.16***	-0.13***	-0.13***	-0.10***	-0.15***
Sympathy (PR)	-0.10**	-0.05	-0.16***	-0.08**	-0.14***	-0.12***
Agreeableness	-0.07*	-0.02	-0.07**	-0.04	-0.08**	-0.08**
Conscientiousness	-0.04	-0.04	-0.06*	-0.11***	0.01	-0.08**
Unhappy Victimizer (1) vs. Rest (0)						
Sympathy (SR)	-0.01	-0.19***	-0.02	-0.04	0.00	0.10***
Sympathy (PR)	-0.06*	-0.03	0.00	-0.10**	-0.03	-0.01
Agreeableness	-0.12***	-0.10**	0.01	-0.08**	-0.03	-0.12***
Conscientiousness	-0.11***	-0.11***	0.00	-0.10***	-0.01	-0.10***
Happy Moralistic (1) vs. Rest (0)						
Sympathy (SR)	0.06*	0.23***	0.12***	0.12***	0.05	0.04
Sympathy (PR)	0.10**	0.08**	0.08**	0.12***	0.08**	0.09**
Agreeableness	0.09**	0.08**	0.05	0.08**	0.07**	0.14***
Conscientiousness	0.12***	0.12***	0.02	0.16***	0.01	0.15***

*Note.* B = Bike story. P = Purse story. SR = Self report. PR = Primary caregiver report.

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

Table 5. *Parameter Estimates (Standard Errors) of Independent Variables on Patterns of Moral Decision Making and Emotion Attribution:**Two-level HLM Bernoulli Model Analyses*

Parameter	Patterns of Moral Decision-Making and Emotion Attribution								
	Happy Victimizer			Unhappy Victimizer			Happy Moralist		
	$\beta$ (SE)	t	OR (CI)	$\beta$ (SE)	t	OR (CI)	$\beta$ (SE)	t	OR (CI)
Time level									
Time	0.04 (0.04)	0.84	1.03 (0.93-1.14)	-0.27 (0.04)	-5.96***	0.77 (0.67-0.81)	0.16 (0.04)	4.36***	1.17 (1.09-1.24)
Story level									
Story context	0.64 (0.08)	8.51***	1.90 (1.65-2.37)	0.38 (0.08)	4.83***	1.46 (1.32-1.86)	-0.96 (0.07)	-13.98***	0.38 (0.35-0.45)
Child level									
Sympathy (SR)	-0.35 (0.06)	-6.36***	0.70 (0.64-0.79)	-0.06 (0.06)	-1.05	0.94 (0.84-1.07)	0.21 (0.05)	4.51***	1.24 (1.10-1.32)
Sympathy (PR)	-0.21 (0.05)	-4.67***	0.81 (0.74-0.89)	-0.05 (0.05)	-1.11	0.95 (0.86-1.04)	0.12 (0.04)	3.11**	1.13 (1.04-1.21)
Agreeableness	-0.09 (0.05)	-1.75	0.91 (0.82-1.01)	-0.20 (0.05)	-4.07***	0.82 (0.74-0.90)	0.11 (0.04)	2.59*	1.12 (1.09-1.28)
Conscientiousness	-0.01 (0.04)	-0.08	0.99 (0.90-1.07)	-0.18 (0.04)	-4.73***	0.84 (0.77-0.90)	0.13 (0.04)	3.53***	1.14 (1.10-1.26)
Cross-level interactions									
Story context x Time	-0.40 (0.07)	-5.61***	0.67 (0.58-0.77)	-0.45 (0.09)	-5.31***	0.64 (0.53-0.75)	0.45 (0.07)	6.55***	1.56 (1.36-1.73)



## EMOTIONS AND MORAL DECISION MAKING

41

Sympathy (SR) x Time	0.16 (0.10)	1.59	1.08 (0.97-1.19)	0.29 (0.06)	4.77***	1.34 (1.19-1.49)	-0.11 (0.04)	-2.58*	0.89 (0.82-0.97)
Sympathy (PR) x Time	-0.08 (0.07)	-2.00*	0.92 (0.85-1.00)	0.06 (0.08)	0.77	1.07 (0.95-1.14)	-0.08 (0.07)	-1.23	0.92 (0.90-1.08)
Agreeableness x Time	-0.05 (0.09)	-0.58	0.95 (0.85-1.02)	0.03 (0.05)	0.58	1.03 (0.94-1.15)	-0.13 (0.07)	-1.81	0.88 (0.84-1.01)
Conscientiousness x Time	0.01 (0.04)	0.21	1.01 (0.94-1.08)	0.07 (0.04)	1.71	1.07 (1.00-1.16)	-0.04 (0.03)	-1.36	0.96 (0.90-1.02)
Control Variables									
Sex	-0.92 (0.08)	-11.43***	0.40 (0.34-0.47)	0.01 (0.08)	0.15	1.01 (0.85-1.20)	0.44 (0.07)	6.11***	1.36 (1.19-1.55)
Cognitive skills	-0.08 (0.03)	-2.69**	0.93 (0.88-0.98)	-0.05 (0.03)	-1.76	0.95 (0.89-1.01)	0.04 (0.03)	1.54	1.04 (1.00-1.10)
Educational attainment	-0.22 (0.04)	-4.99***	0.80 (0.73-0.87)	-0.03 (0.04)	-0.81	0.97 (0.91-1.08)	0.08 (0.04)	2.06*	1.08 (0.98-1.13)
SES (ISEI)	0.01 (0.00)	1.35	1.00 (0.99-1.01)	0.01 (0.00)	1.39	1.01 (0.99-1.01)	0.00 (0.01)	-1.15	1.00 (0.99-1.00)

Note. OR = Odds ratio. CI = 95% Confidence interval. SR = Self report. PR = Primary caregiver report.

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

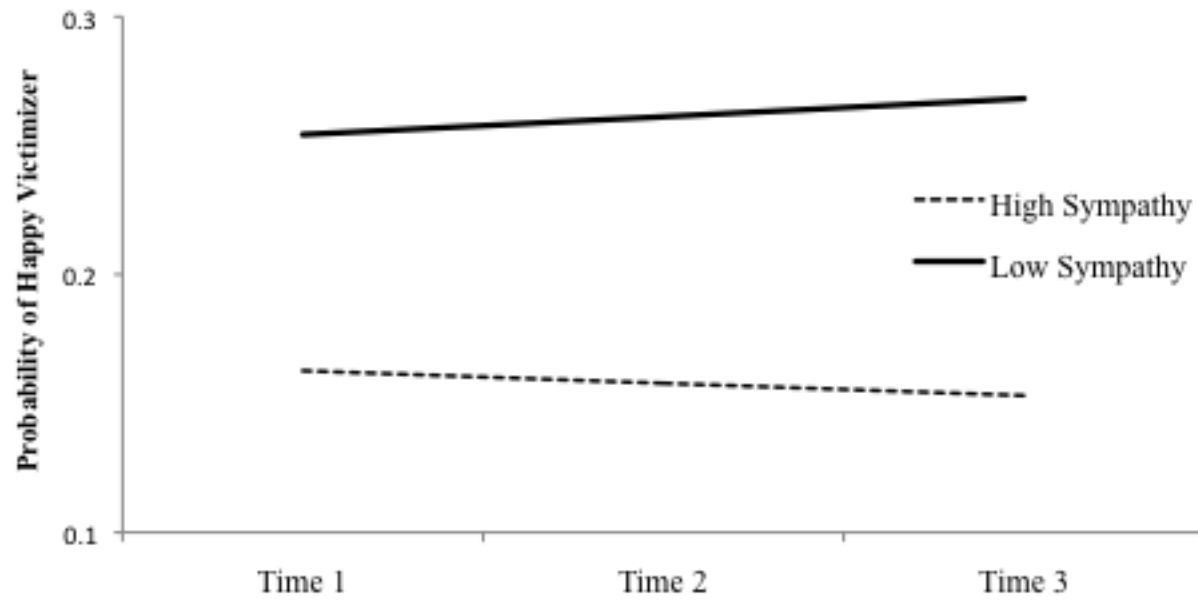


Figure 1. Two-way-interaction of sympathy x time on probability of happy victimizer pattern.

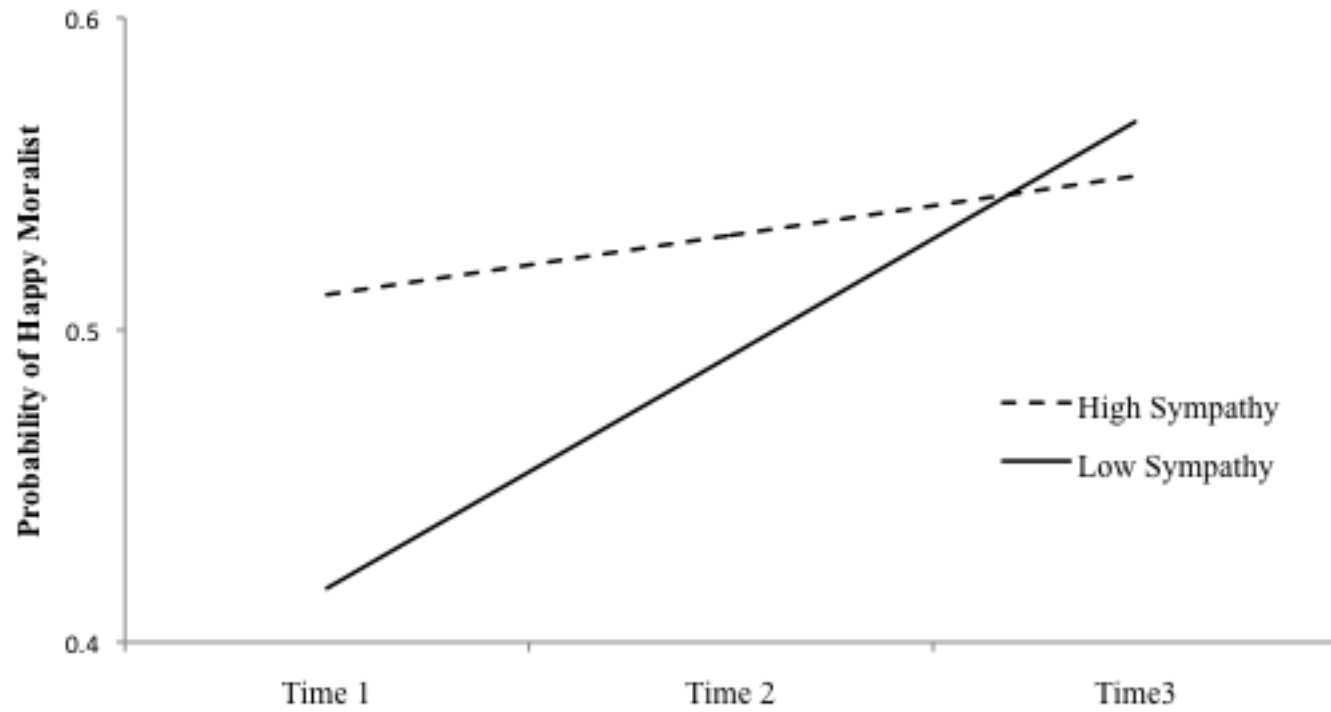


Figure 2. Two-way-interaction of self-reported sympathy x time on probability of happy moralist pattern.