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De Clercq, Barbara; Vanwoerden, Salome; Franssens, Raissa; Van Leeuwen, Karla; Vergauwe, Jasmine; Hofmans, Joeri

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Positive and Harmful Effects of Parental Disciplinary Tactics on Dark Trait Development Throughout Childhood and Adolescence

Barbara De Clercq¹, Salome Vanwoerden², Raissa Franssens¹, Karla Van Leeuwen³, Jasmine Vergauwe¹, & Joeri Hofmans⁴

¹Ghent University, Belgium
²University of Houston, USA
³Katholieke Universiteit Leuven, Belgium
⁴Vrije Universiteit Brussel, Belgium

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Abstract

Children exhibiting a constellation of dark traits may be particularly challenging to parents, because these traits are associated with an increased chance for parents to lose a supportive attitude in dealing with the child’s difficultness, and to turn instead towards punishing strategies. The present study looks with more detail into the construct of parental punishment, and examines differences and similarities in the effects of physical (harsh) versus non-physical (corrective) discipline on the developmental course of childhood FFM-based dark traits across a 10 year time span. Data were drawn from an ongoing Flemish longitudinal study, including 5 assessment points across 10 years (\(N_{time 1} = 720, 54.4\%\) girls, age range \(T_1 = 8-14.78\) years, \(M = 10.73, SD = 1.39\)). Latent growth modeling suggested significant differences between both kinds of parental discipline in terms of contrasting effects on subsequent growth in dark traits, and also showed a number of age-and gender-specific effects of parental discipline on the developmental course of dark traits. These findings underscore the relevance of a more differentiated perspective on effects of parental punishment in understanding childhood maladaptive trait outcomes and may offer fruitful guidelines for the development of intervention programs targeting children that are difficult to manage.

Keywords: childhood, trait development, parenting, dark triad
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Childhood trait development naturally unfolds within a social context (Neyer & Asendorpf, 2001), with consistent support for the role of parenting as one of the earliest and most significant environmental factors contributing a child’s social, emotional and behavioral growth (Kiff et al., 2011). This finding speaks for itself, given that the closest personal network of young children is formed by core family members. The social convoy theory (Kahn & Antonucci, 1982) proposes that parents are the inner circle of the social convoy surrounding the young child, with only minor quantitative relationship differences across families, such as the size of the primary family network. In contrast, substantial variability is believed to exist at the level of qualitative relationship characteristics, including the overall parent-child attachment, the quality of parental affectivity, responsiveness, and the extent to which behavioral or psychologically controlling strategies are applied in daily rearing practices. Each of these aspects has been of considerable interest to researchers in the field of childhood trait development (Davidov & Grusec, 2006; Finn et al., 2017; Khaleque, 2013; Pomerantz & Wang, 2009), all showing convincing evidence that parenting matters in the context of early personality development (Collins et al., 2000; Shiner & Caspi, 2003).

From an interactional perspective, various models have been proposed to conceptualize how the interplay between childhood temperament/personality and parenting relates to subsequent development (for a review see Kiff et al., 2011), underscoring the idea that child or parental risk factors are not universal but conditional. This line of thinking also connects with a recent integrative and theory-based model on the development of early personality pathology (De Fruyt & De Clercq, 2014), suggesting that the manifestation of maladaptive tendencies will be more explicitly activated under environmental circumstances that are relevant to the trait. Currently, the literature has provided substantial evidence in
support of interactive effects between childhood vulnerabilities and parental behavior on a wide range of behavioral and emotional outcomes of childhood functioning, both through the lens of psychological controlling strategies (Mabbe et al., 2016; Morris, et al., 2002) and behavioral controlling practices of parents (Lahey et al., 2003; Prinzie et al., 2006; van Zeijl et al., 2007).

Yet, the spectrum of behavioral controlling strategies is broad, including conceptually distinct though often related practices subsumed under the umbrella of parental discipline, referring to all parental efforts to restrict or manage a child’s behavior (Locke & Prinz, 2002). These parental disciplinary tactics may further be classified according to different perspectives, traditionally classified as love-oriented versus power-assertive techniques of discipline (Becker, 1964), restrictive versus permissive discipline (Sears et al., 1957), or physical versus non-physical punishment (Larzelere & Kuhn, 2005). The latter specification may be especially relevant in the context of childhood characteristics within the externalizing spectrum of behavior, because heavy and persistent acting-out behavior of children has been systematically linked to parental burden, with an increased chance for parents to lose control in dealing with a child’s difficultness (Mash & Johnston, 1990; Östberg & Hagekull, 2000). The processes through which this manageability of the ‘difficult’ child is impeded can be generally situated within inaccurate parental mentalization of their kids’ inner experiences (Sharp & Fonagy, 2008), which is obviously also driven by the fact that children with explicit manifestations of dark traits often express behavior that is difficult to frame. Notwithstanding that physical disciplinary tactics have been consistently defined as significant risk factors for childhood maladjustment (Mulvaney & Mebert, 2007), spanking still is a widely used parental strategy to correct a child’s unwanted behavior (Gershoff & Grogan-Kaylor, 2016), especially when the temperamental features of the child are perceived as difficult to manage.
One constellation of childhood externalizing traits of particular interest are dark traits, representing an empirically-based and age-specific set of traits (De Clercq et al., 2017), drawn from a validated omnibus measure of childhood maladaptive traits (i.e., the Dimensional Personality Symptom Itempoole (DIPSI); De Clercq et al., 2006) that is connected to the well-established Five-Factor Model of personality. Beyond the more common childhood externalizing traits such as aggressive traits and impulsivity, this childhood dark trait set additionally covers a core component of callous-unemotional, narcissistic and manipulative traits (De Clercq et al., 2017), which may relate to high levels of parental stress and difficulty in managing the child. Until today, very little evidence exists on the quality of parental care in relation to childhood dark traits (Jonason, Lyons, & Bethell, 2014) as a set, although the significance of parenting in the development of either psychopathic traits (Lynam et al., 2008; Muratori et al., 2016; Ray et al., 2017; Waller et al., 2013), narcissism (Brummelman et al., 2015; Cohen, et al., 2014; Hengartner et al., 2013), or machiavellianism (Láng & Birkás, 2014) has been demonstrated. In general, these results demonstrate that the effects of parenting on subsequent dark trait development are not the same across traits, though different operationalizations of the trait and parenting constructs hamper a straightforward comparison of existing findings.

The current study aims to explore the role of different parental discipline strategies on subsequent development in the various traits comprising the childhood dark trait construct. We will verify whether the common growth among childhood dark traits as empirically indicated by De Clercq et al. (2017) translates into a shared susceptibility to parental discipline in terms of subsequent development, or alternatively whether some dark traits are relatively more prone to the impact of parental discipline than others, potentially explaining unique growth processes. In addition, by disentangling the construct of parental discipline into its subcomponents of corrective parental discipline (i.e. non-physical discipline) versus harsh
parental discipline (i.e. physical discipline), the current study will examine whether the effect of parental discipline on the development of dark traits varies by the specific disciplinary strategy that is applied. This objective corroborates preliminary cross-sectional evidence on the significant role of the quality of parent child-care in childhood dark trait characteristics (Jonason et al., 2014), exploring how specific types of parental disciplinary behavior influence subsequent change in each of the dark traits. This objective also builds upon the increasing consensus in the broader parenting literature on the overall harmful effects of negative controlling parental strategies (Kochanska et al., 2017), by specifically exploring whether this harmful effect holds for any kind of punishment or whether physical versus non-physical punishment differ in their impact upon dark trait outcomes.

We hypothesize that, while harsh parental discipline will show negative effects on all childhood dark traits, non-physical corrective discipline will have overall protective effects on the development of these traits. This hypothesis is based on two sources of evidence. First, previous research has indicated that authoritative parenting, characterized by provision of structure in a supportive manner (e.g., Baumrind, 1967; Soenens et al., 2015), is associated with positive outcomes among children. Particularly, specific aspects of behavioral control by parents such as firmness and democracy, have been shown to contribute independently to school success in children, above and beyond the effects of acceptance and psychological autonomy (Pinquart, 2016; Steinberg et al., 1989). Likewise, such features of parenting are related to lower externalizing problems among children (Aunola & Nurmi, 2005; Pinquart, 2017), likely due to fostering self-regulation and compliance (Hart et al., 2003). Although the current construct of non-physical corrective discipline may go a step further than the traditional operationalization of authoritative parenting, it may be classified under this umbrella in the context of childhood dark traits, given that these traits may require more explicit boundary setting of parents. Second, the link between harsh discipline and child
externalizing behavior is well documented (Gershoff et al., 2018; Pinquart, 2017), and can be explained from increased perceptions of hostility and rejection by parents (Lansford et al., 2010), reinforcement of low self-control and anger/frustration (Evans et al., 2012), and aggression (You & Lim, 2015). The current study will corroborate this evidence, by directly comparing the relative effect of physical versus non-physical discipline on the development of a set of externalizing traits that have not been studied in conjunction before. In addition, sensitivity analysis were conducted to explore whether the main interactions between parenting and the intercepts of the dark-traits hold across gender and age. While there has been mixed evidence in this regard, a recent meta-analysis found that associations between both parenting dimensions of corrective discipline and harsh discipline with overall externalizing problems were stronger in older samples, whereas no moderating effects of gender were found (Pinquart, 2017).

**Method**

**Participants and Procedures**

The current study relies on data of the ongoing longitudinal PALS study on childhood personality development and (mental health) outcomes, including both children from the general community as well as children referred to mental health care at the moment of inclusion in the study. Detailed information regarding enrollment criteria can be found in De Clercq, Verbeke, De Caluwé, Vercruysse, & Hofmans (2017). Data collection procedures were approved by the Ghent University Ethical Review Board. Currently, the study includes a five-wave multi-informant design (i.e., with child, mother and father ratings) spanning 10 years of childhood, adolescence and emerging adulthood ($N = 720, 54.4\%$ girls, age range $T_1 = 8-14.78$ years, $M = 10.73, SD = 1.39$). Follow-up assessments for Wave 2 and 3 were conducted one and two years after initial assessment. Response rates of the follow-up assessments were 82.9 and 68.5% for T2 and T3, respectively. For detailed descriptions of the participants and procedure for waves 1-3 see De Bolle et al. (2012), for wave 4 see De...
Caluwé et al. (2014) and for wave 5 see De Clercq et al. (2017). Participants were guaranteed that data would only serve research purposes and would be treated confidential. Continued participation across all waves was 42%, with minor differences between responders and non-responders (see De Clercq et al., 2017). The little’s Missing Completely At Random (MCAR) test revealed that, in general, missingness in the data was completely at random ($\chi^2 (460) = 456.18, p = .542$).

**Measures**

*Dimensional Personality Symptom Itempool (DIPSI; De Clercq et al., 2006)*

To measure childhood dark traits, mothers rated their children on the DIPSI across waves 1, 2, 3, and 4. As recently proposed by De Clercq et al. (2017), 44 items of the DIPSI allow to capture the developmental Dark Triad construct, structured in the facets of Aggressive traits, Dominance/Egocentrism, Impulsivity, Lack of empathy, Narcissistic traits and Resistance. Items were scored on a 5-point Likert scale ranging from 1 (‘strongly disagree’) to 5 (‘strongly agree’). Alpha coefficients were adequate across waves, with coefficients ranging from .85 to .91 in wave 1 (mean age child 10.73, SD 1.38), from .88 to .94 in wave 2 (mean age child 11.75, SD 1.40), from .89 to .93 in wave 3 (mean age child 12.75, SD 1.37), and from .89 to .94 in wave 4 (mean age child 15.58, SD 1.80). This set of traits proved to be unidimensional and structurally invariant over time, and further showed a significant shared developmental trajectory, with substantial relations to the adult dark triad outcome from a multi-informant perspective (De Clercq et al., 2017).

*Parental Behavior Scale-Short Version (VSOG; Van Leeuwen, Vermulst et al., 2013)*

The current study includes two subscales of the GPBS, Discipline and Harsh punishment. Discipline includes parental strategies to restrict or manage undesirable behavior of the child, for instance by taking away something enjoyable from the child or by imposing a task. Harsh
punishment includes specific acting-out behavior towards the child in terms of physical punishment such as spanking. Both subscales will from here on be referred to as Corrective Discipline and Harsh Discipline, respectively.

All fathers completed the GPBS across the first three waves of the study (from middle to late childhood), targeting the parental behavior of their spouse to reduce the possibility of social desirable responses. In the current sample, all spouses were also the mother of the target child. Items were rated on a five-point Likert scale, representing concrete aspects of physical and non-physical corrective discipline behavior of the mother with regard to the target child at that specific time. Psychometric properties of both parental subscales across waves were adequate, with alpha coefficients of .84 (Time 1), .85 (Time 2), and .85 (Time 3) for Corrective Discipline (6 items) and .78 (Time 1), .79 (Time 2) and .74 (Time 3) for Harsh Discipline (4 items) respectively.

**Analyses**

The main objective of this paper is testing whether and how different aspects of disciplinary control strategies moderate growth in a set of childhood dark traits over time. First, we tested a latent growth curve model (LGM) for Corrective Parental Discipline and a LGM for Harsh Parental Discipline, estimating individual differences in the intercept and slope of each control strategy. Next, the following two models were conducted separately for each of the six dark traits; each model corresponded to each of the two forms of disciplinary control strategies in which the common slope of the dark traits was regressed on (1) the common intercept of the dark traits, (2) the intercept of the respective disciplinary strategy, and (3) the interaction between the common trait intercept and the intercept of the respective disciplinary strategy. In a final step, we again ran two models for both parental disciplinary strategies, this time including three-way interaction terms in order to explore whether the
interactive effect between baseline trait scores and parenting on subsequent growth in dark traits holds across age and gender of the child.

By testing this series of models, we were able to test (1) whether individual differences in parenting behavior covaried with change in the childhood dark side trait, (2) whether individual differences in Corrective discipline and Harsh discipline were especially pronounced for children who are already high on the dark side trait at the start of the current study, and (3) whether the impact of the predictors on dark trait development was different for boys versus girls and for younger versus older children (at baseline). Interactions between the latent intercept factors were specified using the XWITH command in Mplus. Because modeling latent variable interactions requires numerical integration, and because Chi-Square and its related fit indices (i.e., CFI, TLI, RMSEA and SRMR) are not available when using numerical integration, no fit indices are reported for these models. With numerical integration, missing data are handled in the same way as with MLR (i.e., by means of FIML).

Statistically significant interactions were probed by plotting the simple slopes associated with high versus low levels of the intercept of each trait, boys versus girls, and younger versus older youths (at baseline).

**Results**

To test how parenting behavior influenced growth in each of the six dark traits over time, we first tested a LGM for Corrective Parental Discipline and a LGM for Harsh Parental Discipline. For Corrective Discipline ($\chi^2 (1) = .226; CFI = 1.000; TLI = 1.000; RMSEA = .000; SRMR = .004$) as well as for Harsh Discipline ($\chi^2 (1) = .419; CFI = 1.000; TLI = 1.000; RMSEA = .000; SRMR = .007$) a linear growth function fitted the data well. The growth functions show that, on average, the amount of Corrective Discipline (mean slope = -.11 ; $p < .001$) and the amount of Harsh Discipline (mean slope = -.04 ; $p < .001$) decreased over time. Moreover, there were little inter-individual differences in growth of Corrective Discipline.
(slope variance = .02; \( p = .348 \)), nor in growth of Harsh Discipline (slope variance = .00; \( p = .854 \)), indicating that the overall rate of change in parental disciplinary strategies over time is similar across parents.

Next, we tested whether the interplay of parental discipline and one’s initial level on each of the dark traits predicted growth in each of these six dark traits. Previous work has shown that growth in each of the dark traits is best represented by linear growth functions (De Clercq et al., 2017). Hence, for each of the six dark traits we tested two models: one including an interaction between the intercept of the dark trait and the intercept of Corrective Discipline, and one including an interaction between the intercept of the dark trait and the intercept of Harsh parental discipline. The results of these analyses are shown in Table 1. Results indicate that there was a statistically significant interaction between trait intercept and Corrective Discipline for Aggressive-Irritable traits (\( \beta_3 = -.11, p < .01 \)), while interactions with the traits of Dominance and Impulsivity approached significance (\( \beta_3 = -.06 \) and -.07 respectively, \( p < .10 \))^1. As can be seen in Figure 1, differences were most notable at high levels of the trait, with those experiencing high levels of Corrective discipline showing stronger negative correlations between the intercept and slope, although correlations between intercept and slope were negative for all traits. In other words, high levels of Corrective discipline are beneficial for the development of those dark traits, and this is particularly true for children with high initial levels of these traits. With regard to Harsh parental discipline, there were significant interactions for Aggressive-Irritable traits (\( \beta_3 = .58, p < .001 \)), Lack of empathy (\( \beta_3 = .70, p < .01 \)), Narcissism (\( \beta_3 = .65, p < .001 \)), Resistance (\( \beta_3 = .75, p < .01 \)), while the interaction with Dominance approached significance (\( \beta_3 = .15, p < .10 \)). Plots of these interactions showed a similar pattern in that the correlation between intercept and slope were negative for those experiencing low levels of Harsh discipline (see Figure 1). Although not as

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^1 When correcting for multiple testing, however, these interactions are non-existent
strong in magnitude, those experiencing high levels of Harsh Discipline evidenced positive correlations between trait intercepts and their respective slope with the strongest effects seen among those with the highest intercept levels of traits. In other words, high levels of Harsh Discipline were found to be detrimental for the development of those dark traits, which is particularly true for children with high initial levels of these traits.

In a final step, sensitivity analyses were conducted to test for each dark trait whether the strength of the interaction effects between the intercepts of the relevant trait and the parenting construct on subsequent growth in the dark trait holds across childhood gender or age (at baseline). This was done by regressing the slope of the dark traits on the interaction between the intercept of the relevant trait, the intercept of parental behavior and gender or age, respectively. Table 2 shows that there was only a single trait, Lack of empathy, that demonstrated a three-way interaction with gender ($\beta_7 = -.78$, $p < .001$). Specifically, as plotted in Figure 2, while the correlation between intercept and slope of Lack of empathy appeared to be close to zero among boys, this slope differed for girls conditional on the level of Harsh Discipline experienced at baseline. For girls experiencing low levels of Harsh Discipline, Lack of empathy decreased over time, which was most pronounced for those with the highest baseline levels of Lack of empathy. Girls who experienced high levels of Harsh Discipline, on the other hand, demonstrated increasing trajectories for this trait.

When exploring sensitivity analyses for age (see Table 3), we found a statistically significant three-way interaction between Corrective Discipline and Lack of empathy ($\beta_7 = .08$, $p < .01$). As can be seen in Figure 3, a negative slope of Lack of empathy was found for younger children experiencing high levels of Corrective Discipline (i.e., beneficial), whereas a positive slope was found when younger children experienced low levels of Corrective Discipline (i.e., detrimental). In contrast, a negative slope was found for older children experiencing low levels of Corrective Discipline (i.e., beneficial), while the slope appeared to
be close to zero among older children experiencing high levels of Corrective Discipline. Together, these findings suggest that Corrective Discipline is particularly beneficial for the development of empathy in younger children. For Harsh Discipline, there were statistically significant three-way interactions for the traits of Dominance ($\beta_7 = -.09$, $p < .05$), Impulsivity ($\beta_7 = -.32$, $p < .01$), and Narcissism ($\beta_7 = -.21$, $p < .001$) (see Figure 3). Across all three of these traits, there was a negative slope for younger children experiencing low levels of Harsh Discipline, suggesting that, particularly among younger children with the highest levels of Dominance, Impulsivity, and Narcissism, low levels of Harsh Discipline related to the steepest declines in these traits over time. The only interaction showing a steeper decline was for the trait of Impulsivity among older children experiencing high levels of Harsh Discipline, which was unexpected. Positive correlations between intercept and slopes were found for Narcissistic traits and Dominance among younger children experiencing high levels of Harsh Discipline, suggesting that younger children with high levels of these traits are at highest risk for increasing trajectories of these traits.

**Discussion**

The current study comprehensively examines the development of childhood dark traits across childhood and adolescence from a parenting perspective, and explored how different maternal discipline strategies as observed by fathers impact upon the subsequent course of each of these traits. While the bidirectional model on childhood trait-parenting effects forms the implicit framework from which the current study is drawn, the explicit focus of the study was to explore in depth how specific differences in disciplinary strategies may impact upon subsequent dark trait development of children. The majority of established trait-parenting studies focuses on broad dimensions of parenting in this regard, while the current study disentangles the construct of parental behavioral control into its subcomponents of physical versus non-physical corrective parental discipline. The rationale for this splitting can be
understood from the overall lower manageability of children with dark trait characteristics, as many parents experience difficulties in adhering to positive parenting while experiencing a high necessity to set boundaries in order to reduce the persistent undesirable behavior of their child (Kochanska et al., 2017; Salihovic et al., 2012). The comprehensive focus on childhood dark traits further exceeds the traditional research perspective on common childhood externalizing trait features, and specifically includes those traits that are either neglected in traditional operationalizations of externalizing tendencies (i.e., aggressive and delinquent behavior; Achenbach, 1991) or are the focus of separate research fields (i.e. narcissism (Brummelman et al., 2015) or callous-unemotional traits (Frick et al., 2014)). The importance of studying these dark traits in conjunction, however, has been empirically indicated in a recent prospective study (De Clercq et al., 2017), underscoring that these traits show a significant co-occurrence at a young age and also show a substantial shared normative course over time. This finding implies that children exhibiting all childhood dark traits together as proposed in De Clercq et al. (2017) actually exist and that raising these “difficult” children may be presumably associated with a higher tendency of parents to rely on controlling strategies.

Overall, the results of the current study show that physical and non-physical discipline have an opposite impact upon subsequent dark trait development. Whereas non-physical corrective discipline shapes childhood dark traits towards more maturation, physical discipline appears to attenuate the natural maturational decline in almost all dark traits. This finding may nuance the overall increasing consensus on the harmful effect of punishment (Akcinar & Baydar, 2014), as the current results suggest that some children may benefit from corrective discipline as long as it does not include any kind of physical punishment. Importantly, this beneficial effect of non-physical corrective discipline does not apply to all dark traits, which may be linked to the evidence that notwithstanding the substantial shared
growth among childhood dark traits, some unique growth processes evolve across time as well (De Clercq et al., 2017). More specifically, the positive effect of corrective discipline is particularly observed for the developmental process of the more typical externalizing traits of aggressive-irritable traits, and to a lesser extent for impulsivity and dominance. For the more affective traits of lack of empathy or narcissism, the positive effect of corrective discipline was not found (although development of empathy appeared to benefit from corrective discipline in younger children). This is consistent with previous data and theory indicating that affective characteristics of psychopathy may render typical parental socialization less effective (Edens et al., 2008). In view of the significant harmful effect of harsh discipline on these same affective dark traits, however, these findings clearly point to the necessity of training parents in the use of valuable alternative parental strategies to deal with children showing explicit affective dark trait features.

One exception to the overall toxic effect of physical discipline on subsequent trait development relates to the trait Impulsivity. Whereas all other traits show increasing deviating pathways when growing up in a harsh controlling context compared to a low harsh controlling context, Impulsivity does not seem to be affected. This may indicate that Impulsivity development is a strong biologically-driven process that is less influenced by parental discipline. An age-specific perspective on Impulsivity, however, provides a more detailed picture, as younger children indeed display steady high trajectories of Impulsivity when parents use physical punishment, whereas older children seem to become less impulsive in a high harsh controlling context. Notwithstanding this unexpected result, the age-specific impact of harsh discipline on impulsivity development may indicate that manifestations of impulsivity at different ages reflect a different nature. In adolescence, a period of high turbulence, impulsivity may represent a more reactive behavioral symptom and because of this behavioral reactivity, it may be more malleable by the threat of physical punishment. In
childhood, however, impulsivity may be a biological-driven expression of immature behavioral control in childhood that is not influenced by physical discipline strategies because the trait expression itself is uncontrollable by the child. It is exactly at this point that corrective discipline, instead of physical discipline, may foster a learning process in children (Schroeder & Kelley, 2009; van Prooijen et al., 2018), leading to more impulse control across time, as shown in the current results. These findings thus speak to the importance of looking at similar phenotypic manifestations of traits from an explicit age-specific maladaptive trait framework (De Clercq, 2017), because behavior that is similar at the observable level at different ages may reflect important etiological differences, including unique transactional processes that take place at different ages in the context of similar socialization strategies.

From a more overall perspective, the results show that both physical and non-physical controlling parenting linearly decrease over time. In line with other studies (Van Heel, 2019), there appear to be only minor differences between parents in the pace of change over time, with most explicit effects of parenting on subsequent trait development for children with high scores at baseline (see also Pinquart, 2017). From an age- and gender-specific perspective on the impact of parenting on trait development, the results point to the vulnerability of especially young children when exposed to harsh discipline. The steepest increases (or the most steady trajectories) of dark traits were seen among young children who are confronted with high levels of physical discipline. Because of the immaturity of brain development and moral reasoning (Garrigan et al., 2018), however, most of the dark traits are most explicitly present at a very young age. Both the presence of high mean-levels of dark traits and this relatively higher vulnerability among younger children therefore underscore the relevance of parenting programs that especially target parents of young children who are difficult to manage. From a gender-specific perspective on the trait by parenting developmental processes, specific attention should be given to the effect of harsh discipline on the Lack of
empathy trait, because this finding suggests that the nature of this trait may differ for boys and girls. More specifically, lack of empathy in boys tends to remain stable over time, irrespective of the level of harsh discipline, whereas low-empathic girls tend to develop more empathy when parents are not using physical discipline. It can thus be concluded that growth towards adaptation can overall be fostered by avoiding physical punishment in both boys and girls, with the exception of empathic development among boys. The latter finding may be linked to the literature on callous-unemotional traits, showing that low empathic behavior early in life is partially the result of a lack of role models and growing up with low parental warmth (Bedford et al., 2015). The current findings suggest that this may be especially true for girls, given their tendency to develop more empathy in a parenting context with low levels of physical discipline whereas lack of empathy in boys may reflect a core child-driven deficit in emotional processing that is not influenced by parental controlling strategies, neither in terms of low/high physical discipline or low/high corrective discipline. This is in line with multiple previous studies finding that girls are more susceptible to environmental factors in regard to development of callous-unemotional traits (Fontaine et al., 2010; Viding et al., 2005).

**Limitations and future research**

The conclusions of this study must be interpreted in light of several limitations. First of all, the current study did not measure evocative effects of childhood dark traits on initial maternal discipline strategies as observed by fathers. However, the literature on reciprocal effects between parents and children is prominent (Sameroff, 2009), including evidence on the explicit role of child temperamental difficulties for adequate parental mentalization during parent-child interactions. As such mentalizing capacities are required to adequately reflect upon and cope with the child as a psychological agent (Sharp & Fonagy, 2008), the current study is embedded within the overall assumption that child-evocative effects on parenting strategies do exist, especially in view of the current operationalization of “the difficult child”.
Second, it is known that dark traits have a significant genetic component (Vernon, Villani, Vickers, & Harris, 2008). This shared genetic component between parents and their biological children may affect both parenting strategies as well as the child’s behavior, and provides an interesting perspective to include in further research.

Third, while our study is novel in that different domains of behavioral control were parsed, we did not evaluate the effects of positive parenting, that may be relevant in the context of dark trait development (such as for narcissism; Thomaes & Brummelmann, 2018). Relatedly, we did not include other traits that may play a significant role in the context of dark trait development, such as the broad trait domain of negative affectivity which has been shown in previous research to be highly relevant in the context of efficacy of intervention programs and susceptibility to punishment (Viding, Fontaine, & McCrory, 2012). Forth, we relied on spousal reports of maternal behavior. While a major strength of this approach is that it limits the possibility of social desirability, at the same time it limits the perspective of children. There is a rich body of literature examining informant discrepancies in family reports of parenting practices, suggesting that there is a need for multiple informants to achieve a full picture of family dynamics (Korelitz & Garber, 2016). Although our results clearly suggest that corrective discipline is related to stronger declines in aggressive traits with an additional trend towards stronger declines in impulsivity and dominance, it is unclear whether these improved behaviors actually reflect positive psychosocial functioning or instead are merely changes of behavior to avoid disciplinary consequences. Future research may include child-ratings of well-being and ratings of parental personality to address these research questions, also exploring potential shared genetic effects between childhood dark traits and harsh parental behavior. Finally, modelling the developmental trajectory of each trait separately fails to acknowledge the shared developmental course of childhood dark traits through childhood and adolescence (De Clercq et al., 2017). However, we were unable to
model the effects of parenting on a shared latent growth trajectory of all dark traits, due to the high complexity of this statistical model relative to the number of observations in the dataset.

Conclusion

The current study is the first to differentiate between the effects of physical and non-physical discipline on the development of a comprehensive set of dark traits throughout the significant developmental periods of childhood and adolescence. Beyond the overall consensus on the indispensable importance of a nurturing and caring parenting climate, the current study explored to what extent parental discipline strategies differ in their impact on subsequent maladaptive trait development. This is a relevant perspective to take in the context of rearing a child with a particular set of challenging personality traits, as many of these parents experience limits in the efficacy of exclusive mild parenting. In response to this, the current findings may add to the established evidence that training programs for parents of children with a broad set of difficult characteristics may benefit from an additional focus on strengthening corrective discipline skills. However, the results speak against standard training protocols in this regard, and point to the importance of developmental considerations with regard to age and gender, as the nature of dark trait manifestations and the impact of controlling parenting strategies may differ for younger versus older children and for boys versus girls specifically.
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### Table 1

**Developmental Course of Dark Traits by Trait Intercepts, Parental behavior, and Trait x Parental behavior**

<table>
<thead>
<tr>
<th></th>
<th>Corrective discipline</th>
<th>Harsh parental discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta_0$</td>
<td>$\beta_1$</td>
</tr>
<tr>
<td>Aggressive traits</td>
<td>-0.39*</td>
<td>0.24*</td>
</tr>
<tr>
<td>Dominance</td>
<td>-0.11</td>
<td>0.08</td>
</tr>
<tr>
<td>Lack of empathy</td>
<td>-0.18</td>
<td>0.17</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>-0.17</td>
<td>0.08</td>
</tr>
<tr>
<td>Narcissism</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Resistance</td>
<td>-0.29</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Note: † $p < .10$ ‡ $p < .05$; * $p < .01$; ** $p < .001$; cd= corrective discipline, hpd: harsh parental discipline; In view of the significant interactive effects for trait x parental behavior, main effects of parental behavior should not be directly inferred from the table, but need to be interpreted from Figure 1.
Table 2

*Developmental Course of Dark Side Traits by Trait Intercepts, Parental behavior, and Gender*

<table>
<thead>
<tr>
<th>Trait</th>
<th>Corrective discipline</th>
<th>Harsh parental discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta_0$ $\beta_1$ $\beta_2$ $\beta_3$ $\beta_4$ $\beta_5$ $\beta_6$ $\beta_7$</td>
<td>$\beta_0$ $\beta_1$ $\beta_2$ $\beta_3$ $\beta_4$ $\beta_5$ $\beta_6$ $\beta_7$</td>
</tr>
<tr>
<td>Aggressive traits</td>
<td>-.30    .18   .15†  -.24  -.09†  .14   .06   -.04</td>
<td>1.07†  -.79***  -.82***  -.02  .59***  .04  -.02  -.03</td>
</tr>
<tr>
<td>Dominance</td>
<td>-.27    .11   .16   .25   -.08  -.02  -.12  .02</td>
<td>.63†  -.42†  -.43   -.24  .29   .18   .13   -.11</td>
</tr>
<tr>
<td>Lack of empathy</td>
<td>.26     -.20  -.08  -.48  .07   .40   .16   -.14</td>
<td>1.10*** -.88**  -.83**  -.23*** .67**  1.03*** .93**  -.78***</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>-.33    .12   .19†  .25   -.08†  -.02  -.12  .02</td>
<td>-.28   .11   .40   .47  -.19  -.27  -.46   .25</td>
</tr>
<tr>
<td>Narcissism</td>
<td>-.15    .09   .10   .19   -.06  .01  -.10  .02</td>
<td>.98*** -.82*** -.70*** .12  .61*** -.07  -.19   .10</td>
</tr>
<tr>
<td>Resistance</td>
<td>-.29    .24   .13   -.06  -.10  .12   .00  -.03</td>
<td>1.16*** 1.00*** -.83*** -.03  .73*** .04  -.05   .02</td>
</tr>
</tbody>
</table>

Note: † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 

$\beta_0$ $\beta_1$ $\beta_2$ $\beta_3$ $\beta_4$ $\beta_5$ $\beta_6$ $\beta_7$ $\beta_8$ $\beta_9$ $\beta_{10}$. 

Slope = $\beta_0 + \beta_1$ Int$_{trait} + \beta_2$ Int$_{cd} + \beta_3$ Sex + $\beta_4$ Int$_{trait} \times$ Int$_{cd}$ + $\beta_5$ Int$_{trait} \times$ Sex + $\beta_6$ Int$_{cd} \times$ Sex + $\beta_7$ Int$_{trait} \times$ Int$_{cd} \times$ Sex + $\beta_8$ Int$_{trait} \times$ Sex + $\beta_9$ Int$_{cd} \times$ Sex + $\beta_{10}$ Int$_{trait} \times$ Int$_{cd} \times$ Sex.
Table 3

**Developmental Course of Dark Side Traits by Trait Intercepts, Parental behavior, and Age**

<table>
<thead>
<tr>
<th>Trait</th>
<th>Corrective discipline</th>
<th>Harsh parental discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\text{Slope}<em>{\text{trait}} = \beta_0 + \beta_1 \text{Int}</em>{\text{trait}} + \beta_2 \text{Int}<em>{\text{cd}} + \beta_3 \text{Age} + \beta_4 \text{Int}</em>{\text{trait}} \times \text{Int}_{\text{cd}} + \beta_5$</td>
<td>$\text{Slope}<em>{\text{trait}} = \beta_0 + \beta_1 \text{Int}</em>{\text{trait}} + \beta_2 \text{Int}<em>{\text{hpd}} + \beta_3 \text{Age} + \beta_4 \text{Int}</em>{\text{trait}} \times \text{Int}<em>{\text{hpd}} + \beta_5 \times \text{Int}</em>{\text{trait}} \times \text{Age}$</td>
</tr>
<tr>
<td></td>
<td>$\text{Int}<em>{\text{trait}} \times \text{Age} + \beta_6 \text{Int}</em>{\text{cd}} \times \text{Age} + \beta_7 \text{Int}_{\text{cd}} \times \text{Age}$</td>
<td>$\text{Int}<em>{\text{hpd}} \times \text{Age} + \beta_6 \text{Int}</em>{\text{hpd}} \times \text{Age} + \beta_7 \text{Int}<em>{\text{hpd}} \times \text{Int}</em>{\text{cd}} \times \text{Age}$</td>
</tr>
<tr>
<td>Aggressive</td>
<td>$\beta_0$</td>
<td>$\beta_1$</td>
</tr>
<tr>
<td></td>
<td>-.33</td>
<td>.20</td>
</tr>
<tr>
<td>Dominance</td>
<td>-.11</td>
<td>.09</td>
</tr>
<tr>
<td>Lack of empathy</td>
<td>.05</td>
<td>-.02</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>-.01</td>
<td>-.03</td>
</tr>
<tr>
<td>Narcissism</td>
<td>-.02</td>
<td>.07</td>
</tr>
<tr>
<td>Resistance</td>
<td>.00</td>
<td>-.00</td>
</tr>
</tbody>
</table>

Note: † $p < .10$; ‡ $p < .05$; * $p < .01$; ** $p < .001$. 

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Figure 1. Trait x Parenting Interactive Effects on Subsequent Trait Development
Figure 2. Trait x Parenting x Gender Interactive Effects on Subsequent Trait Development

![Graph showing the interactive effects of harsh discipline, gender, and trait development on empathy.]
Figure 3. Trait x Parenting x Age Interactive Effects on Subsequent Trait Development