

Relationship between interparental functioning and adolescents' level of Machiavellianism: a multi-perspective approach

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Abstract

Childrearing antecedents of Machiavellianism have been investigated, finding that cold, rejecting, and neglecting parenting is associated with Machiavellianism. However, there is a paucity of research on Machiavellianism and family functioning that is suggested to be a stronger predictor of children's adjustment than parenting. In two cross-sectional, self-report studies with 266 adolescents (115 boys) and 98 families raising adolescents (51 boys), we investigated the relationship between adolescent Machiavellianism and interparental functioning. We found that some aspects of perceived interparental conflict and poor quality coparenting were associated with higher levels of Machiavellianism in boys. The association between interparental discord and Machiavellianism has been discussed with respect to previous studies on family functioning, child maladjustment, and Machiavellianism. The selective relationship between measured indices of interparental functioning and Machiavellianism in boys has been discussed using the male vulnerability hypothesis and the distinct pathways model.

Keywords: adolescence; coparenting; distinct pathways model; Machiavellianism; male vulnerability hypothesis; perceived interparental conflict

1. Introduction

Machiavellianism – a personality trait representing cynical, manipulative, and detached interpersonal attitudes and world views – has been in the focus of authors from several fields of psychology since the 1970s (for a review see Fehr, Samson, & Paulhus, 1992). However, research on the developmental aspects of Machiavellianism has been scarce. Developmental research on Machiavellianism focused mostly on parent-child interactions (e.g., Kraut & Price, 1976; Láng & Birkás, 2015; Ojha, 2007) and general family processes (e.g., Láng, 2016a; Láng & Birkás, 2014). Although these studies provided valuable data on the developmental antecedents of Machiavellianism, the investigation of interparental discord – an important correlate of child and adolescent maladjustment (e.g., Buehler et al., 1997; Cummings & Davies, 1994) – has been out of the scope of these studies, yet. This paper presents two studies that were aimed at investigating the relationship between adolescents' level of Machiavellianism and quality of parents' dyadic functioning.

1.1. Developmental antecedents of Machiavellianism

Machiavellianism is a personality trait characterized by manipulative and deceitful interpersonal tactics, a cynical view of the world and fellow humans, and pragmatic moral norms (Christie & Geis, 1970). Behavioral genetic studies showed that environmental factors (Veselka, Schermer, & Vernon, 2011) and especially shared environmental factors (Vernon Villani, Vickers, & Harris, 2008) accounted for a significant part of between-subject variance in Machiavellianism. Thus, experiences in the family of origin might be especially formative for the development of Machiavellianism. Despite this, few studies have focused on the

empirical investigation of the relationship between childhood experiences and Machiavellian personality traits – either longitudinally or with a cross-sectional methodology.

In an early research, Kraut and Price (1976) found that manipulative children have parents who also show high levels of Machiavellianism. Besides replicating the above mentioned results, a recent study on the relationship between Machiavellianism of grown-up children and their parents showed that the strength of this association weakened as children grew older (Siwy-Hudowska & Pilch, 2014). We consider this result to be an argument for environmental effects in the transgenerational transmission of Machiavellianism.

Parenting and family functioning have been found to be linked to Machiavellianism in adolescents and adults as well. In several studies (e.g., Jonason, Lyons, and Bethell, 2014; Kraut & Price, 1976; Láng & Birkás, 2015; Ojha, 2007), Machiavellianism was significantly associated with recollections or concurrent perceptions of parental rejection. Láng and Lénárd (2015) showed that Machiavellianism was related to more frequent recollections of childhood negative home atmosphere and neglect in a community sample of adults. These experiences of neglect might be reflected in Machiavellian adolescents' possession of schemas that express expectations of emotional deprivation, mistrust, and abuse (Láng, 2015a).

Studies from a family systems perspective (Láng & Birkás, 2014; Ryumshina, 2013) found that adolescents' perception and teachers' report of family disengagement had a significant and positive correlation with Machiavellianism. The study of Láng and Birkás (2014) showed that Machiavellian adolescents' families were characterized by chaotic family functioning as well. As an extension, Láng (2016a) reported that adults' retrospective account of emotional parentification [i.e., crediting the child with responsibility for the emotional well-being of parents and other family members (Jurkovic, Thirkield, & Morrell, 2001)] was significantly associated with Machiavellianism, but only for men. In sum, higher levels of Machiavellianism seem to be associated with more negative family environment. This may be

through more rejecting and neglecting parenting (e.g., Kraut & Price, 1976; Láng & Birkás, 2015; Ojha, 2007) or less optimal family functioning in general (Láng, 2016a; Láng & Birkás, 2014).

To date, no specific theories are available to account for the ontogeny of Machiavellianism. Life History Theory (LHT; Kaplan & Gangestad, 2005) might give a good explanation for the development of Machiavellian traits. In their evolutionary theory of socialization, Belsky, Steinberg, and Draper (1991) suggest that individuals use parental practices to calibrate their life history strategy to environmental conditions. Individuals from dissolved or stressful families – where parents are uninvolved, inconsistent, or even absent – will adopt a fast life history strategy. This strategy includes opportunistic and exploitative interpersonal relationships in general, low commitment to romantic partners, and low parental investment. Dark personality traits – including psychopathy, narcissism, and Machiavellianism – are repeatedly found to be associated with fast life history strategy (Jonason, Konig, & Tost, 2010; Jonason, Webster, Schmitt, Li, & Crysel, 2012; McDonald, Donnellan, & Navarrete, 2012). Thus, besides interparental functioning, family structure might also play an important role in the development of Machiavellianism.

With regard to gender differences, studies have repeatedly found boys to report higher levels of Machiavellianism (e.g., Czibor et al., 2017; Jonason, Icho, & Ireland, 2016). Moreover, recent studies (Abell et al., 2015; Czibor et al., 2017) revealed that gender might significantly moderate the relationship between Machiavellianism and outcome variables in children and adults as well. For school-aged boys, Abell et al. (2015) found that Machiavellianism was correlated with more direct and indirect aggression, being accepted more frequently by others, and accepting peers into their own group more frequently. For school-aged girls, Machiavellianism was related to less indirect aggression, being accepted less frequently by peer-groups, and less activity towards children approaching target

participants' group. In adults, Czibor et al. (2017) found that women's Machiavellianism was associated with anxious personality traits, while men's Machiavellianism correlated with an opportunistic world view. Based on these results, gender as a moderator variable should be considered more frequently and more seriously in Machiavellianism research.

1.2. Functioning of the parental dyad and its relationship with child and adolescent adjustment

In the approach of family systems theory (P. Minuchin, 1985), when a child is born into a family, an additional function of the marital relationship emerges – wife and husband become mother and father and constitute together the family's executive subsystem (S. Minuchin, 1974). This interparental subsystem is an extension of the marital subsystem and represents an intersection between marital and parent-child relationships (Galdiolo & Roskam, 2016). Disturbed functioning in either the marital or the interparental relationship negatively affects child adjustment from infancy to adolescence and maybe even beyond (e.g., Buehler et al., 1997; Cummings & Davies, 1994). In our studies, two indicators of interparental functioning were investigated in relation to Machiavellianism: perceived interparental conflict and coparenting. While interparental conflict can be perceived as existing but independent of the child, children are always the target of coparenting efforts.

Conflicts between parents over issues related to or independent from the family are common experience in each family. Interparental conflict is a multidimensional construct “that includes frequency, mode of expression, chronicity or duration, intensity, and degree of resolution” of disagreements between parents (Krishnakumar & Buehler, 2000, p.25). By now, several models have been developed to account for how children are affected by interparental conflicts. Grych and Fincham (1990) developed a cognitive-contextual model that highlighted cognitive appraisals as the most influential components. The Emotional

Security Theory (EST) of Davies and Cummings (1994) emphasized children's experience of emotional security and perception of their parents' abilities to preserve family stability. The specific emotions theory by Crockenberg and Langrock (2001a; 2001b) focused on the role of children's emotional reactions to interparental conflicts and how these emotions are helpful in maintaining or achieving valued goals.

Compared to interparental conflict, coparenting represents a more specific aspect of interparental functioning. According to Feinberg (2003, p. 96), coparenting "refers to the ways that parents and/or parental figures relate to each other in the role of parents. Coparenting occurs when individuals have overlapping or shared responsibility for rearing particular children, and consists of the support and coordination (or lack of it) that parental figures exhibit in parenting". Several aspects of coparenting were emphasized by different authors (Feinberg, 2003; Van Egeren, 2001; Van Egeren & Hawkins, 2004), but the essence of coparenting can be described by the following three components (Kolak & Volling, 2007). First, *cooperation* refers to the supportive and valuing attitude towards the other parental figure. Second, there may be *conflict* between the parental figures about childrearing issues. Third, *triangulation* may occur. Triangulation refers to the parent's efforts to form an alliance with the child against the other parental figure or to communication between parents through their child.

Child adjustment is tightly connected to both interparental conflict and coparenting. No matter whether of cross-sectional or longitudinal design, and irrespective of methodology (i.e., using observational or self-report data), several studies (Belsky, Woodworth, & Crnic, 1996; Buehler et al., 1997; Cummings & Davies, 1994; Feinberg, Kan, & Hetherington, 2007; Schoppe, Mangelsdorf, & Frosch, 2001; Teubert & Pinquart, 2010) found weak to moderate relationships between interparental discord and internalizing or externalizing symptoms in children and adolescents. In theory, Davies and Cummings (2006), Rhoades (2008), and

Teubert and Pinquart (2010) argue that child age and gender could be an important moderator for the relationship between disturbed interparental functioning and child maladjustment. However, empirical findings considering the moderating effect of gender are inconsistent (for a review see Snyder, 1998).

2. Aims of the studies, hypotheses

Adolescents were chosen as the target age group out of two reasons. First, given the attitude like nature of Machiavellianism, it is by adolescence that Machiavellianism becomes a relatively stable construct (Kraut & Price, 1976). Second, although adolescents are in the process of disengaging from their families and spending more and more time with peers (Margolin, Gordis, & John, 2001), families continue to play an important role in the healthy development of adolescents, which is based on positive coparenting (Weissman & Cohen, 1985)..

In particular, , we wanted to investigate the relationship between adolescents' level of Machiavellianism and interparental functioning. We did so in two studies with different samples (i.e., one with adolescents and one with families) and different conceptualizations of interparental functioning (i.e., perceived interparental conflict and parent reported coparenting). We expected that perceived interparental conflict and parent reported quality in coparenting would be related to adolescents' level of Machiavellianism. We expected interparental conflict and lower quality coparenting to be related to higher levels of Machiavellianism in adolescents. Given the novelty of our research question, we did not formulate specific hypotheses regarding the relationship between Machiavellianism and aspects of perceived interparental conflict or aspects of coparenting. Therefore, our studies

should be considered exploratory at least in part. Given the importance of gender with regard to both Machiavellianism and interparental functioning (e.g. FAbell et al., 2015; Davies & Cummings, 2006; Rhoades, 2008; Teubert & Pinquart, 2010) all analyses were done separately for girls and boys. Given that family structure might affect life history strategy that in turn might be expressed in Machiavellianism (Jonason et al., 2012; McDonald et al., 2012), we tested the potential effect of family structure as well in Study 1.

Since most of Machiavellianism studies rely only on self-report data from one informant, we wanted to include multiple perspectives in our studies. We believed that including adolescents' perception of interparental conflict and parents' own reports of coparenting could have improved our interpretations. With using these multiple perspectives, we were hopefully able to avoid the effects of perceptual bias and the mere investigation of associations between a single person's mental representations. Our decision to collect data from two samples was guided by precaution. While adolescents are relatively easy to recruit from secondary schools, it is not the case for complete families. Using two samples enabled us to build the biggest possible samples.

3. Study 1

3.1. Method

3.1.1. Participants and procedure

Two hundred and sixty six adolescents (115 boys) participated in our study. All adolescents were enrolled in formal education and were 16.32 years old ($SD=1.00$) on

average. With regard to their current family structure, 173 adolescents came from two-parent families, 28 adolescents lived with their mothers and stepfathers, two adolescents lived with their fathers and stepmothers. Forty-four adolescents lived with their mothers, 11 adolescents lived with their fathers, and four adolescents lived with other, non-specified relatives. Four adolescents did not report their family structure. Based on their family structure, we grouped adolescents into two groups: living in two-parent families (N=173) and living in incomplete families (including any other option; N=89). Seventy-eight boys lived in two-parent families and 35 boys lived in incomplete families. Ninety-five girls lived in two-parent families and 54 girls lived in incomplete families. According to the result of a χ^2 -test ($\chi^2 = .795$; $p = .373$), there was no significant association between gender and family structure (two-parent vs. incomplete families).

Psychology students – who served as research assistants – contacted their former secondary schools to recruit participants. After receiving adolescents' and their parents' informed consent, adolescents filled out the questionnaire package in their classes. The study received ethical approval from the United Ethical Review Committee for Research in Psychology (Ref. No. 2016/048).

3.1.2. Measures

Mach-IV Scale (Christie and Geis, 1970). Machiavellianism was measured by the Mach-IV scale. The scale consisted of 20 items (ten reverse scored) that tap the Machiavellian attitude of individuals through statements like “Anyone who completely trusts anyone else is asking for trouble”. Participants indicated their agreement with the statements on a 7-point Likert scale (1 = completely disagree; 7 = completely agree). For further analyses, a total score was computed by adding item scores and an additional 20 points to achieve 100 as the

theoretical midpoint of the scale. Higher scores indicated more pronounced Machiavellian attitudes. Cronbach α for the scale is shown in Table 1.

Children's Perception of Interparental Conflict Scale (CPIC; Szepes, Czeglédi, Urbán, Horváth, and Balog, 2014; Grych, Seid, and Fincham, 1992). Adolescents' perceptions of conflict between their parents were measured by CPIC. This scale consisted of 8 subscales with a total of 48 items. The subscales were as follows: (1) Frequency subscale (8 items; e.g., "They may not think I know it, but my parents argue or disagree a lot") referred to the perceived frequency of interparental conflict; (2) Intensity subscale (7 items; e.g., "My parents get really mad when they argue") referred to the perceived intensity of interparental conflict; (3) Resolution subscale (6 items; e.g., "Even after my parents stop arguing they stay mad at each other") referred to parents attitude towards each other after the conflict – as perceived by the child; (4) Content subscale (4 items; e.g., "My parents often get into arguments about things I do at school") referred to how often the child perceives himself or his issues as the topic of argument between his parents; (5) Threat subscale (6 items; e.g., "I get scared when my parents argue") referred to the child's fears connected to interparental conflict; (6) Coping efficacy subscale (items; e.g., "I don't know what to do when my parents have arguments") referred to the child's ability to cope with the interparental conflict; (7) Self-blame subscale (items; e.g., "It's usually my fault when my parents argue") referred to the child's beliefs that he caused the conflict between his parents; (8) Triangulations subscale (8 items; e.g., "I feel caught in the middle when my parents argue") referred to the child's involvement in the conflict between his parents. The suitability of CPIC for adolescents was proved by Bickham and Fiese (1997). Participants indicated their agreement with the statements on a 3-point Likert scale (0=false; 1=sort of true; 2=true). Item scores were summed to compute subscale scores. Higher scores on each subscale indicated more negative perception. Cronbach α s for the subscales are shown in Table 1.

3.1.3. Statistical analyses

For statistical analyses, we used IBM SPSS for Windows 22.0. We computed means, standard deviations, and internal reliability indices (Cronbach α s) for the measured variables. Gender differences on the measured variables were tested with ANOVAs. Strength of relationships between pairs of variables was estimated with Pearson's correlations. The potential moderator effect of gender on correlations was tested with SPSS PROCESS macro (Hayes, 2013). To control for the potential effect of incomplete family structure in general, moderated moderation was conducted with family structure (two-parent families vs. incomplete families) on the effect of gender between Machiavellianism and perceptions of interparental conflicts with SPSS PROCESS macro (Hayes, 2013). Further, Machiavellianism was regressed on variables of perceived interparental conflict that significantly correlated with it. Unique and common effects of predictors on Machiavellianism were estimated using commonality analysis (Nimon, 2010).

3.2. Results

Gender differences on the measured variables and internal reliability indices (Cronbach α s) for the whole sample are presented in Table 1. Boys reported significantly higher levels of Machiavellianism than girls. Girls perceived their parents' conflict as more frequent, intense and threatening than boys. Moreover, girls – compared to boys – perceived their parents to be less able to resolve the problem and perceived themselves as being less able to cope with the distress resulting from interparental conflict.

According to the results of Pearson's correlations (Table 2), no significant correlations were found between Machiavellianism and perception of interparental conflict for girls. Boys' level of Machiavellianism significantly and positively correlated with the intensity of perceived interparental conflict, lack of successful parental resolution of the conflict, and adolescents' efficacy of coping with the conflict. Thus, boys who perceived more intense and conflict between their parents, who perceived their parents as being less able to successfully resolve the conflict, and who reported less efficacy of coping with their parents' conflict reported higher levels of Machiavellianism. Moderation analyses further revealed that the relationship between Machiavellianism and intensity was significantly stronger for boys than for girls (R^2 increase due to interaction=.02; $F_{(1,262)}=5.66$; $p<.05$). No significant moderation effect of gender was found for either resolution or coping efficacy (R^2 increase due to interaction<.01; $F_{(1,262)}<0.76$; $p>.38$ in both cases). Moderated moderation (family structure by gender) analyses further revealed that family structure had a significant moderation effect only on the relationship between Machiavellianism and perceived frequency of interparental conflicts (R^2 increase due to frequency by gender by family structure interaction=.02; $F_{(1,254)}=5.28$; $p<.05$). The relationship between Machiavellianism and perceived frequency of interparental conflict was significantly stronger for boys living in two-parent families ($r = .27$; $p < .05$) than for boys living in incomplete families or for girls from any family structure ($|r| < .15$; $p > .42$ in all three other cases). No significant moderated moderation effect was found on any other relationships between Machiavellianism and aspects of perceived interparental conflict (R^2 increase due to interaction<.01; $F_{(1,254)}=5.66$; $p>.14$ in all cases).

For boys, Machiavellianism was regressed on the three variables of CPIC that correlated significantly with Machiavellianism (Table 3). Taken together, children's perceptions of the intensity of interparental conflict, perception of their parents' ability to resolve the conflict, and perception of their own coping efficacy explained a significant

variance of adolescents' level of Machiavellianism ($R^2=.11$; $F_{(3,111)}=4.388$; $p<.01$). However, none of the CPIC variables (i.e., intensity, resolution, and coping efficacy) had a significant unique effect on Machiavellianism. According to the results of commonality analysis (Table 2), the common effect of perceived intensity and perceived parental resolution of interparental conflict proved to be the strongest (30.8 percent of total R^2). Thus, adolescent boys' perception of chronic (i.e., intense and unresolved) conflicts between parents predicted the most of adolescent boys' level of Machiavellianism.

3.3. Discussion

Gender differences with regard to Machiavellianism (e.g., Czibor et al., 2017; Jonason, Icho, & Ireland, 2016) and perceptions of interparental conflict (Grych & Fincham, 1990) replicated previous findings. Considering our research aim, our results indicated that the perception of more intense, more unresolved and more overwhelming parental conflicts was associated with Machiavellianism in boys. The relationship between perceived frequency of interparental conflict and Machiavellianism was significant only in the case of boys coming from two-parent families. The moderating effect of family structure might have resulted from children living with both of their parents witnessed their parents' conflicts from a closer distance – either in space or in time. In the next paragraphs the potential effect of interparental conflict on adolescents' levels of Machiavellianism will be discussed. Alternate causal directions are discussed in Section 5.

If we consider Machiavellianism as a form of conduct problem – including lying, disregard for others, and extreme competitiveness (Christie & Geis, 1970) – than our results are in line with previous research that showed relationships between perceptions of

interparental conflict and externalizing behavioral problems (e.g., Davies, Hentges, Coe, Martin, Sturge-Apple, & Cummings, 2016; Jarnecke, South, Elkins, Krueger, Tully, & Iacono, 2016; Jouriles, Rosenfield, McDonald, & Mueller, 2014; Lucas-Thompson & George, 2017; Zemp, Bodenmann, Backes, Sutter-Stickel, & Bradbury, 2016). Previous research on children's perceptions of interparental conflict offers several possible explanations for the gender-specific nature of our results.

According to the gender intensification hypothesis (Hill & Lynch, 1983), adolescent girls are expected to value close interpersonal and family relations. These expectations hold less for boys. Therefore, becoming conning, manipulative, and deceitful in face of interparental conflicts might be a more viable strategy for boys – as compared with girls – to attain their goals in the family or to get surrogate gratification from peer relationships. Further, Crockenberg and Langrock's (2001a; 2001b) specific emotions theory suggests that children's emotional reactions to interparental conflicts – or lack of thereof – serve for the achievement or maintenance of valued goals. Because Machiavellian individuals value materialistic goals (McHoskey, 1999), emotional detachment can contribute to staying close to the source of material resources (i.e., parents) and to carrying on with exploitation.

Machiavellianism can also be regarded as a form of coping with distress resulting from family adversities (e.g., Birkás & Láng, 2014; Láng, 2016a). In this sense, interparental discord leads to distress and in turn distress is defended against by Machiavellianism. For boys, Machiavellianism was associated with less ability to cope with feelings resulting from the conflict. According to Kerig (2001), boys are more distressed when they are unable to intervene in interparental conflict. Thus, their reduced coping efficacy leaves Machiavellian boys with increasing distress in conflicting situations. This distress might come from two sources. First, conflict between parents is distressing in itself (Grych & Fincham, 1990). Second, overwhelming distress might prevent boys to intervene which leads to even more

distress (Kerig, 2001). Moreover, more intense conflicts and less parental resolution might make parents less available for children. Thus, detachment might be an emotional and manipulateness might be a behavioral ingredient of the Machiavellian strategy to cope with distress resulting from the inability to optimally regulate affective states and with the distress resulting from the unavailability of parents. In our view, this mechanism is very similar to the process of a self-reliant or deactivating strategy of individuals with avoidant attachment. This hypothesis is supported by the overlap between the constructs of Machiavellianism and avoidant attachment (e.g., Abell, Lyons, and Brewer 2013; Ináncsi, Láng, and Bereczkei, 2015; Jonason, Lyons, and Bethell, 2014; Láng and Birkás, 2015). This line of reasoning fits well with the EST (Davies & Cummings, 1994). The EST holds that children's reactions to the interparental conflict (in this case their level of Machiavellianism) is a function of their experience of emotional security and perception of their parents' abilities to preserve family stability. According to our results, Machiavellian boys perceive themselves as unable to cope with the situation and perceive their parents as unable to restore harmony in the parental dyad on the long run. This might lead to the deactivating strategy described above.

4. Study 2

4.1. Method

4.1.1. Participants and procedure

Ninety-eight cohabiting Hungarian families raising at least one 14-18 years old adolescent (target adolescent) were recruited for a study entitled 'Personality traits of

adolescents in a family system perspective'. Parents' relationship lasted 21.59 years on average ($SD=3.83$) and 96 parental pairs were married. On average, mothers were 43.79 ($SD=3.57$) years old, whereas fathers were 46.54 ($SD=4.29$) years old. 55.1 percent of mothers and 66.3 percent of fathers had at least 12 years of formal education. Target adolescents (47 girls) were all enrolled in formal education and were 16 years old ($SD=1.29$) on average. On average, target adolescents had 1.29 siblings ($SD=.92$).

Participants were recruited from the relational network of undergraduate psychology students for whom recruitment was a partial requirement for a developmental course at University of xxxxxx. There was an inclusion criterion for the study: only families composed of adolescents and two cohabiting biological parents were included. Families could participate in the study independent of the amount of children. Inclusion criterion was set to obtain a relatively homogeneous sample with regard to family structure. After giving their informed consent, family members participated voluntarily and anonymously in the study. Families received no reward in any form for participation. The study received ethical approval from the United Ethical Review Committee for Research in Psychology (Ref. No.: 2016/063).

4.1.2. Measures

Mach-IV (Christie and Geis, 1970). Adolescents' level of Machiavellianism was measured by the Mach-IV scale. The scale consisted of 20 items (10 reverse scored) that tapped the Machiavellian attitude of individuals through statements like "Anyone who completely trusts anyone else is asking for trouble". Participants indicated their agreement with the statements on a 7-point Likert scale (1 = completely disagree; 7 = completely agree). For further analyses, a total score was computed by adding item scores and an additional 20

points to achieve 100 as the theoretical midpoint of the scale. Higher scores indicated more pronounced Machiavellian attitudes. Cronbach α for the scale is shown in Table 4.

Coparenting Inventory for Parents and Adolescents (CI-PA; Teubert and Pinquart, 2011). Both mothers and fathers completed the parent form of CI-PA. The inventory assesses the quality of coparenting on the following three subscales. (1) *Conflict* “is defined as the extent of parental arguments or fights over childrearing as well as the extent of undermining the other parent through criticism, disparagement, or blame” (Teubert and Pinquart, 2010, p. 287). (2) *Cooperation* “refers to the extent parents exchange information about their child, support and respect each other as parents, as well as communicate to the child a climate of mutual loyalty” (Teubert and Pinquart, 2010, p. 287). (3) *Triangulation* “includes coalition formation between a child and one parent, and involvement of the child in parental conflicts” (Teubert and Pinquart, 2010, p. 287). Each subscale is measured by 4 items (e.g., “Me and my partner agree on whether to fulfil the wishes and demands of our child or not (reversed)”, “Me and my partner reach shared decisions with regard to our child’s upbringing”, “Our child gets involved in the arguments between me and my partner” for conflict, cooperation, and triangulation respectively). Scores were summed to obtain a total score for each subscale. Conflict and triangulation were reverse scored. Thus, higher scores on each subscale indicate higher quality coparenting. Cronbach α s for the subscales are presented in Table 4.

4.1.3. Statistical analyses

For statistical analyses, we used IBM SPSS for Windows 22.0. We computed means, standard deviations, and internal reliability indices (Cronbach α s) for the measured variables. Strength of relationships between pairs of variables was estimated with Pearson’s correlations. The potential moderator effect of gender on correlations was tested with SPSS

PROCESS macro (Hayes, 2013). Further, Machiavellianism was regressed on coparenting variables. This was done separately for maternal and paternal variables to avoid harmful multicollinearity. Unique and common effects of predictors on Machiavellianism were estimated using commonality analysis (Nimon, 2010).

4.2. Results

Gender differences on the measured variables and internal reliability indices (Cronbach α s) for the whole sample are presented in Table 4. Boys and girls differed only in maternal coparenting conflict. Mothers of adolescent boys reported significantly more coparenting conflict than mothers of girls. Effect size for this difference was small.

According to the results of Pearson's correlations (Table 5), no significant correlations were found between Machiavellianism and parental reports of coparenting for girls. For boys, both parents' report of coparenting on all three dimensions correlated negatively and significantly with adolescents' level of Machiavellianism. Thus, parents of boys – but not girls – with higher levels of Machiavellianism reported more conflict and less cooperation with their coparent, and more triangulation of the child.

The moderation effect of adolescent gender on the relationship between adolescent Machiavellianism and variables of parent reported coparenting was tested. Adolescents' gender moderated the relationship between adolescent Machiavellianism and father reported cooperation (R^2 increase due to interaction=.06; $F_{(1,94)}=5.91$; $p<.05$) and father reported triangulation (R^2 increase due to interaction=.06; $F_{(1,94)}=6.11$; $p<.05$) with significantly stronger relationships for boys. The other four tested moderation effects of adolescents'

gender were nonsignificant (R^2 increase due to interaction $<.03$; $F_{(1,94)} < 3.01$; $p > .08$ in all cases).

For boys, Machiavellianism scores were regressed on the six maternal and paternal coparenting variables (Table 6). According to the results of multiple linear regression analysis (Table 6), the six parent reported coparenting variables together explained a significant proportion of variance in adolescent boys' level of Machiavellianism ($R^2 = .28$; $F_{(6,44)} = 2.822$; $p < .05$). At the same time, none of the parent reported coparenting variables had a significant unique effect on adolescent boys' Machiavellianism. According to the results of commonality analysis (Table 6), 10.6 percent (38 percent of 28 percent explained variance) of variance in adolescent boys' level of Machiavellianism was explained by the common effect of maternal and paternal reports of coparenting conflict, coparenting cooperation, and triangulation. Thus, boys' higher levels of Machiavellianism seemed to be related to poorer quality of parent reported coparenting quality in general. Moreover, unique effects of father reported coparenting variables and the common effect of paternal reports of coparenting conflict, coparenting cooperation, and triangulation together accounted for another 10 percent (36 percent of 28 percent of explained variance) of variance in adolescent boys' levels of Machiavellianism. This left less than 8 percent of explained variance for all maternal unique effects and for all other common effects (i.e., 56 combinations of maternal and/or paternal coparenting variables).

4.3. Discussion

To summarize the results of Study 2, we found that boys' level of Machiavellianism was significantly associated with more conflict, more triangulation, and less cooperation in

coparenting as reported by both mothers and fathers. However, the relationship was stronger for paternal than for maternal reports of coparenting. In the next paragraphs the potential effect of poor quality coparenting on adolescents' levels of Machiavellianism will be discussed. Alternate causal directions are discussed in Section 5.

Our results are in line with previous studies on coparenting and child adjustment that found disruptions in coparenting to be associated with externalizing problems, especially in boys (Belsky, Woodworth, & Crnic, 1996; Feinberg, Kan, & Hetherington, 2007; Schoppe, Mangelsdorf, & Frosch, 2001). The explanation for this can be the detrimental effect of disrupted coparenting on the family's ability to provide a secure base (Byng-Hall, 1995). Coparenting is a coordinated collaboration of two parental figures (Feinberg, 2003). We hypothesize that parents failing at successfully navigating this collaboration might lack some important social skills (e.g., perspective-taking, empathy) and behave in a self-focused and defensive way. With behaving accordingly, they do not only ruin the secure family base (Byng-Hall, 1995) but also serve as role models for their offspring. Through observing unsuccessful parental collaboration, adolescents may learn generalized scripts of coercive conflict resolution and opportunistic interpersonal relating (Bandura, 1977). This social learning hypothesis might also explain the somewhat stronger relationship between father reported coparenting and boys' level of Machiavellianism, because imitation is more likely to take place with a similar model (i.e., father as a parent of the same sex in this case).

With regard to the three measured aspects of parental coparenting, they can relate to adolescents' Machiavellianism as follows. Coparenting conflict and lack of coparenting cooperation refers to lack of understanding between parents and mutual disregard for each other (Kolak & Volling, 2007). These disturbed interactions might serve as a model for adolescents suggesting that they should not care for the opinion or emotional welfare of others with whom they interact. Machiavellian individuals' self-focused approach to conflict

resolution (Mesko, Lang, Czibor, Szijarto, & Bereczkei, 2014), their disagreeable nature (Jakobwitz & Egan, 2006), and disrespect for others as expressed in the early maladaptive schemas of the Impaired Limits schema domain (Láng, 2016b) might be the results of imitating such models. With triangulation, parents force their children to take sides in the conflicts between parents (Kolak & Volling, 2007). This might not only violate children's loyalty towards both parents, leaving them with destructive entitlement to exploit others (Boszormenyi-Nagy & Krasner, 1986; Láng & Birkás, 2014). Using children as weapons in the warfare between parents can also suggest to adolescents that others are merely means to achieve their own goals, which is another hallmark of Machiavellian individuals (Christie & Geis, 1970; Láng, 2015b).

Given the cross-sectional design, we must remain cautious with regard to the direction of causation. It is very tempting to believe that parents serve as models for their children in developing Machiavellian behavioral tendencies. However, it is also plausible to believe that interparental conflict and discord in coparenting do not directly contribute to the development of Machiavellianism in adolescents. This adverse situation might only give an excellent opportunity for Machiavellian adolescents to express their protean approach to social influence (Jonason & Webster, 2012). Lack of understanding and mutual undermining between parents enable adolescents to reach their goals through manipulation and deceitful behaviors. These strategies can be reinforced by achieved goals. In turn, success in achieving goals through manipulation might make adolescents develop a cynical view of the world and parents as significant others. Thus, poor quality of coparenting might only potentiate and not cause Machiavellianism in adolescents.

5. Limitations, general discussion, and conclusions

Before giving a general discussion, some limitations of our studies should be mentioned. Both studies used only self-report measures in assessing personality and relational variables. Therefore, Study 1 is especially prone to mono-reporter bias. However, Study 2 remedied for this flaw of design, and the converging results of Studies 1 and 2 makes us believe that results of Study 1 can also be considered as valid. The second limitation should be mentioned with regard to family structure. In Study 2, only cohabiting families were enrolled. This means that our sample – including only non-divorced families – is relatively homogeneous, so results should be generalized only very cautiously. Third, our studies were cross-sectional in design. This design prevented us from establishing causal relationships between measured variables. We hope that longitudinal studies in the future will do good for this shortcoming of our studies and give a clearer picture of causal directions.

The results of our two studies can be summarized briefly as follows. Perceptions of more intense and less resolved interparental conflict and children's less efficient coping with distress were associated with higher levels of Machiavellianism in boys. Poorer quality of coparenting – as reported by both parents – was associated with higher levels of adolescents' Machiavellianism as well. This relationship again was only significant for boys. Thus, the two studies yielded consequent results. It seems that both interparental conflict and poorer quality coparenting are associated with higher levels of Machiavellianism, and these relationships selectively apply to boys.

The general gender-specific nature of our results can be excellently explained with any of the following two models. First, the male vulnerability hypothesis (e.g., Kerig, 1996) posits that boys are more prone to stress – and specifically to family stress (O'Leary & Vidair, 2005) – than girls. In this sense, boys – as compared with girls – are more prone to develop a

dysfunctional personality from experiencing intense and long-lasting interparental conflicts or the aftermath of poorer quality of coparenting.

Second, the distinct pathways model (e.g., Johnston, Gonzalez, & Campbell, 1987; Zahn-Waxler, 1993) suggests that stressful life events and adverse environments have quantitatively the same but qualitatively different effects on boys and girls. This means that stressors have an effect on both boys and girls, but adversities result in externalizing problems in boys and in internalizing problems in girls. Machiavellianism, with its antagonistic nature (Jakobwitz & Egan, 2006), can be considered as an externalizing problem. Thus, we do not believe that problems of interparental functioning leave girls unaffected, but rather we hypothesize girls to develop internalizing aspects of Machiavellianism (e.g., depression, neuroticism, and anxiety). Because the Mach-IV (Christie & Geis, 1970) emphasizes the externalizing aspects of Machiavellianism (i.e., manipulation and cynicism), and because these externalizing symptoms in general are more characteristic of boys (Zahn-Waxler, 1993), these could leave the effects of interparental discord on girls' Machiavellianism invisible.

Moreover, our results are in line with previous studies on Machiavellianism or the Dark Triad that found gender-specific relationships between different family variables and the aforementioned personality traits. Láng (2016a) found that retrospective reports of childhood emotional parentification predicted the level of Machiavellianism only in men. Jonason, Icho, and Ireland (2016) revealed that a composite score for Dark Triad traits correlated with childhood unpredictable family environment only in men as well. Thus, we might hypothesize that the Machiavellian externalizing behavioral strategy (being deceitful, manipulative, and cynical) as measured by Mach-IV can be a male form of “condition-dependent adaptation” (Jonason, Icho, & Ireland, 2016, p.8).

Given the limited nature of our studies, we were unable to establish causal directions between the measured variables. Therefore, the potential effect of adolescents' relatively high

levels of Machiavellianism on interparental conflict and poorer quality of coparenting should be discussed as well. For example, De Haan, Deković, and Prinzie (2012) found that adolescents' personality traits – especially disagreeableness – contributed to parenting dysfunction over and above parental personality traits. This could mean that Machiavellian children in general might be difficult-to-parent offspring, especially in times of adolescence when parent-child conflicts are more frequent than ever (Steinberg & Silk, 2002).

Adolescents' relatively high level of Machiavellianism might not be a mere source of stress for parents. With their manipulative interpersonal tactics (Christie & Geis, 1970) and their materialistic or extrinsic value orientation (McHoskey, 1999), Machiavellian boys might be more likely to exploit family members or to turn parents against each other in reaching their goals. This would increase the occurrence of interparental conflicts and undermine efforts of coparenting cooperation. However, Wastell and Booth (2003) raise our attention that Machiavellianism is not necessarily a manipulative strategy employed through conscious choice, but could be a result of alexithymia, i.e. the inability to read emotions. Thus, Machiavellian youth might contribute to the escalation of everyday family conflicts with their relative lack of empathy as well.

There is a relative paucity of research on gender-specific effects of coparenting and interparental conflict and on gender-specific correlates of Machiavellianism. Our study expands on these limited findings on coparenting, interparental conflict, and Machiavellianism that all too often neglect the potentially gendered nature of these concepts. Moreover, our studies are among the few studies (e.g., Ryumshina, 2013; Láng & Birkás, 2014; Láng, 2016a) that investigated Machiavellianism from a family system perspective. Especially, Study 2 of this paper expands on previous research with using a multi-informant method and family as a unit of investigation. Longitudinal studies could further contribute to this expansion of research.

With regard to the practical applicability of our results, family interventions could be informed by these studies. Mothers are considered to be the gatekeepers in many families and consequently are the main target of family interventions. Our results showed that fathers' perceptions of coparenting were more strongly correlated with boys' Machiavellianism as compared to mothers' perceptions. In targeting the change in the level of Machiavellianism as a focus of intervention, more importance could be attributed to fathers, and to how these fathers experience parenting and coparenting issues in their families. But why intervene with Machiavellianism? As a personality trait associated with manipulative tendencies and utilitarian morality (Christie & Geis, 1970), Machiavellianism can be considered as a form of pseudopathology (Jonason, Duineveld, & Middleton, 2015). In this regard, Machiavellianism can be adaptive for the individual in accessing important resources but harmful for the society. With their cynical view of the world and human nature (Christie & Geis, 1970), Machiavellian youth can be vulnerable to experience further difficulties in their lives. Lacking social support (Monaghan, Bizumic, & Sellbom, 2016) and perceiving the social environment as hostile (Rauthmann, 2012), these individuals are more prone to experience different forms of psychological ill-being, e.g., depression (Bakir, Yilmaz, & Yavas, 1996), paranoid ideation (Christoffersen & Stamp, 1995), and negative affectivity (DeShong, Helle, Lengel, Meyer, & Mullins-Sweatt, 2017).

Table 1. Internal reliability of the measured scales (N = 266) and gender differences in the measured variables, results of ANOVAs.

		Cronbach α	Boys (N = 115)		Girls (N = 151)		F	p	Cohen'd
			M	SD	M	SD			
Machiavellianism		.73	98.41	14.08	94.28	12.53	6.373	< .05	.31
Aspects of children's perception of interparental conflict	Frequency	.83	3.97	2.77	5.30	3.39	11.725	< .005	- .43
	Intensity	.83	3.82	2.72	5.52	3.55	18.296	< .001	- .54
	Resolution	.89	3.02	2.77	4.03	3.50	6.462	< .05	- .32
	Content	.76	.84	1.39	.72	1.30	.598	.440	.09
	Threath	.80	2.01	2.55	3.15	2.80	11.606	< .005	- .43
	Coping efficacy	.65	4.42	2.24	5.25	2.57	7.677	< .01	- .34
	Self-blame	.53	1.67	1.56	1.34	1.61	2.738	.099	.21
	Triangulation	.69	3.95	2.77	4.67	3.26	3.638	.058	- .24

Table 2. Results of Pearson's correlations for girls (N=151; above the diagonal) and boys (N=115; below the diagonal).

	Mach	Aspects of children's perception of interparental conflict							
		Freq	Int	Res	Cont	Thr	Cop	Bla	Tri
Mach	-	.026	.067	.159	.070	.085	.151	.072	.023
Freq	.145	-	.754***	.749***	.142	.333***	.364***	.113	.396***
Int	.292**	.577***	-	.736***	.102	.370***	.424***	.102	.495***
Res	.245**	.487***	.654***	-	.173*	.441***	.430***	.163*	.429***
Cont	.055	.167	.009	-.099	-	.151	-.072	.478***	.195*
Thr	.125	.343***	.402***	.404***	.084	-	.561***	.172*	.252**
Cop	.212*	.194*	.279**	.327***	.018	.602***	-	.047	.086
Bla	.075	.010	-.043	.030	.565***	.076	.057	-	.236***
Tri	-.001	.328***	.341***	.319**	.221**	.226**	-.067	.151	-

Note: Mach=Machiavellianism; Freq=Frequency; Int=Intensity; Res=Resolution; Cont=Content; Thr=Threat; Cop=Coping efficacy; Bla=Self-Blame; Tri=Triangulation. *p<.05; **p<.01; ***p<.001.

Table 3. Machiavellianism regressed on boy's (N=115) perceptions of the intensity of interparental conflict, perception of their parents' ability to resolve the conflict, and perception of their own coping efficacy; results of multiple linear regression and commonality analysis.

Effects	Coefficient	% of total R ²	β	p
Unique to Int	.026	24.878	.215	.073
Unique to Res	.002	1.951	.061	.613
Unique to Cop	.015	14.555	.132	.169
Common to Int and Res	.033	30.756		
Common to Int and Cop	.004	3.831		
Common to Res and Cop	.003	2.884		
Common to Int, Res, and Cop	.022	21.145		
Total	.105	100.000		

Note: Int=Intensity; Res=Resolution; Cop=Coping Efficacy.

Table 4. Internal reliability of the measured scales (N = 98) and gender differences in the measured variables, results of ANOVAs.

		Cronbach α	Boys (N = 51)		Girls (N = 47)		F	p	Cohen's d
			M	SD	M	SD			
Adolescents' Machiavellianism		.82	97.55	13.95	92.53	16.13	2.724	.102	.33
Parental reports of coparenting	Maternal conflict	.84	14.20	3.40	15.53	2.92	4.321	< .05	- .42
	Paternal conflict	.87	14.61	3.58	15.45	2.91	1.602	.209	- .26
	Maternal cooperation	.86	15.49	3.65	16.26	3.29	1.181	.280	- .22
	Paternal cooperation	.87	15.71	3.56	16.38	3.18	.981	.325	- .20
	Maternal triangulation	.85	14.82	3.65	15.70	3.45	1.492	.225	- .25
	Paternal triangulation	.85	15.12	4.05	14.94	3.46	.056	.813	.05

Note: higher scores on all three coparenting scales indicate higher quality of coparenting. *p<.05; **p<.01; ***p<.001

Table 5. Results of Pearson's correlations between the measured variables for girls (N=47; above the diagonal) and boys (N=51; below the diagonal).

	Adolescents' Machiavellianism	Parental reports of coparenting conflict		Parental reports of coparenting cooperation		Parental reports of triangulation	
		Maternal	Paternal	Maternal	Paternal	Maternal	Paternal
Adolescents' Machiavellianism	-	-.216	-.002	-.083	.124	-.017	.066
Maternal coparenting conflict	-.404**	-	.552***	.786***	.467**	.726***	.600***
Paternal coparenting conflict	-.450**	.709***	-	.508***	.763***	.609***	.692***
Maternal coparenting cooperation	-.336*	.765***	.700***	-	.569***	.620***	.586***
Paternal coparenting cooperation	-.392**	.713***	.891***	.767***	-	.660***	.757***
Maternal triangulation	-.404**	.785***	.664***	.809***	.716***	-	.785***

Paternal triangulation	-.479***	.619***	.792***	.685***	.835***	.783***	-
Note: higher scores on all three coparenting scales indicate higher quality of coparenting. *p<.05; **p<.01; ***p<.001							

Table 6. Adolescent boys' (N=51) Machiavellianism regressed on the six subscales of parental reports of coparenting; results of multiple linear regression and commonality analysis.

Effects	Coefficient	% of total R ²	β	p
Unique to paternal cooperation	.017	6.16	.353	.313
Unique to paternal conflict	.017	6.16	- .308	.313
Unique to paternal triangulation	.041	14.90	- .462	.119
Unique to maternal cooperation	.002	.65	.085	.741
Unique to maternal conflict	.015	5.55	- .238	.338
Unique to maternal triangulation	< .001	.05	.027	.929
Common to all six maternal and paternal coparenting subscales	.106	37.99		
Common to all three paternal coparenting subscales	.026	9.23		

Note: common effects accounting for less than 7 percent of R² are omitted from the table.

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